

Controlling Shareholder and TMT Collusion—Evidence from Acquisitions with Performance Commitment

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Abstract

Using acquisition data between listed companies and private companies from 2011 to 2016 in the Chinese capital market, we found controlling shareholders and top management teams (TMTs) after acquisitions with signed performance commitment (PC) contracts will sell more stocks than those without those contracts. We also found that stronger local legal protection can make controlling shareholders and TMTs less willingly to sell. In addition, the selling phenomena through acquisitions with PC contracts is more apparent in less competitive industries, in companies with an IPO year surpassing the lock-up period. In short, an acquisition with PC is more of a way of harvesting instead of healing for the controlling shareholders and TMTS in the acquiring listed company. The finding sheds light on a new form of collusion and tunneling through financial contracts in the less-developed capital market. Our results are robust to propensity score matching, Heckman two steps, and diff-in-diff tests.

Keywords: Performance commitment, controlling shareholders, top management teams, selling, legal protection

JEL Classification: G14 G34

Funding: This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

1. Introduction

Concentrated ownership is popular among companies, according to La Porta, Lopez-de-Silanes, Shleifer, and Vishny (hereafter referred to as LLSV) (1999) in their global statistical analysis of large companies' shareholding structures. Under the concentrated ownership structure, controlling shareholders are incentivized to expropriate minority shareholders, which is also an agency problem in addition to the classical agency problem between owners and managers (Shleifer and Vishny, 1997; LLSV, 1997, 1998; Djankov et al. 2008; Johnson et al., 2000). Controlling shareholders can gain two kinds of benefits: public and private benefits of control. Private benefits of control refer to the controlling shareholders' benefits that are not enjoyed by other shareholders. Barclay and Holderness (1989) provided evidence of private benefits of control from the perspective of the block trading premiums. Dyck and Zingales (2004) analyzed the private benefits of control differences worldwide from the same perspective. Zingales (1994) provided evidence of private benefits of control from the voting rights premium, and Nenova (2003) analyzed the difference of private benefits of control among the world's top 18 capital markets.

Although, in theory, private benefits of control do not necessarily harm the interests of other shareholders (Holderness, 2003), controlling shareholders are fully motivated and capable of gaining private benefits by depriving minority shareholders (LLSV, 1997). A large amount of evidence suggests tunneling is the primary means for controlling shareholders to grasp private benefits of control.

Tunneling comes in two forms according to Johnson et al. (2000): "First, a controlling shareholder can simply transfer resources from the firm for his own benefit through self-dealing transactions. Such transactions include outright theft or fraud, asset sales, contracts such as transfer pricing advantageous to the controlling shareholder, excessive executive compensation, loan guarantees, expropriation of corporate opportunities, and so on. Second,

the controlling shareholder can increase his share of the firm without transferring any assets through dilutive share issues, minority freeze outs, insider trading, creeping acquisitions, or other financial transactions that discriminate against minorities.”

Tunneling is particularly severe in emerging markets such as China where legal enforcement and governance mechanisms are less effective than in other countries (Chen et al., 2018). The existing research based on Chinese data mainly focuses on the first type of tunneling.

Controlling shareholders extract private benefits from publicly listed companies through loan guarantees (Berkman et al., 2009), dividend policies (Chen et al., 2009), related-party transactions (Jian and Wong, 2010), intercorporate loans (Jiang et al., 2010), Non-Operational Fund Occupancy (NOFO) (Jiang et al., 2015), corporate philanthropy (Chen et al., 2018) and information disclosure (Wu and Wu, 2010; Cai, 2012; Cai et al., 2017). Research on the second type of tunneling (i.e., from a financial transaction perspective) is scarcely seen. However, Aharony et al. (2010) found that abnormal RP sales in the pre-IPO period as tunneling opportunities are negatively correlated with the market valuation of IPO firms in the post-IPO period.

In this study, we unveil another way of tunneling by the controlling shareholders in the less developed Chinese capital market through PC contracts in acquisitions that have not been noticed in academic studies. The PC contracts in acquisitions have the same purpose with earnouts as defined by Cadman et al. (2014), in that “earnouts are provisions of acquisition agreements that provide sellers with payments conditional on the occurrence of specified future events or meeting certain conditions. These contracted outcomes, which generally extend up to five years after the acquisition, are often based on financial performance measures, such as revenue and earnings targets, and/or nonfinancial performance hurdles.”

The difference is that acquirers in PC contracts in China do not delay the acquisition payment as seen in earnouts. Acquirers fully pay the target in acquisitions, while targets pay back the

pre-specified amount as agreed to in the PC contracts contingent upon conditions similar to those in earnouts. We mainly answered three questions in this study. First is why Chinese listed companies have adopted PC contracts in acquisitions, second is how the collusion and tunneling mechanism work in the acquisition with signed PC contracts and third we further explored factors that influence the expropriation mechanism.

Our study contributes to the literature in several ways. First, our findings contribute to the tunneling literature by pointing out the new selling mechanism through acquisitions with PC, which has not been documented previously in the literature. Second, our study contributes to the PC and earnouts literature (Datar et al., 2001; Kohers and Ang, 2000; Cain et al, 2011; Barbopoulos and Wilson, 2013; Lukas and Heimann, 2014; Cadman et al., 2014) and specifically, how PC contracts can be applied by opportunistic TMTs and large shareholders to exploit minority shareholders. Third, our evidence on PC applications in acquisitions supports legal protection affects the expropriation of minority shareholders (LLSV, 1998; Reese Jr and Weisbach, 2002) in the largest emerging markets, China.

After introducing the background of the PC policy implementation process in China in Section 2, we review the relevant literature and develop our main hypotheses in Section 3. We then describe the sample, key variables, and research design in Section 4. Section 5 reports the empirical results, and Section 6 presents robustness tests before presenting our conclusions in the final section.

2. Background

PC was first introduced to Chinese listed companies in the process of listed companies' shareholding structure reform which started in 2005 (Hou et al., 2015)². To protect the

² As of this writing, performance commitment is what CSRC requires the listed companies to make, which is on business performance after shareholding structure reform, aiming at protecting the interests of investors, promoting the smooth progress of the listed companies' split share structure reform, which formed the embryonic form of earnout in acquisition.

interests of investors, the China Securities Regulatory Commission (CSRC) has called for the disclosure of PC by the listed companies who implemented shareholding structure reform in assets reorganization. When the performance fails to meet the standard, the listed companies shall compensate the outstanding shareholders with a certain proportion of shares or cash. On April 16, 2008, CSRC issued “*the Administration Measures for Significant Asset Restructuring of Listed Companies*” (CSRC Decree No. 53), which first legally restricted the acquisition and reorganization of listed companies. It explicitly stipulated that the target firms should sign a PC agreement with the acquirers if the acquirers evaluate the price in a valuation method based on future expected earnings. To further optimize the market environment of the acquisition and reorganization of listed companies, in November 2014, the CSRC revised the “*Measures for the Administration of Major Assets Reorganization of Listed Companies*” (CSRC Decree No.109). This revision is the legal source of the contingent payment in the current acquisition and reorganization of listed companies.

Along with the increasing acquisition and reorganization transactions, the CSRC has issued a series of instructions to related problems and solutions to the PC of acquisition and reorganization. When replying to relative questions, the CSRC emphasized "no matter whether the target assets belonged to or are controlled by the block-holders, actual controlling shareholders, or related parties of actual controlling shareholders, or whether the target assets are priced by asset approach, the block-holders, actual controlling shareholders, or related parties of actual controlling shareholders, they all should make performance commitment with the stock and cash they have obtained.” The CSRC also emphasized that “the major assets reorganization of listed companies should not subject to the provisions of ‘*Article 5 of*

the No. 4 guidelines for regulating listed Companies -- The Actual Controlling Shareholders, Shareholders, Related Parties, Acquirers and Listed Companies' promise and performance;” they cannot change the PC randomly³. As a contractual arrangement of price adjustment, PC, which can reduce the information asymmetry and protect the investors of acquiring firms, has been applied to the acquisition and reorganization of listed companies increasingly, and has become an important institutional guarantee for the smooth completion of acquisitions and reorganizations of listed companies (Pan et al., 2017).

3. Literature review and hypothesis development

3.1. The literature on earnouts in acquisitions

Recently, a few studies have focused on earnout in acquisitions and its impact on shareholder wealth. Due to the problems of asymmetric information and moral hazard in acquisitions, it is common to uncover the disagreements between acquirers' and targets' estimates of the intrinsic value of the deal. Earnout is a useful contract to retain and stimulate target managers after the acquisition deal (Cain et al., 2011). The payments in acquisitions can be split into two parts: the fixed payments and contingent payments based on the future performance of targets. The latter contingent payments are earnouts.

As noted by Blough et al. (2007), “Empirical analysis of earnout clauses between third parties has revealed considerable heterogeneity in the terms of earnout contracts, the profit level indicator, the period over which performance is measured, and the form of payment for the

³ On January 15, 2016, the CSRC issued Relevant Issues and Answers to Performance Commitment in acquisition. On June 17, 2016, the CSRC issued Relevant Issues and Answers to the Performance Commitment of Listed Companies, clearly stipulating that the performance commitment agreement should not be changed. On August 4, 2017, CSRC spokesman Gao Li reiterated the requirements for regulation of Performance Commitment in acquisition in the regular press conference.

earnout.” Earnouts are more typically found where the target is a private company or a subsidiary of a public firm rather than a public company. Because private companies suffer more serious information asymmetry and moral hazard and have more uncertainty about the internal value (Datar et al., 2001). The pre-specified performance targets in earnouts vary, such as cash flow, pre-tax income, gross profit, net income, and earnings per share. The key features of earnouts can vary significantly from case to case—there is not a “one size fits all” approach to the financial contracts involved.

Prior studies suggest that acquirers using earnout generate significantly higher announcement and post-acquisition value gains than not using earnout (Barbopoulos and Sudarsanam, 2012). Earnout in acquisition can minimize the costs of valuation uncertainty and moral hazard in acquisition negotiations (Cain et al., 2011). Elnahas et al. (2017) show that target managers significantly manage earnings upward by cutting discretionary expenses during earnout periods. As compared to a sample of matched non-earnout acquisitions, acquisitions with earnout clauses were followed by significantly lower long-term abnormal returns.

Similarly, the goal of PC contracts in China is reducing information asymmetry and moral hazard, especially in acquiring private companies. There are several differences between PC contracts and earnouts. Firstly, the main difference is that given acquirers with PC contracts do not delay the acquisition payment as in earnouts, there are no contingent payments in PC contracts. Acquirers pay the full amount to targets after acquisitions succeed. If failing to achieve prespecified performance hurdles in PC contracts, targets pay back the compensation based on prespecified conditions. *The administrative measures for the acquisition of listed companies* (CSRC Decree No.108) demanded financial advisors investigate acquirers’

financial capability and capital source, making sure that acquirers can accomplish acquisitions. Financial advisors should take joint and several liabilities, which means once acquirers cannot make the payment, financial advisors pay instead. If the acquisition payment is in cash, no less than 20% of the total price should be deposited at a specified bank as a security deposit, and if the payment is in stocks, all the stocks should be deposited in securities registration and clearing institution except when issuing new stocks. Based on the above policies, contingent payments are impractical in China, which is the main difference between earnout and PC. Secondly, the transaction price of acquisitions with earnouts is partially fixed, and the other part is fluctuating with an upper limit so earnouts can mitigate information asymmetry between acquirers and targets by adjusting transaction price. The transaction price of acquisitions with PC contracts is fixed. When the value divergence is large, the acquirers may undertake the risk of excessive payment, and the target may lose the opportunity to obtain the desired value. Thirdly, earnouts are enforceable because the right of initial payment is in the hand of acquirers, and the installment is easier to implement for them. PC contracts are normally less enforceable because the right of initial compensation is in the hand of the targets, and compensation is difficult to fully implement for acquirers. If the target enterprise is deadbeat, the PC will be turned into a bad check.

As we can see from the above analysis, PC contracts have a high risk for acquirers. If the targets cannot meet the pre-specified performance hurdles, acquirers may face higher risks and bear more losses. There are few studies examining PC contracts in acquisitions in China and their economic consequences; we attempt to fill the research gap in this study.

3.2. The literature on tunneling

Due to the concentrated ownership in firms, the controlling shareholders can use their power to expropriate minority shareholders (Johnson et al., 2000). LLSV (1998) find that a legal system with poor investor protection can be a proxy for the likelihood of tunneling. The stock market in China is suitable for the tunneling study for two main reasons. First, the majority of listed firms in China have a controlling shareholder. Secondly, investor protection is relatively poor, and minority shareholders could barely take enforcement action against the misconduct of controlling shareholders (Jiang et al., 2010). Lemmon and Lins (2003) find that insiders have the incentive and ability to engage in expropriation in pyramidal ownership structures. De Cesari (2012) uses a sample of Italian controlled firms to explain that controlling shareholders have strong incentives to expropriate minority shareholders, pay out more and prefer dividends over repurchases when disgorging cash. Besides, tunneling is usually achieved through collusion between controlling shareholders and top management team (Wang and Xiao, 2011). Since tunneling reduces the performance of listed firms (Jiang et al., 2010), controlling shareholders engaging in expropriation activities have less incentive to demand high pay-performance sensitivity in executive compensation. Then TMTs will pursue collusion with controlling shareholder to increase self-benefits (Johnson et al., 2000).

Bae et al. (2000) claim that firms belonging to Korean business groups (chaebols) make acquisitions to increase controlling shareholders' wealth by increasing the value of other group firms. They find that when a chaebol-affiliated firm acquires, the minority shareholders of that firm lose in their investment. However, the controlling shareholders of the chaebols, on average, will benefit because the acquisition enhances the value of other firms in the

group. That is, controlling shareholders can increase their value by expropriating minority shareholders when acquiring.

Despite the existence of many published studies on tunneling in a Chinese setting (Berkman et al., 2009; Chen et al., 2009; Jian and Wong, 2010; Jiang et al., 2010; Jiang et al., 2015; Chen et al., 2018), the expropriation mechanism through acquisition is still rarely studied, especially expropriation in acquisitions with PC contracts, which give us an opportunity to investigate whether signing a PC contract is a way of healing or harvesting and how the mechanism works in China.

3.3. Hypotheses

3.3.1. Performance commitment and selling of stocks

Comparing earnout with PC, we see that PC contracts in acquisitions fail to reduce the risk for acquirers. Based on the estimated future income or profit, acquirers make a payment to targets at first, while if the targets cannot meet the pre-specified performance targets and lack money, or even worse, face bankruptcy; acquirers cannot receive the full compensation and suffer a big loss. Even if the shareholders of targets use stock to compensate, and due to the poor performance, the stock price may greatly decrease in value and cannot offset the acquirers' loss. Sometimes targets refuse to compensate in the event of poor performance, and acquirers may appeal to the court and induce more loss.

With the apparent enforcement difficulty, why have PC contracts become popular in China recently? First, under China capital market, most of the target firms are unlisted companies and acquirers are listed companies. So normally acquirers could gain abnormal return after

acquisition announcement (Ma et al., 2009; Gaur et al., 2013). Moreover, acquisitions with PC contracts could convey positive information to the market. The original intention of PC contracts is to protect the interests of acquirers and targets, to reduce the information asymmetry between acquirers and targets, and to facilitate a successful deal. It is good news to the outside investors that the listed company (acquirer) makes an acquisition with PC clauses (Song et al., 2018). Controlling shareholders from acquirers could improve corporate stock price and market value through acquisitions with PC contracts, especially for companies with the underestimated market value after observing the positive market sentiment about the contracts.

Secondly, most listed firms in China have a controlling shareholder; they can easily use their power to expropriate minority shareholders and increase their own interests. A large body of empirical evidence has shown that controlling shareholders may take advantage of minority shareholders through connected transactions, especially in emerging markets like China where legal protections of minority shareholders are weak (LLSV, 1997, 1998, 1999, 2000; Johnson et al., 2000; Berkman et al., 2009; Chen et al., 2009; Jian and Wong, 2010; Jiang et al., 2010; Jiang et al., 2015). After the listed company's Shareholding Structure Reform⁴, controlling shareholders using information disclosure besides internal transaction to manipulate stock price have been the new form of tunneling in China (Wu and Wu, 2010; Cai, 2012; Cai et al., 2017). Wu and Wu (2010) examined controlling shareholders' tunneling

⁴ Shareholding Structure Reform is an institutional arrangement for non-tradable shares to be traded on the market. The shares of listed companies in the A share market in China are divided into tradable shares and non-tradable shares. Shares held by shareholders that are publicly issued and can be traded in stock market are called tradable shares; shares publicly issued while not traded are called non-tradable shares. So shares of the same listed company are divided into tradable shares and non-tradable shares; non-tradable shares are held by controlling shareholders, top management teams and other original shareholders. The purpose of Shareholding Structure Reform is to reduce tunneling.

behaviors during their stock-selling periods. They found that for the purpose of maximizing controlling shareholders' selling returns, through releasing good news in advance and delaying bad news, there are positive cumulative abnormal returns of listed firms before controlling shareholders sell stock, and negative cumulative abnormal returns after selling stock. Using earning forecast as one kind of internal information, Cai (2012) found that controlling shareholders incline to sell stock before releasing bad news or after releasing good news.

Controlling shareholders and TMTs may collude to adopt a PC contract in the acquisition, send out the “good” news to the market, and stimulate their stock price. They can then take advantage of the stock price hike in the window and sell to arbitrage. Especially after the listed company's Shareholding Structure Reform, controlling shareholders can sell their stocks freely when the stock price rises to the desired level. Controlling shareholders thus are probable to sell after acquisition with PC contracts to benefit.

Thirdly, prior studies have shown that it is common for controlling shareholders or TMTs to expropriate by using the elevated stock price and sell stocks in the Chinese listed firms. For example, large stock dividends can induce a positive reaction in the Chinese stock market; then, after the announcement of stock dividends policy, shareholders will sell stock to gain interests (Xie et al., 2016; Cai et al., 2017). By manipulating stock price and utilizing the increasing stock price after acquisition with PC contracts, controlling shareholder and TMTs can gain much more interests than just receiving cash dividends or cash salary.

However, in the long run, the stock prices will fall, and due to the information asymmetry, minority shareholders are, thus, harvested and bear the loss.

Our first hypothesis arises from the previous discussion.

H1: Controlling shareholders after acquisitions with signed performance commitment contracts will sell more stocks compared to those without.

Tunneling can be achieved through collusion between controlling shareholders and TMTs (Wang and Xiao, 2011; Zhang et al., 2014). Because controlling shareholders have a relatively strong influence on firms and expropriation reduces firm performance (Jiang et al., 2010), it is sensible for TMTs to collude with controlling shareholders to gain benefits by expropriating minority shareholders rather than against them (Wang and Xiao, 2011). As Zhang et al. (2014) implied, tunneling could bring noise into corporate operations and corporate outcomes; TMTs may suffer risk and loss due to tunneling. TMTs have both the ability and the incentive to collude with controlling shareholders. So, TMTs may collude with the controlling shareholders to make use of a PC contract in an acquisition to send out the “good” news to market, elevate their stock price, and sell after acquisition to benefit.

Furthermore, as Wang and Xiao (2011) reported, controlling shareholders who expropriate benefiting from minority shareholders could reduce the demand for pay-performance sensitivity of executive compensation. Grinstein and Hribar (2004) stated that when the acquisitions are successfully completed, TMTs could be awarded extra compensation, usually as cash bonuses. TMTs from acquirers take the lead in the acquisition process; when they foresee they could not get the fair cash bonus through a successful acquisition, they could collude with the controlling shareholders to pursue selling stocks to gain benefits after the acquisition.

Therefore, our next hypotheses are as follows:

H2: TMTs after acquisitions with signed performance commitment contracts will sell more stocks compared to those without.

H3: Lower pay-performance sensitivity can further induce TMTs to sell stocks after acquisitions with signed performance commitment contracts.

3.3.2. The impact of legal protection

LLSV (1998) claim that law and its enforcement are important to protect security holders' rights. The quality of legal protections affects the ability of shareholders to expropriate resources from minority shareholders (Reese Jr and Weisbach, 2002). Reese Jr and Weisbach (2002) show that non-US firms cross-list in the United States to increase protection of their minority shareholders. Given that non-US firms are subject to US securities law, the cost of extracting private benefits increases for managers and commits the firm to protect minority shareholders' interests. The variations in the levels of legal protection across regions and provinces lead to observable differences in expropriation in China. In provinces where legal protection for minority shareholders is weak, it is considerably easier for controlling shareholders to expropriate resources from minority shareholders and face a relatively low risk of a lawsuit. On the contrary, strong legal protection can restrain expropriation. Also, legal protection fosters good corporate governance that, in turn, instills investor confidence (Defond and Hung, 2004). Defond and Hung (2004) find that CEO turnover is more likely to be associated with poor firm performance in countries with strong legal protection, which means strong legal protections are more likely to protect corporate governance that successfully terminates poorly performing CEOs. In a word, good corporate governance under strong legal protection can decrease the possibility of expropriation of minority

shareholders and collusion between controlling shareholders and TMTs. We presume that, in provinces with strong legal protection, it is harder for controlling shareholders and TMTs to collude to manipulate acquisitions with signed PC contracts and beneficially sell after acquisition with a higher risk of a lawsuit.

Therefore, our next hypothesis is as follows:

H4: Stronger local legal protection can make controlling shareholders and TMTs less willingly to collude and sell stocks after acquisitions to expropriate with signed performance commitment contracts after acquisitions.

4. Research design

4.1. Sample and data

To form our acquisition samples, we began with all announced and completed Chinese acquisitions announced between January 1, 2011, and December 31, 2016, from the Chinese Acquisition Database of Wind Info and CSMAR. In 2011, we started to see the acquisitions with PC contracts, and 2016 was the latest year we can collect all selling data for the next year (2017). We retain acquisitions only if the acquirers were an A-share⁵ listed company and the control right of the target firm changed after the transaction completed, which means that the proportion of shares of targets' shareholders transferred to acquirers' shareholders was more than 50%. Our exclusion criteria were as follows: (1) we eliminated acquisition samples in which one of the counterparties belongs to the financial industry; (2) we eliminated the acquisition samples whose purpose is backdoor listing; (3), and we eliminated

⁵ Stocks listed either in Shanghai Stock Exchange or Shenzhen Stock Exchange, not including Chinese companies listed overseas.

the samples with missing data. After the preliminary screening, we obtained 3643 acquisition samples, 1151 of them have PC contracts.

Because the target firms are unlisted companies, their data cannot be obtained directly from the public databases. We hand-collected these data by checking each deal draft, collected and compiled information of the PC signed by both parties, and obtained the transaction value, transaction proportion, performance hurdles, and other information. Because only acquirers are listed companies, we focused on controlling shareholders and TMTs from acquirers selling behavior.

Table 1 presents the distribution of acquisition events during the 2011–2016 study period. Based on the distribution table of the acquisition samples, there are 1151 completed acquisitions that have PC contracts, the acquirers of which are listed companies, and the acquired ownership of target companies are all more than 50%. Since 2013, the number of acquisitions with PC has increased significantly, which shows that since the Haifu Investment Case⁶, PC has started to gain the attention of the Chinese capital markets and was widely applied to acquisitions since then.

Insert Table 1 about here

⁶ In October 2007, Haifu Investment and Gansu Shiheng signed a capital-increasing agreement with performance commitment. In 2008, Gansu Shiheng's net profit did not meet the committed standards. According to the terms of the agreement, Gansu Shiheng needs to compensate Haifu Investment. There occurred a compensation dispute between the two parts, and Haifu investment took Gansu Shiheng to court. On December 31, 2010, Lanzhou Intermediate People's Court made a verdict that performance commitment is invalid. Haifu investment refused to accept and appealed. On September 29, 2011, Gansu High Court made a second instance verdict, determining the terms invalid, but Gansu Shiheng needed to return the increased money and the interests of Haifu Investment. Gansu Shiheng refused to accept and appealed to the Supreme People's Court. On December 19, 2011, the Supreme People's Court accepted the application of Shiheng Company and put it on trial. In November 2012, the Supreme People's Court issued a verdict that Gansu High Court's second instance verdict on the case be abrogated, the terms of gambling between the shareholders of the investor and the original shareholders of the investee were effective, and Gansu Shiheng ought to pay the agreed upon compensation to Haifu Investment.

4.2. Model

Our hypotheses are proposed mainly on the influence of PC on controlling shareholders and TMTs collusion and sales of stock. Therefore, we need to measure stock selling of controlling shareholders and TMTs, PC, and control variables influencing controlling shareholders and TMTs selling stock. We propose the following equation to test our hypotheses:

$$Selling_{t+1} = \beta_0 + \beta_1 PC_t + \sum \beta_i Controls_t + \varepsilon_t \quad (1)$$

Where *Selling* measures stock selling of controlling shareholders and TMTs, and PC refers to the PC. The following discussion provides additional details for this equation.

4.3. Measurement of key variables

4.3.1. Dependent variables

We focus on acquirers' controlling shareholders and TMTs stock selling behavior one year after the acquisition announcement date, which is measured by the percentage of selling shares of controlling shareholders (Top1selling) or top management teams (TMTselling). We also count the stock selling announcement frequency for one year after the acquisition announcement date, which is measured by the announcement times of controlling shareholders or TMTs' selling stock (Top1freq and TMTfreq). If the controlling shareholders or TMTs from the acquirers did not sell the stock one year after acquisition announcements, Top1selling and Top1freq or TMTselling and TMTfreq are zero.

4.3.2. Independent variable

Firstly, we use PC to represent whether the performance commitment contracts are signed.

This variable is a dummy variable. If the acquirer and target sign a PC contract, PC takes a value of 1; otherwise, PC takes a value of 0.

Besides, we use PPS to represent the pay-performance sensitivity of the executive compensation. Based on the model of Jensen and Murphy (1990), pay-performance sensitivity is measured by the growth rate of TMTs' cash salary divided by the growth rate of companies' net profit. If pay-performance sensitivity is lower than 1, the sensitivity is low, and PPS takes a value of 1; otherwise, PPS takes a value of 0.

To measure legal protection, we use *China's marketization index* (Fan et al., 2016) to identify the legal protection level for each province. For each year the legal protection index is higher than the median, the province has a high level of legal protection, and protection takes a value of 1; otherwise, protection takes a value of 0.

4.3.3. Control variables

We control for several factors that have affected controlling shareholders' and TMTs' stock selling behavior in prior studies. We control the firm market value of total assets (Size), total long-term debts (Lev), return on total assets (ROA), the shareholding ratio of the controlling shareholder (Top1), the shareholding ratio of top management team (TMTstock), the cash salary of top management team (TMTsalary), the shareholding ratio of institutional investor (Inst), firm's growth (Growth), proportion of independent directors (Independent), the total number of board directors (Boardnumber), the detrended average monthly stock turnover

(OTurnover), past returns (Ret), the standard deviation of firm-specific weekly returns over the fiscal year (Sigma), whether the firm's ultimate controlling shareholder is state (SEO), the standard deviation of past three years' revenue (Logp3), and age at IPO year (Age). At the acquisition level, the method of payment (Pay), whether the acquisition is a related transaction (Related) and whether the acquisition is belonging to major asset restructuring (Major) are controlled. All the variables are defined in Appendix A.

5. Empirical analysis

5.1. Descriptive statistics

Table 2 presents descriptive statistics for the variables used in our analysis. The mean performance commitment (PC) is 0.316, and nearly 31.6% of acquisitions in our regression sample have PC contracts. The mean Top1selling and TMTselling are 0.513 and 0.505, respectively.

Insert Table 2 about here

Before we tested our hypotheses, we measured the stock overvaluation of acquirers before and after acquisitions. Acquirers are more overvalued with stock-financed acquisitions (Fu et al., 2013; Akbulut, 2013). So, we used stock overvaluation derived in Rhodes-Kropf et al. (2005) to determine acquirers' overvaluation. The samples were separated into an acquisitions with PC subsample and an acquisitions without PC subsample. Stock overvaluation is measured by three time points: MV_{t-1} is one year before the acquisition announcement date, MV_t is one day after the acquisition announcement date, and MV_{t+1} is one year after the acquisition announcement date. If the value of MV is greater than 0,

acquirers are overvalued; if MV is lower than 0, acquirers are undervalued. At the same time, we used acquirers' cumulative abnormal returns and buy and hold return to represent short-term and long-term abnormal market returns. We report the CARs for the acquiring firm over the three-day event window (one day before the announcement to one day after the announcement; CAR1), the seven-day event window (CAR3), the eleven-day event window (CAR5), the twenty-one-day event window (CAR10), and the thirty-one-day event window (CAR15). The long-term performance is buy and hold return for one year (BHR1).

From panel A of Table 3, we can see that before the acquisition, the acquirers with the PC are significantly undervalued, and acquirers without PC are overvalued. Comparing the two subsamples before acquisitions, the stock value of the acquirers with PC is significantly lower than the acquirers without a PC. The MV_t of acquisitions with PC are positive and significantly greater than acquisitions without PC, indicating that the market has a greater positive reaction to acquisitions with a PC. By testing the cumulated abnormal returns from Panel B of Table 3, we can also conclude the same result: CARs of acquisitions with a PC is positively and significantly greater than acquisitions without a PC. However, one year after the acquisition announcement date, the stock overvaluation of acquirers with a PC is not significantly higher than acquirers without a PC, and the mean MVs notably decrease for acquirers with PC. Also, from panel B of Table 3, the BHR1 of acquisitions with PC is not significantly greater than acquisitions without a PC. Why might the stock overvaluation of acquirers with a PC increase at first and significantly decrease after one year? We suppose that controlling shareholders and TMTs take the bonus abnormally positive stock return from the PC and sell stock to gain more interests. After stock selling, the abnormal return

disappeared. Next, we directly tested controlling shareholders and TMTs stock selling behavior.

Insert Table 3 about here

5.2. Multivariate analyses of performance commitment on controlling shareholders and TMTs stock selling

First, we tested our hypothesis H1 (i.e., after acquisitions with a PC, controlling shareholders will sell more stock compare to the acquisitions without a PC). Columns (1) and (2) from Table 4 display how PC influences controlling shareholders selling stock. Column (1) reports that the coefficients associated with PC are positive and significant at the 5% level, all else being equal, indicating that using a PC has a robust, positive impact on the percentage of shares sold by controlling shareholders. Column (2) reports that the coefficients associated with PC are positive and significant at the 1% level, all else being equal, indicating that using a PC has a robust, positive impact on controlling shareholders' selling stock announcement times. The results support hypothesis H1, after acquisitions with signed PC contracts, controlling shareholders will sell more stocks compared to the acquisitions without PC contracts.

Then we tested our hypothesis H2; Columns (3) and (4) from Table 4 report that the coefficients associated with PC are positive and significant at the 5% and 1% levels, respectively, all else being equal, indicating that PC use has a robust, positive impact on the percentage of selling shares and announcement times of TMTs. This supports H2: after acquisitions with signed PC contracts, TMTs will sell more stocks compared to the

acquisitions without PC contracts. Columns (5) and (6) from Table 4 add the interaction (PC*PPS), which is positively related to the percentage of selling shares and announcement times of TMTs, significant at the 1% and 10% level. This indicates that lower pay-performance sensitivity of executive compensation can further increase TMTs selling stocks after acquisitions with signed PC contracts, supporting H3.

Insert Table 4 about here

Furthermore, we tested the cumulated abnormal return after the announcement of stock selling. Given that controlling shareholders and TMTs might make announcements multiple times, we focused on the last stock selling announcement date and tested the acquirers' cumulative abnormal returns. We report the CARs for the acquiring firm over the three-day event window (one day before the announcement to one day after the announcement [CAR1], the seven-day event window [CAR3], the eleven-day event window [CAR5], the twenty-one-day event window [CAR10], and the thirty-one-day event window [CAR30]). As shown in Table 5, we see that CARs decreased to negative values for the whole sample, and for the acquisitions with PC, CAR3 to CAR10 were significantly negative to zero. After stock selling, the positive abnormal return disappeared. Controlling shareholders and TMTs from acquirers take the bonus of the abnormal positive stock return of PC by selling stock to gain self-interest.

Insert Table 5 about here

5.3. Multivariate analyses of the impact of legal protection

We added legal protection (Protection) as interaction variables to the regression model and tested our hypothesis H4. Columns (1) and (2) from Table 6 show that the interaction (Protection*PC) is negatively related to controlling shareholders' stock selling and announcement times significantly at the 1% level, indicating that high-level, local legal protection can prevent controlling shareholders from expropriating resources from minority shareholders after acquisitions with PC. Columns (3) and (4) from Table 6 show that the interaction (Protection*PC) is negatively related to TMTs' stock selling and announcement times significantly at the 5% level, indicating that high-level, local legal protection can prevent TMTs from expropriating resources from minority shareholders after acquisitions with PC. All the results support H4.

Insert Table 6 about here

5.4. Additional tests

We also tested how industry competition and IPO year affect controlling shareholders' and TMTs' stock selling. First, we tested the effects of industry competition levels. In the less competitive industry, the most profit is gained by a few companies (Dixit and Stiglitz, 1977; Krugman, 1979). Therefore, insiders cannot gain more interests from dividends, and they may prefer to gain interests from selling stock. We used the Herfindahl-Hirschman Index to indicate industry competition. For each year the Herfindahl-Hirschman index is higher than the median, the industry has a low level of industry competition, and Competition takes a value of 1, otherwise, it takes a value of 0. We added industry competition (Competition) as

interaction variables to the regression model. The regression results are shown in Columns (1) to (4) in Table 7. The interaction (Competition*PC) is positively related to controlling shareholders' and TMTs' stock selling, significantly at the 10% to 1% level, which indicates that controlling shareholders and TMTs are inclined to sell stock after acquisitions with PC in less competitive industries.

Secondly, based on *the Stock Listing Rules of Shenzhen Stock Exchange and Shanghai Stock Exchange*, controlling shareholders' and TMTs' stock are locked up for 36 months from the listing date, so they cannot gain interests from stock pricing fluctuation during that period. Once the lock-up period ends, controlling shareholders and TMTs can exchange stock freely and can use stock price fluctuation to gain interests. We use Salegae to reflect the non-locked-up period. If the IPO year is larger than three years (not including three years) and less than five years (including five years), Salegae takes a value of 1; otherwise, it takes 0. We assume controlling shareholders, and TMTs have a strong motivation to sell stock as soon as the lock-up period ends to gain interests, and the window of acquisition we focused on is 1 year, so we want to test the stock selling behavior with the IPO age from 4 years to 5 years, then acquisition announcements are at 3 years to 4 years.

We added the non-lock-up period (Salegae) as interaction variables to the regression model. The regression results are shown in Columns (5) to (8) in Table 7. The interaction (Salegae*PC) is positively related to controlling shareholders' and TMTs' stock selling, significantly at the 5% level, indicating that once the lock-up period ends, controlling shareholders and TMTs have more incentive to sell stock after acquisitions with PC. That is, the controlling shareholders and TMTs plan for the timing of the acquisitions to expropriate.

Insert Table 7 about here

5.5. Multivariate analyses of performance commitment provisions on controlling shareholders' and TMTs' stock selling

Next, we will focus on the terms of PC contracts and how they influence controlling shareholders' and TMTs' behavior. Although the specific terms of PC contracts vary in different acquisitions, they all include three aspects. The first aspect is performance hurdles (i.e., the pre-specified performance targets) generally using net income. The second is compensation standard based on the differences between pre-specified net income and actual net income. Shareholders in target firms should compensate the acquirers for the differences between pre-specified net income and actual net income (compensating profit) or the discount value of the differences between pre-specified net income and actual net income to adjust the acquisition payment (compensating price). The third aspect is the compensation method; shareholders in target firms use cash or stock as a method of payment. PC contracts motivate a target firm's managers to accomplish pre-specified performance hurdles, which are mainly based on future net incomes. Once the pre-specified net income is not achieved, the shareholders of the targets should compensate acquirers using either stock or cash to pay for the differences between pre-specified net income and net income achieved.

Based on the development and future income of target firms, the transaction value paid by acquirers is often higher than the current intrinsic value of the targets, resulting in an acquisition premium. To make the acquisition successfully, controlling shareholders could collude with TMTs from acquirers to sign a PC contract with relative low-performance hurdles, which is easier to accept by the targets while the acquisition premium is higher than

the discount value of the targets' future income (i.e., the targets' future intrinsic value).

Acquiring firms probably pay more money to buy a less valuable company. Due to low-performance hurdles for targets and high acquisition payment for acquirers, the whole market value of acquiring firms will reduce in the long run, and controlling shareholders and TMTs from acquirers will take advantage of the window of increasing stock price after the acquisition announcement to sell to improve their individual benefits and avoid damage in the long term. So, lower performance hurdles will induce controlling shareholders and TMTs to sell more stock.

Similarly, using compensating profit as compensating standard is easier for targets' shareholders to implement than compensating price. Because compensating price is the discount value of the differences between pre-specified net income and actual net income to adjust the acquisition payment (which takes the interest rate and asset impairment into account) it also realizes the retroactive adjustment of the transaction price, reflecting the economic essence of the acquisition. Compensating profit only focuses on the difference between pre-specified net income and actual net income. Using cash as a compensation method will cause financial loss for targets' shareholders. However, using stock as the compensation method will not only cause financial loss but also reduce the ownership of targets' shareholders and have a certain impact on targets' shareholders' controlling right. To successfully accomplish acquisitions, controlling shareholders and TMTs from acquirers prefer to use compensating profit as the compensating standard and use cash as the compensation method. While acquiring firms have a high risk of financial loss in the future, the market value of acquiring firms could diminish. To offset the loss due to the possibility of

market value reduction in the long term, controlling shareholders and TMTs from acquirers will take advantage of the window of increasing stock price to sell.

We used H_PC, C_PC and P_PC to represent specific PC provisions. H_PC refers to performance hurdles for PC contracts. This variable refers to the promised profit of each 10,000 yuan's acquisition value, which is measured by the annual mean of the promised profit divided by the value of the acquisition transaction value. C_PC refers to compensation standard for PC. This variable is a dummy variable. If the compensation standard of PC is compensating price, C_PC takes a value of 1; otherwise, it takes a value of 0. P_PC refers to the compensation method for PC. This variable is a dummy variable. If the PC is compensated by the stock, P_PC takes a value of 1; otherwise, it takes a value of 0.

Table 8 displays the results used to test PC terms. Column (1) to Column (4) report that the performance hurdles (H_PC) are negatively related to Top1 selling, Top1 frequency, TMT selling, and TMT frequency, and are significant at the 5% to 1% level, respectively, indicating that, as a measure of the targets' intrinsic value, performance hurdles can significantly reduce controlling shareholders' and TMTs' stock selling. Columns (5) to (8) report that the performance compensation content (C_PC) is negatively related to Top1 selling, Top1 freq, TMT selling, and TMT freq, significant at 10% and 1%, respectively, indicating that, compared to compensating profit, compensating price can significantly reduce controlling shareholders' and TMTs' stock selling. Column (9) to Column (12) report that performance compensation method (P_PC) is negatively related to Top1 selling, Top1 freq, TMT selling, and TMT freq, significant at 10% and 1%, respectively, which means that compared to using cash, using stock can significantly reduce controlling shareholders' and TMTs' stock selling.

Insert Table 8 about here

6. Robustness test

In this section, we perform several robustness checks to examine the validity of our results, including Fixed effects regression, Propensity Score Matching, Heckman two-step selection test, and diff-in-diff test.

6.1. Fixed effects regression

Firstly, Table 9 shows regression estimates when we include firm-level fixed effects. There is a significant positive correlation between PC and controlling shareholders and TMTs selling stock, indicating the results are robust.

6.2. Propensity score matching

To control the sample's self-selection and the potential endogeneity between PC contracts and selling, we used a propensity score matching method by matching 1075 acquisition samples with signed PC contracts against control acquisition samples without signed PC contracts.

The primary benefit of using a control sample matched on propensity scores is that it allowed us to compare the treatment group to a set of firms that are the same on all observable dimensions, thus allowing us to clearly attribute any observed effects to PC itself, rather than to the firm characteristics associated with PC (Bowen et al., 2009).

Taking the first announcement day of acquisitions as the event day, using the propensity score matching method and selecting control group samples based on covariates—the firm market value of total assets (Size), the shareholding ratio of the controlling shareholder (Top1), whether the firm's ultimate controlling shareholder is state (SEO), age at IPO year (Age), the

method of payment (Pay), whether the acquisition is a related transaction (Related), whether the acquisition is belonging to major asset restructuring (Major), the free cash flow of firms (FCF), the total payment of acquirers in acquisition (Bvalue) and stock overvaluation (MV). All the variables are defined in Appendix A. We matched the samples of acquisition with PC (i.e., the test group) to samples without PC (i.e., the control group) one by one. Finally, the total number of successfully-matched samples was 2150, of which 1075 have signed PC contracts (test group).

The regression results of Table 10 indicate a significant positive correlation between PC and controlling shareholders and TMTs selling stock, indicating the results are robust. And Table 11 indicates the validity test results of PSM, which means there is no significant difference of covariates between treatment group and control group.

Insert Table 10 and Table 11 about here

6.3. Heckman two-step selection model

A firm's decision to sign PC contracts may be non-random, and this may cause a self-selection bias. We adopted the Heckman two-step model to test for a possible self-selection issue. In the first step, we estimated a probit model with a binary PC dummy (PC, which equals 1 if a firm signs a PC in the acquisition, 0 if otherwise) as the dependent variable.

We add the following determinants of signing PC contracts: SEO (a dummy variable that equals 1 when the ultimate controlling shareholder of a listed firm is the state, 0 if otherwise), Related (a dummy variable that equals 1 if the acquisition is a related transaction, 0 if otherwise), Major (a dummy variable that equals 1 if the acquisition belongs to a major asset

reorganization, 0 if otherwise), Pay (if acquirers use cash as a way to pay in acquisitions, the variable takes 1; using stock as a way to pay in acquisitions takes 0), Bvalue (the total payment of acquirers in acquisition), Proportion (proportion of shares of targets' shareholders transferred to acquirers' shareholders), MV (stock overvaluation), Duality (a dummy variable that equals 1 if the chairman plays dual roles, 0 if otherwise), and FCF (the free cash flow of firms). Heckman's estimator requires exogenous variables that correlate with an acquirer's propensity to sign a PC contract, but not with abnormal market returns or stock price crash risk. The variables are defined in Appendix A. The first-step regression result is in Table 12. The results of the second-step regressions (Table 12) show that the coefficients of the variable PC still hold, meaning the results are robust.

Insert Table 12 about here

6.4. Diff-in-diff test

Controlling shareholders' and TMTs' stock selling behavior might be affected by behavior before acquisitions, namely controlling shareholders and TMTs of acquirers could always sell stocks with PC contracts, comparing to acquirers without those contracts, no matter before or after acquisitions. To solve the endogeneity problem, we changed the measurement of Top1selling to the difference between the percentage of selling shares of controlling shareholders one year after the acquisition and that of controlling shareholders one year before acquisition, resulting in $\Delta\text{Top1selling}$, to eliminate the effect of behavior before acquisitions. We also calculate $\Delta\text{Top1freq}$, $\Delta\text{TMTselling}$, and $\Delta\text{TMTfreq}$. The variables are defined in Appendix A.

Columns (1) and (2) from Table 13 display how PC influences the difference of controlling shareholders selling stock. Column (1) reports that the coefficients associated with PC are positive and significant at the 1% level, all else being equal, indicating that using PC has a robust positive impact to induce controlling shareholders selling more stock after acquisition. Column (2) has the same result.

Column (3) from Table 13 reports that the coefficients associated with PC are positive and significant at the 1% level, all else being equal, indicating that using PC has a robust positive impact to induce TMTs selling more stock after the acquisition. Column (4) has the same result.

Insert Table 13 about here

7. Conclusion

Tunneling has been a long-term problem in the Chinese stock market. In this study, we presented and tested the second type of tunneling from a financial transaction perspective (Johnson et al., 2000) that controlling shareholders' and TMTs' selling behavior after the introduction of PC contracts into Chinese acquisitions to test the hypothesis that such provisions provide an opportunity for controlling shareholders and TMTs to expropriate minority shareholders. We found controlling shareholders and TMTs after acquisitions with signed PC contracts will sell more stocks compared to those without PC contracts. We also sought to unveil the reason why TMTs collude with the controlling shareholders to sell, and we discovered that lower pay-performance sensitivity might be to blame. We also discovered that stronger local legal protection could make controlling shareholders and TMTs less

willingly to sell—that is, strengthening legal protection may foster a fairer business environment and is conducive to the minority interests of listed companies. The selling phenomena through acquisitions with PC contracts is more apparent in less competitive industries, in companies with an IPO year surpassing the lock-up period. Acquisitions with PC contracts also do not increase accounting returns, further prove that signing PC contracts is a way for controlling shareholders and TMTs to manipulate stock price and expropriate interests from minority shareholders, which ultimately damages listed companies' performance. In short, an acquisition with PC contracts is more of a way of harvesting instead of healing for the acquiring listed company. Our results are robust to propensity score matching, Heckman, and diff-in-diff robustness tests.

Due to the data availability, we focused on how acquirers are impacted by the PC contracts because of their listing status, but existing literature also reveals how the acquisition targets and their TMTs are involved in the earnout setting. As more acquisitions with PC emerge, especially with listed targets, we will be able to explore the target side of Chinese acquisitions in the future.

Appendix A

Variables Definition

Variable name	Description
Top1selling	The shares of controlling shareholders selling within one year after acquisition announcement divide by total outstanding shares and multiplied by 100%.
TMTselling	The shares of TMT selling within one year after acquisition announcement divide by total outstanding shares and multiplied by 100%.
Top1freq	Announcement times of controlling shareholders' selling within one year after acquisition announcement
TMTfreq	Announcement times of TMT's selling within one year after acquisition announcement.
Δ Top1selling	Top1selling within one year after acquisition announcement minus Top1selling within one year before acquisition announcement.
Δ TMTselling	TMTselling within one year after acquisition announcement minus TMTselling within one year before acquisition announcement.
Δ Top1freq	Top1freq within one year after acquisition announcement minus Top1freq within one year before acquisition announcement.
Δ TMTfreq	TMTfreq within one year after acquisition announcement minus TMTfreq within one year before acquisition announcement.
Δ ROA	The growth rate of ROA after acquisitions, $(ROA_{t+1}-ROA_t)/ROA_t$, year t is acquisition announcement year.
Δ ROE	The growth rate of ROE after acquisitions, $(ROE_{t+1}-ROE_t)/ROE_t$, year t is acquisition announcement year.
PC	Whether the performance commitment contracts are signed. This variable is a dummy variable. If the acquirer and target signed a performance commitment contract, PC takes 1, otherwise, takes 0.
PPS	Pay-performance sensitivity is measured by the growth rate of TMTs' cash salary divided by the growth rate of companies' net profit. If pay-performance sensitivity is lower than 1, the sensitivity is low, PPS takes 1, otherwise, takes 0.
Protection	For each year legal protection index is higher than median, the province has a high level of legal protection, Protection takes 1, otherwise takes 0.
Size	The natural logarithm of the market value of total assets in year t.
Lev	Firm financial leverage, calculated by total long-term debts divided by total assets in year t.
Growth	The increased percentage of sales growth in year t.
ROA	Return on assets, calculated by net profit divided by the book value of total assets in year t.
Top1	The percentage of shares owned by the controlling shareholder in year t.
Duality	A dummy variable that equals 1 if the chairman plays dual roles, 0 otherwise in year t.
Inst	The percentage of shares owned by institutional investors in year t.
FCF	Free cash flow, $(\text{operating cash flow} - \text{capital expenditure}) / \text{total assets}$ in year t.
SEO	A dummy variable that equals 1 if the ultimate controlling shareholder of a listed firm is the state in year t and 0 otherwise.

TMTstock	The shares of top management team divide by total equity in year t.
TMTsalary	The natural logarithm of cash salary of top management team in year t.
Independent	The proportion of independent directors in year t.
Boardnumber	The total number of board directors in year t.
Logp3	The standard deviation of firm's revenue from year t-3 to t-1.
Age	The natural logarithm of age at IPO year.
Pay	If acquirers use cash to pay in acquisitions, the variable takes 1; using stock to pay in acquisitions takes 0.
Related	A dummy variable that equals 1 if the acquisition is related transaction, 0 otherwise. Related transaction means that acquirers directly or indirectly hold shares of targets more than 20%, or acquirers and targets share the same controlling shareholders, or any other situations based on company law.
Major	A dummy variable that equals 1 if the acquisition is belong to major asset reorganization, 0 otherwise. Major asset reorganization is defined by <i>the Listed Companies Major Asset Reorganization Regulation</i> . When a listed company or its controlling parent or its affiliated company, purchase or sell the amount of asset accounting for more than 50% of the total asset, or operating income for more than 50%, or net worth for more than 50% and more than 50 million RMB based on audited consolidated financial accounting reports in the recent fiscal year, we can define this transaction is major asset reorganization.
Bvalue	The natural logarithm of the total payment of acquirers in acquisition.
MV	Stock overvaluation, the measure of stock overvaluation derived in Rhodes-Kropf et al. (2005).
Proportion	Proportion of shares of targets' shareholders transferred to acquirers' shareholders.
OTurnover	The detrended average monthly stock turnover in year t, calculated as the average monthly share turnover in year t minus the average monthly share turnover in year t -1.
Ret	The mean of firm-specific weekly returns over the fiscal year t.
Sigma _t	The standard deviation of firm-specific weekly returns over the fiscal year period t.

References:

Aharony, J., Wang, J., Yuan, H. (2010). Tunneling as an incentive for earnings management during the IPO process in China. *Journal of Accounting and Public Policy*, 29, 1-26.

doi:10.1016/j.jaccpubpol.2009.10.003

Akbulut, M. E. (2013). Do overvaluation-driven stock acquisitions really benefit acquirer shareholders?. *Journal of Financial & Quantitative Analysis*, 48, 1025-1055.

doi:10.1017/S0022109013000379

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

doi:10.1111/1540-6261.00510

Barbopoulos, L., Sudarsanam, S. (2012). Determinants of earnout as acquisition payment currency and bidder's value gains. *Journal of Banking & Finance*, 36, 678-694.

doi:10.1016/j.jbankfin.2011.10.007

Barbopoulos, L., Wilson, J. (2013). The valuation effects of earnout in M&A of financial institutions. *Responsible Banking and Finance Working Paper*. University of St Andrews.

Barclay, M. J., Holderness, C. G. (1989). Private benefits from control of public corporations. *Journal of Financial Economics*, 25, 371-395.

Barclay, M. J., Holderness, C. G. (1991). Negotiated block trades and corporate control. *The Journal of Finance*, 46, 861-878. doi:10.1111/j.1540-6261.1991.tb03769.x

Berkman, H., Cole, R. A., Fu, L. J. (2009). Expropriation through loan guarantees to related parties: Evidence from China. *Journal of Banking & Finance*, 33, 141-156.

Bowen, R.M., Call, A.C., Rajgopal, S. (2009). Whistle-blowing: target firm characteristics and economic consequences. *Accounting Review*, 85, 1239-1271.

doi:10.2308/accr.2010.85.4.1239

Blough, S., Glaser, M., Kiet, O., Scholz, C. (2007). How earn-out clauses can shift risks. *International Tax Review*, Jul/Aug 2007, 25-30.

Cadman, B., Carrizosa, R., Faurel, L. (2014). Economic determinants and information environment effects of earnouts: New insights from SFAS 141 (R). *Journal of Accounting Research*, 52, 37-74. doi:10.1111/1475-679X.12036

Cai, H. J., Wang, X. Y., Tan, C. (2017). Large Stock Dividends, Financial Performance and the Scale of Large Shareholders' Stock-Selling. *Accounting Research (China)*, 12, 45-51.

Cai, N. (2012) Information advantage, timing behavior and insider trading of controlling shareholders. *Journal of Financial Research (China)*, 5, 179-192.

Cain, M. D., Denis, D. J., Denis, D. K. (2011). Earnouts: A study of financial contracting in acquisition agreements. *Journal of Accounting and Economics*, 51, 151-170.

Chen, D., Jian, M., Xu, M. (2009). Dividends for tunneling in a regulated economy: The case of China. *Pacific-Basin Finance Journal*, 17, 209-223. doi:10.1016/j.pacfin.2008.05.002

Chen, J., Dong, W., Tong, J., et al. (2018). Corporate philanthropy and tunneling: Evidence from China. *Journal of Business Ethics*, 150, 135-157. doi:10.1007/s10551-016-3166-y

Datar, S., Frankel, R., Wolfson, M. (2001). Earnouts: The effects of adverse selection and agency costs on acquisition techniques. *Journal of Law, Economics, and Organization*, 17, 201-238. doi:10.1093/jleo/17.1.201

De Cesari, A. (2012). Expropriation of minority shareholders and payout policy. *The British Accounting Review*, 44, 207-220.

Denis, D. J., Denis. D. K. (1994). Majority owner-managers and organizational efficiency. *Journal of Corporate Finance*, 1, 91-118. doi:10.1016/0929-1199(94)90011-6

Defond, M. L., Hung, M. (2004). Investor protection and corporate governance: Evidence from worldwide CEO turnover. *Journal of Accounting Research*, 42, 269-312.

doi:10.1111/j.1475-679X.2004.00138.x

Djankov, S., La Porta, R., Lopez-de-Silanes, F., et al. (2008). The law and economics of self-dealing. *Journal of Financial Economics*, 88, 430-465. doi:10.1016/j.jfineco.2007.02.007

Dixit, A. K., Stiglitz, J. E. (1977). Monopolistic competition and optimum product diversity. *The American Economic Review*, 67, 297-308.

Dyck, A., Zingales, L. (2004). Private benefits of control: An international comparison. *The Journal of Finance*, 59, 537-600. doi:10.1111/j.1540-6261.2004.00642.x

Elnahas, A. M., Hassan, M. K., Ismail, G. M. (2017). Religion and mergers and acquisitions contracting: The case of earnout agreements. *Journal of Corporate Finance*, 42, 221-246.

doi:10.1016/j.jcorpfin.2016.11.012

Firth, M., Fung, P. M. Y., Rui, O. M., 2007. How ownership and corporate governance influence chief executive pay in China's listed firms. *Journal of Business Research*, 60, 776-785. doi:10.1016/j.jbusres.2007.01.014

Fu, F. J., Lin, L., Officer, M. S. (2013). Acquisitions Driven by Stock Overvaluation: Are they Good Deals?. *Journal of Financial Economics*, 109, 24-39.

<http://dx.doi.org/10.2139/ssrn.1328115>

Fan, G., Wang, X. L., Yu, J. W. (2016). Marketization index of China's provinces: NERI Report 2016. Social Science Academic Press (China).

Gaur A S, Malhotra S, Zhu P. (2013) Acquisition announcements and stock market valuations of acquiring firms' rivals: A test of the growth probability hypothesis in China. *Strategic Management Journal*, 34(2), 215-232.

Grinstein, Y., Hribar, P. (2004). CEO compensation and incentives: evidence from M&A bonuses. *Journal of Financial Economics*, 73, 119-143. doi:10.1016/j.jfineco.2003.06.002

Holderness C. (2003). A survey of blockholders and corporate control. *FRBNY Economic Policy Review*, 9, 51-64. <http://dx.doi.org/10.2139/ssrn.281952>

Hou, Q., Jin, Q., Yang, R., Yuan, H., Zhang, G. (2015). Performance Commitments of Controlling Shareholders and Earnings Management. *Contemporary Accounting Research*, 32, 1099-1127.

Jensen, M. C., Murphy, K. J. (1990). Performance pay and top-management incentives. *Journal of Political Economy*, 98, 225-264. doi:10.1086/261677

Jian, M., Wong, T. J. (2010). Propping through related party transactions. *Review of Accounting Studies*, 15, 70-105. doi:10.1007/s11142-008-9081-4

Jiang, G., Lee, C. M. C., Yue, H. (2010). Tunneling through intercorporate loans: The China experience. *Journal of Financial Economics*, 98, 1-20.

Jiang, G., Rao, P., Yue, H. (2015). Tunneling through non-operational fund occupancy: An investigation based on officially identified activities. *Journal of Corporate Finance*, 32, 295-311. doi:10.1016/j.jcorpfin.2014.10.011

Johnson, S., La Porta, R., Lopez-de-Silanes, F., et al. (2000). Tunneling. *American Economic Review*, 90, 22-27.

Kohers, N., Ang, J. (2000). Earnouts in mergers: agreeing to disagree and agreeing to stay. *Social Science Electronic Publishing*, 73, 445-476.

Krugman, P. R. (1979). Increasing returns, monopolistic competition, and international trade. *Journal of International Economics*, 9, 469-479. doi:10.1016/0022-1996(79)90017-5

La Porta, R., Lopez-de-Silanes, F., Shleifer, A., et al. (1997). Legal determinants of external finance. *The Journal of Finance*, 52, 1131-1150.

La Porta, R., Lopez-de-Silanes, F., Shleifer, A., et al. (1998). Law and finance. *Journal of Political Economy*, 106, 1113-1155. doi:10.1086/250042

La Porta, R., Lopez-de-Silanes, F., Shleifer, A., et al. (1999). Corporate ownership around the world. *The Journal of Finance*, 54, 471-517. doi:10.1111/0022-1082.00115

La Porta, R., Lopez-de-Silanes, F., Shleifer, A., et al. (2000). Agency problems and dividend policies around the world. *The Journal of Finance*, 55, 1-33. doi:10.1111/0022-1082.00199

Lemmon, M. L., Lins, K. V. (2003). Ownership structure, corporate governance, and firm value: Evidence from the East Asian financial crisis. *The Journal of Finance*, 58, 1445-1468. doi:10.1111/1540-6261.00573

Lukas, E., Heimann, C. (2014). Technological-induced information asymmetry, M&As and earnouts: stock market evidence from Germany. *Applied Financial Economics*, 24, 481-493. doi:10.1080/09603107.2014.887189

Ma J, Pagan J A, Chu Y. (2009) Abnormal Returns to Mergers and Acquisitions in Ten Asian Stock Markets. *International Journal of business*, 14(3).

Nenova, T. (2003). The value of corporate voting rights and control: A cross-country analysis. *Journal of Financial Economics*, 68, 325-351. doi:10.1016/S0304-405X(03)00069-2

Pan, A. L., Qiu, J. L., Yang, Y. (2017). Research on the Incentive Effect of Valuation Adjustment Mechanism in M&As-Evidence from Listed Companies on SEM and GEM Board in China. *Accounting Research (China)*, 3, 46-52.

Reese, Jr., W. A., Weisbach, M. S. (2002). Protection of minority shareholder interests, cross-listings in the United States, and subsequent equity offerings. *Journal of Financial Economics*, 66, 65-104. doi:10.3386/w8164

Rhodes-Kropf, M., Robinson, D., Viswanathan, S. (2005). Valuation waves and merger activity: the empirical evidence. *Journal of Financial Economics*, 77, 561–603. doi:10.1016/j.jfineco.2004.06.015

Shleifer, A., Vishny, R. W. (1997). A survey of corporate governance. *The Journal of Finance*, 52,737-783. doi:10.1111/j.1540-6261.1997.tb04820.x

Shleifer, A., Vishny, R. W. (1986). Large shareholders and corporate control. *Journal of Political Economy*, 94(3, Part 1): 461-488. doi:10.1086/261385

Song, D., Su, J., Yang, C., et al. (2018). Performance commitment in acquisitions, regulatory change and market crash risk—evidence from China. *Pacific-Basin Finance Journal*.

doi:10.1016/j.pacfin.2018.08.006

Volpin, P. F. (2002). Governance with poor investor protection: Evidence from top executive turnover in Italy. *Journal of Financial Economics*, 64, 61-90. doi:10.1016/S0304-

405X(02)00071-5

Wang, K., Xiao, X. (2011). Controlling shareholders' tunneling and executive compensation: Evidence from China. *Journal of Accounting and Public Policy*, 30, 89-100.

doi:10.1016/j.jaccpubpol.2010.09.014

Wu, Y. H, Wu, S. N. (2010) Tunneling Behaviors during Large Shareholders' Stock-Selling Periods. *China Industrial Economics (China)*, 5, 121-130.

Xie, D. R., Cui, C. Y., Liao, K. (2016). Large Stock Dividends and Insiders' Shares Selling: Which One Dominates the Other?. *Journal of Financial Research (China)*, 11,158-173.

Zhang, M., Gao, S., Guan, X., et al. (2014). Controlling Shareholder-Manager Collusion and Tunneling: Evidence from China. *Corporate Governance: An International Review*, 22, 440-

459. doi:10.1111/corg.12081

Zingales, L. (1994). The value of the voting right: A study of the Milan stock exchange experience. *The Review of Financial Studies*, 7, 125-148. doi:10.1093/rfs/7.1.125

Tables

Table 1

Sample Distribution. This table reports the distribution of acquisition events during 2011-2016. We retain acquisitions if the acquirers were A-share listed company and the control right of the target firm changed after the transaction, which means that acquirers own more than 50% of the target.

Year	Total Acquisitions	Acquisitions with Performance Commitment	Percentage of Total Acquisitions
2011	371	12	0.0323
2012	435	26	0.0598
2013	501	132	0.2635
2014	658	286	0.4347
2015	965	475	0.4922
2016	713	220	0.3086
Total	3643	1151	0.3159

Table 2

Descriptive Statistics. This table reports descriptive statistics of controlling shareholders and TMTs selling, performance commitment, pay-performance sensitivity, legal protection and control variables for the sample in 2011–2016. All variables are defined in Appendix A.

Variable	Mean	Std. dev.	Maximum	Minimum	Median
Top1selling	0.513	1.658	9.863	0.000	0.000
Top1freq	0.648	2.116	14.000	0.000	0.000
TMTselling	0.505	2.048	14.970	0.000	0.000
TMTfreq	2.474	3.412	17.000	0.000	1.000
PC	0.316	0.465	1.000	0.000	0.000
PPS	0.461	0.498	1.000	0.000	0.000
Protection	0.578	0.494	1.000	0.000	1.000
Size	22.780	0.931	26.950	20.380	22.720
Lev	0.092	0.111	0.777	0.000	0.047
ROA	7.101	6.321	28.950	-12.670	6.369
Top1	0.367	0.154	0.751	0.092	0.355
TMTstock	0.151	0.216	0.705	0.000	0.003
TMTsalary	14.840	2.193	16.920	0.000	15.090
Inst	0.398	0.247	0.901	0.005	0.393
Growth	0.179	0.339	1.683	-0.563	0.133
Independent	0.372	0.053	0.571	0.300	0.333
Boardnumber	8.653	1.669	15.000	5.000	9.000
OTurnover	-0.075	0.465	0.973	-1.731	-0.017

Ret	0.010	0.015	0.063	-0.016	0.006
Sigma	0.081	0.037	0.203	0.031	0.070
Related	0.397	0.489	1.000	0.000	0.000
Major	0.204	0.403	1.000	0.000	0.000
Pay	0.733	0.443	1.000	0.000	1.000
Logp3	17.540	5.834	25.430	0.000	19.090
SEO	0.320	0.466	1.000	0.000	0.000
Age	3.321	0.489	4.623	0.000	3.353

Table 3

Panel A: This panel reports the results of univariate analysis on the mean differences of stock overvaluation between acquisitions with performance commitment and control group. MV_{t-1} is one year before acquisition announcement date, MV_t is one day after the acquisition announcement date and MV_{t+1} is one year after acquisition announcement date. The t-values for differences in means are based on t-tests. *, **, and *** indicate significance at the 10%, 5%, and 1% levels (two-tailed test).

Variables	Acquisitions with performance commitment	Acquisitions without performance commitment	T test	P value
	Mean	Mean		
MV_{t-1}	-0.0265**	0.01504*	-2.9817***	0.0029
MV_t	0.0612***	0.0249***	2.7607***	0.0058
MV_{t+1}	0.0190**	0.0199**	-0.0585	0.9534

Panel B: This panel reports the results of univariate analysis on the mean differences of cumulative abnormal market returns from the three-day event window to the thirty-one-day event window and buy and hold ratio for one year. The t-values for differences in means are based on t-tests.

Variables	Acquisitions with performance commitment	Acquisitions without performance commitment	T test	P value
	Mean	Mean		
CAR1	0.1211***	0.0204***	5.7349***	0.0000
CAR3	0.1690***	0.0233***	7.9604***	0.0000
CAR5	0.1875***	0.0211***	8.8896***	0.0000
CAR10	0.1953***	0.0120***	9.3660***	0.0000
CAR15	0.1877***	0.0021	9.2387***	0.0000
BHR1	0.0954**	0.1237**	0.4017	0.6879

Table 4

Regression for hypotheses 1, 2, and 3. This table presents the results from the ordinary least squares regression of the impact of performance commitment on controlling shareholders and TMTs selling of stock. Reported in parentheses are t-values based on robust standard errors clustered by firm, *, **, and *** indicate significance at the 10%, 5%, and 1% levels (two-tailed test). All variables are defined in Appendix A.

VARIABLES	(1) Top1selling	(2) Top1freq	(3) TMTselling	(4) TMTfreq	(5) TMTselling	(6) TMTfreq
PC	0.1910** (2.3039)	0.3325*** (3.1073)	0.2206** (2.0451)	0.4303*** (2.6422)	-0.1171 (-1.0900)	0.8610*** (2.9656)
PPS					0.1416* (1.8841)	0.8378*** (6.3099)
PC*PPS					0.4109*** (3.2881)	0.5658* (1.8181)
Size	0.0238 (0.6177)	0.0783 (1.5118)	-0.0454 (-1.2008)	0.1199 (1.5592)	-0.0573 (-1.4546)	0.0562 (0.7144)
Lev	-0.1594 (-0.5599)	0.1776 (0.5434)	-0.1433 (-0.5103)	-1.9805*** (-4.5085)	-0.0610 (-0.2109)	-1.5135*** (-3.4036)
ROA	-0.0156*** (-2.8830)	-0.0145** (-1.9868)	-0.0172*** (-2.7784)	0.0151 (1.5479)	-0.0157** (-2.5581)	0.0175* (1.8077)
Top1	-1.0829*** (-5.2709)	-1.4366*** (-5.3160)	0.1620 (0.7554)	-1.5132*** (-3.9518)	0.1476 (0.6945)	-1.6076*** (-4.2254)
TMTstock	-0.6667*** (-3.6923)	-0.5216** (-2.2121)	2.6056*** (10.0406)	3.3179*** (8.5330)	2.5837*** (10.0065)	3.2945*** (8.5112)
TMTsalary	-0.0599 (-1.4165)	-0.0380 (-0.5537)	0.0540 (1.4538)	0.3357*** (3.8718)	0.0450 (1.1738)	0.3313*** (3.7721)
Inst	0.9443*** (5.9167)	1.0006*** (5.1443)	-0.6447*** (-3.8272)	-0.5542** (-1.9665)	-0.6341*** (-3.7869)	-0.5155* (-1.8362)
Growth	-0.1391* (-1.6823)	-0.1108 (-1.1013)	0.2199 (1.5955)	0.2467 (1.4478)	0.2203 (1.5966)	0.2139 (1.2565)
Independent	-0.8587 (-1.5923)	-1.0656 (-1.4487)	-0.8280 (-1.2906)	-2.5417** (-2.3345)	-0.8126 (-1.2628)	-2.2116** (-2.0381)
Boardnumber	0.0237 (1.0421)	0.0445 (1.6066)	0.0190 (0.9038)	0.0183 (0.5070)	0.0197 (0.9361)	0.0195 (0.5412)
OTurnover	0.0052 (0.0478)	0.0117 (0.0771)	0.2136** (1.9833)	0.3243** (1.9641)	0.2154** (1.9990)	0.3212* (1.9528)
Ret	-1.7570 (-0.4483)	-7.9483* (-1.7108)	1.7234 (0.4623)	-11.2204 (-1.5652)	1.8984 (0.5081)	-9.8157 (-1.3699)
Sigma	1.4545 (0.9208)	2.8274 (1.4999)	-2.4759 (-1.5549)	4.4418* (1.6877)	-2.4863 (-1.5608)	4.0845 (1.5464)
Related	0.0098 (0.1476)	0.0246 (0.2869)	-0.1372** (-2.2075)	-0.2928*** (-2.6380)	-0.1324** (-2.1367)	-0.2889*** (-2.6290)
Major	-0.0600 (-0.6172)	-0.0344 (-0.2635)	-0.0631 (-0.5503)	-0.3173* (-1.9241)	-0.0717 (-0.6277)	-0.3234** (-1.9703)
Pay	0.2523** (2.5708)	0.1410 (1.1739)	0.0773 (0.6327)	0.0984 (0.5579)	0.0880 (0.7239)	0.0987 (0.5582)
Logp3	-0.0213** (-2.1501)	-0.0307** (-2.0958)	0.0177** (2.4678)	0.0920*** (5.8605)	0.0185** (2.5637)	0.0943*** (6.0452)
SEO	-0.3230*** (-3.7742)	-0.3619*** (-3.4655)	-0.0661 (-1.3452)	-0.7325*** (-6.4597)	-0.0608 (-1.2305)	-0.7380*** (-6.5555)

Age	-0.4281*** (-3.2526)	-0.5916*** (-3.4587)	0.1585* (1.8858)	-0.6140*** (-3.5393)	0.1540* (1.8297)	-0.6108*** (-3.5460)
Constant	2.6978*** (2.7087)	1.7911 (1.4381)	0.0672 (0.0704)	-4.2572** (-2.1939)	0.3643 (0.3789)	-3.3879* (-1.7335)
Year	Yes	Yes	Yes	Yes	Yes	Yes
Industry	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3,397	3,397	3,397	3,397	3,397	3,397
R ²	0.062	0.061	0.129	0.277	0.133	0.284
Adjusted R ²	0.051	0.050	0.119	0.268	0.122	0.275

Table 5

This table reports the results of univariate analysis on the mean differences of cumulative abnormal market returns from the three-day event window to the sixty-one-day event window. The t-values for differences in means are based on t-tests.

Variables	Acquisitions with performance	Acquisitions without performance	T test	P value
	commitment after selling	commitment after selling		
	Mean	Mean		
CAR1	-0.0002	-0.0015	0.7926	0.4281
CAR3	-0.0061***	-0.0027	-1.1561	0.2478
CAR5	-0.0052*	-0.0026	-0.6548	0.5126
CAR10	-0.0081**	-0.0034	-0.8638	0.3878
CAR30	-0.0081	-0.0090	0.0939	0.9252

Table 6

Regression for hypothesis 4. This table presents the results from the ordinary least squares regression of the impact of performance commitment on controlling shareholders and TMTs selling of stock. Reported in parentheses are t-values based on robust standard errors clustered by firm, *, **, and *** indicate significance at the 10%, 5%, and 1% levels (two-tailed test). All variables are defined in Appendix A.

VARIABLES	(1)	(2)	(3)	(4)
	Top1selling	Top1freq	TMTselling	TMTfreq
PC	0.6386*** (4.3450)	0.7819*** (4.0604)	0.3638** (2.2912)	0.4439* (1.9046)
Protection	-0.9426*** (-10.1757)	-0.9896*** (-9.2270)	-0.5523*** (-5.9829)	-1.0128*** (-6.7987)
Protection * PC	-0.9011*** (-5.3216)	-0.9214*** (-4.1048)	-0.3847** (-2.1552)	-0.4057** (-2.4816)
Size	-0.1607*** (-3.6826)	-0.1155* (-1.9554)	-0.1541*** (-3.2806)	-0.0807 (-0.9270)
Lev	0.1358 (0.4868)	0.4907 (1.5177)	0.0484 (0.1687)	-1.5897*** (-3.5846)
ROA	-0.0110** (-2.0563)	-0.0096 (-1.3316)	-0.0144** (-2.3156)	0.0202** (2.0726)

Top1	-1.1680*** (-5.7823)	-1.5276*** (-5.6796)	0.1031 (0.4842)	-1.6399*** (-4.2973)
TMTstock	-0.6959*** (-3.9721)	-0.5530** (-2.3883)	2.5840*** (10.0716)	3.2688*** (8.5318)
TMTsalary	-0.0937** (-2.3955)	-0.0738 (-1.1618)	0.0320 (0.9035)	0.2908*** (3.5517)
Inst	0.9424*** (6.1412)	0.9975*** (5.2991)	-0.6526*** (-3.8947)	-0.5827** (-2.0766)
Growth	-0.1710** (-2.1084)	-0.1442 (-1.4559)	0.2009 (1.4359)	0.2111 (1.2328)
Independent	-0.6556 (-1.2342)	-0.8483 (-1.1607)	-0.6858 (-1.0784)	-2.2324** (-2.0605)
Boardnumber	0.0324 (1.4524)	0.0537** (1.9639)	0.0245 (1.1659)	0.0291 (0.8114)
OTurnover	-0.0487 (-0.4557)	-0.0448 (-0.2988)	0.1823* (1.7142)	0.2674 (1.6317)
Ret	-0.4507 (-0.1186)	-6.5773 (-1.4365)	2.4863 (0.6673)	-9.8265 (-1.3741)
Sigma	1.3684 (0.8979)	2.7352 (1.4784)	-2.5367 (-1.5991)	4.3086 (1.6315)
Related	0.0078 (0.1213)	0.0227 (0.2689)	-0.1373** (-2.2142)	-0.2906*** (-2.6371)
Major	-0.0808 (-0.8469)	-0.0566 (-0.4372)	-0.0778 (-0.6786)	-0.3495** (-2.1186)
Pay	0.2495*** (2.5838)	0.1381 (1.1563)	0.0760 (0.6221)	0.0970 (0.5481)
Logp3	-0.0225** (-2.3430)	-0.0319** (-2.2289)	0.0169** (2.3708)	0.0903*** (5.7965)
SEO	-0.2477*** (-3.0295)	-0.2822*** (-2.8018)	-0.0185 (-0.3821)	-0.6376*** (-5.7072)
Age	-0.3312*** (-2.5833)	-0.4896*** (-2.9504)	0.2168** (2.5571)	-0.5040*** (-2.8909)
Constant	6.6245*** (6.0030)	5.9199*** (4.2160)	2.4055** (2.1792)	0.1100 (0.0517)
Year	Yes	Yes	Yes	Yes
Industry	Yes	Yes	Yes	Yes
Observations	3,397	3,397	3,397	3,397
R ²	0.105	0.090	0.140	0.288
Adjusted R ²	0.093	0.078	0.129	0.279

Table 7

Regression for industry competition and IPO age. This table presents the results from the ordinary least squares regression of the impact of performance commitment on controlling shareholders and TMTs selling of stock. Reported in parentheses are t-

values based on robust standard errors clustered by firm, *, **, and *** indicate significance at the 10%, 5%, and 1% levels (two-tailed test). All variables are defined in Appendix A.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	Top1selling	Top1freq	TMTselling	TMTfreq	Top1selling	Top1freq	TMTselling	TMTfreq
PC	0.2394*** (2.7558)	0.3465*** (3.1685)	0.2688** (2.1847)	0.4589*** (2.6291)	0.0607 (0.6961)	0.1454 (1.2561)	0.1995** (1.9862)	0.4399*** (2.6324)
Competition	0.9291*** (6.7391)	1.0284*** (6.3687)	0.3646*** (3.7714)	1.0803*** (4.5171)				
Competition * PC	0.5645*** (3.3028)	0.4598* (1.9591)	0.3437** (2.0748)	0.5411* (1.6699)				
Saleage					0.1125 (1.1781)	0.0854 (0.7830)	0.7104*** (5.2051)	1.6761*** (8.0123)
Saleage* PC					0.3216** (2.3828)	0.4761** (2.5391)	0.1772** (2.3635)	0.3385** (2.1325)
Constant	3.2522*** (3.1941)	2.3928* (1.8761)	0.2934 (0.3028)	-3.6210* (-1.8526)	2.5303*** (2.5886)	1.6511 (1.3085)	-0.8744 (-0.9228)	-6.4701*** (-3.3666)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year/Industry	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3,397	3,397	3,397	3,397	3,397	3,397	3,397	3,397
R ²	0.074	0.070	0.131	0.280	0.067	0.066	0.146	0.304
Adjusted R ²	0.062	0.058	0.120	0.271	0.055	0.0541	0.135	0.295

Table 8

Regression for performance commitment terms. This table presents the results from the ordinary least squares regression of the impact of performance commitment on controlling shareholders and TMTs selling of stock. Reported in parentheses are t-values based on robust standard errors clustered by firm, *, **, and *** indicate significance at the 10%, 5%, and 1% levels (two-tailed test). All variables are defined in Appendix A.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
VARIABLES	Top1selling	Top1freq	TMTselling	TMTfreq	Top1selling	Top1freq	TMTselling	TMTfreq	Top1selling	Top1freq	TMTselling	TMTfreq
H_PC	-0.0612*** (-2.9693)	-0.0677** (-2.0445)	-0.0904** (-2.0144)	-0.1677*** (-2.8997)								
C_PC					-0.4280*** (-3.1730)	-0.5706*** (-2.7969)	-0.2631* (-1.7152)	-0.8531*** (-3.0291)				
P_PC									-0.2594* (-1.7506)	-0.5802** (-2.3179)	-0.6330*** (-3.1050)	-0.9897*** (-3.3170)
Constant	2.7008* (1.8935)	4.0496* (1.8435)	2.4869 (0.9194)	-3.8331 (-0.9207)	2.9905** (2.0688)	4.4305** (1.9933)	2.6534 (0.9816)	-3.2212 (-0.7737)	2.8124** (1.9729)	4.2879* (1.9370)	2.7354 (1.0207)	-3.3850 (-0.8190)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year /Industry	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,075	1,075	1,075	1,075	1,075	1,075	1,075	1,075	1,075	1,075	1,075	1,075
R ²	0.072	0.079	0.145	0.254	0.084	0.088	0.147	0.260	0.075	0.087	0.155	0.261
Adjusted R ²	0.035	0.043	0.111	0.224	0.047	0.051	0.113	0.230	0.038	0.051	0.121	0.232

Table 9

Fixed effects regression. This table presents the results from the fixed effects regression of the impact of performance commitment on controlling shareholders and TMTs selling of stock. Reported in parentheses are t-values based on robust standard errors clustered by firm, *, **, and *** indicate significance at the 10%, 5%, and 1% levels (two-tailed test). All variables are defined in Appendix A.

VARIABLES	(1) Top1selling	(2) Top1freq	(3) TMTselling	(4) TMTfreq
PC	0.2039** (2.0520)	0.3018** (2.3879)	0.2618** (2.1343)	0.3761** (1.9923)
Constant	3.0464** (2.4333)	2.3320 (1.5338)	-0.5376 (-0.4000)	-6.3895** (-2.5322)
Controls	Yes	Yes	Yes	Yes
Year /Industry	Yes	Yes	Yes	Yes
Firm fixed effect	Yes	Yes	Yes	Yes
Observations	3,397	3,397	3,397	3,397
Adjusted R ²	0.0708	0.0648	0.1322	0.2551

Table 10

Regression for PSM. This table presents the results from the ordinary least squares regression of the impact of performance commitment on controlling shareholders and TMTs selling of stock. Reported in parentheses are t-values based on robust standard errors clustered by firm, *, **, and *** indicate significance at the 10%, 5%, and 1% levels (two-tailed test). All variables are defined in Appendix A.

VARIABLES	(1) Top1selling	(2) Top1freq	(3) TMTselling	(4) TMTfreq
PC	0.1579** (1.9630)	0.3448*** (3.0064)	0.3498*** (3.0813)	0.5645*** (2.9275)
Constant	1.7030 (1.5248)	1.3655 (0.8830)	0.1231 (0.1078)	-1.0241 (-0.4548)
Controls	Yes	Yes	Yes	Yes
Year/Industry	Yes	Yes	Yes	Yes
Observations	2,150	2,150	2,150	2,150
R ²	0.060	0.056	0.132	0.280
Adjusted R ²	0.043	0.039	0.116	0.267

Table 11

PSM validity test results. This table presents the results which is calculated using the pstest command in the Stata program. All variables are defined in Appendix A.

VARIABLES	Mean			T-test	
	Treatment group	Control group	% bias	t	p> t
Size	12.72	12.76	-4.20	-0.90	0.37
Top1	0.30	0.31	-2.10	-0.42	0.68
Age	3.30	3.34	-6.60	-1.53	0.13
SEO	0.11	0.12	-2.50	-0.51	0.61
FCF	19.32	19.36	-2.90	-0.54	0.59

MV	0.02	0.03	-4.30	0.67	0.50
Related	0.30	0.27	8.20	1.41	0.16
Major	0.34	0.33	1.90	0.32	0.77
Pay	0.50	0.52	-4.80	-0.66	0.51
Bvalue	7.26	7.94	-4.40	-0.91	0.36

Table 12

Regression for Heckman two-step. This table presents the results from the ordinary least squares regression of the impact of performance commitment on controlling shareholders and TMTs selling of stock. Reported in parentheses are t-values based on robust standard errors clustered by firm, *, **, and *** indicate significance at the 10%, 5%, and 1% levels (two-tailed test). All variables are defined in Appendix A.

FIRST-STEP	(1)	SECOND-STEP	(1)	(2)	(3)	(4)
VARIABLES	PC	VARIABLES	Top1selling	Top1freq	TMTselling	TMTfreq
Related	-0.4155*** (-5.4366)	PC	0.1686** (1.9907)	0.2471** (2.1916)	0.1834** (2.5039)	0.3871** (2.1337)
Major	0.2828*** (3.1859)	IMR	0.1730 (1.5222)	0.0772 (0.7043)	0.1377 (0.9458)	0.1337 (0.6990)
Pay	-1.4067*** (-15.7899)	Constant	2.7051** (2.4292)	2.3420* (1.6912)	0.0143 (0.0130)	-3.9765* (-1.8402)
SEO	-0.4337*** (-5.5856)	Controls	Yes	Yes	Yes	Yes
		Year/Industry	Yes	Yes	Yes	Yes
Proportion	-0.0378 (-0.2348)	Observations	3,397	3,397	3,397	3,397
		R ²	0.069	0.065	0.139	0.283
Bvalue	0.1991*** (9.3408)	Adjusted R ²	0.055	0.052	0.127	0.273
MV	-0.2384*** (-3.1357)					
FCF	-0.0000* (-1.9362)					
Duality	0.1268* (1.8770)					
Constant	-2.6149*** (-6.1649)					
Year/ Industry	Yes					
Observations	3,397					
Pseudo R ²	0.401					

Table 13

Regression for difference test. This table presents the results from the ordinary least squares regression of the impact of performance commitment on controlling shareholders and TMTs selling of stock. Reported in parentheses are t-values based on robust standard errors clustered by firm, *, **, and *** indicate significance at the 10%, 5%, and 1% levels (two-tailed test). All variables are defined in Appendix A.

VARIABLES	(1) $\Delta\text{Top1selling}$	(2) $\Delta\text{Top1freq}$	(3) $\Delta\text{TMTselling}$	(4) $\Delta\text{TMTfreq}$
PC	0.5265*** (9.0218)	0.2085*** (2.8858)	0.2129*** (3.8169)	0.4413** (2.1777)
Constant	0.4844 (0.6837)	-0.9707 (-1.2305)	-0.5150 (-0.9078)	1.3602 (0.5910)
Controls	Yes	Yes	Yes	Yes
Year/Industry	Yes	Yes	Yes	Yes
Observations	3,397	3,397	3,397	3,397
R ²	0.052	0.024	0.115	0.120
Adjusted R ²	0.041	0.012	0.104	0.109