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# Controlling shareholders expropriation and firms leverage decision: evidence from Chinese non-tradable share reform

Qigui Liu

*University of Wollongong*, [ql945@uow.edu.au](mailto:ql945@uow.edu.au)

Gary Tian

*University of Wollongong*, [gtian@uow.edu.au](mailto:gtian@uow.edu.au)

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# Controlling shareholders expropriation and firms leverage decision: evidence from Chinese non-tradable share reform

## **Abstract**

This paper examines the effect of excess control rights on the leverage decisions made by Chinese non-SOEs before and after the Non-tradable share reform (NTS reform). We find that firms with excess control rights have more excess leverage and their controlling shareholders use the resources for tunneling rather than investing in positive NPV projects. We also find that excess leverage in firms with excess control rights decreases and the market reaction to announcements of related party transactions are more positive after NTS reform. This confirms that tunneling by the controlling shareholders actually reduced. We argue that in emerging markets where legal protection for creditors and shareholders is weak, controlling shareholders borrow excess debt to tunnel through inter-corporate loans and related party transactions. Furthermore the privatization of these economies can reduce the controlling shareholders' tunneling activities and associated excess leverage which destroys firm value.

## **Keywords**

tradable, non, reform, chinese, share, controlling, shareholders, expropriation, firms, leverage, decision, evidence

## **Disciplines**

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# **Controlling shareholder, expropriations and firm's leverage decision: Evidence from Chinese Non-tradable share reform**

Qigui Liu<sup>a</sup>, Gary Tian<sup>a,\*</sup>

<sup>a</sup> *School of Accounting and Finance, University of Wollongong, Wollongong, NSW, 2522, Australia.*

## **ABSTRACT**

This paper examines the effect of excess control rights on the leverage decisions made by Chinese non-SOEs before and after the Non-tradable share reform (NTS reform). We find that firms with excess control rights have more excess leverage and their controlling shareholders use the resources for tunneling rather than investing in positive NPV projects. We also find that excess leverage in firms with excess control rights decreases and the market reaction to announcements of related party transactions are more positive after NTS reform. This confirms that tunneling by the controlling shareholders actually reduced. We argue that in emerging markets where legal protection for creditors and shareholders is weak, controlling shareholders borrow excess debt to tunnel through inter-corporate loans and related party transactions. Furthermore the privatization of these economies can reduce the controlling shareholders' tunneling activities and associated excess leverage which destroys firm value.

**Key words:** Leverage decision; Excess control rights; Tunneling; Chinese non-tradable share reform

JEL Classification: G32, G34

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\*Corresponding author: Tel.: +61 4221 4301.

**Email addresses:** [lqg8210@163.com](mailto:lqg8210@163.com) (Qigui Liu), [gtian@uow.edu.au](mailto:gtian@uow.edu.au) (Gary Tian).

## 1. Introduction

Ever since the divergence between control rights and cash flow rights of controlling shareholders is identified by La Porta et al. (1999), its destructive value has been widely studied<sup>1</sup>. Most studies argue that the controlling shareholders are strongly motivated to pursue their private benefit by transferring, or tunneling, resources out of the listed company because they obtain all the benefits without bearing the full financial consequences (Lin et al., 2012). In recent literature<sup>2</sup>, tunneling activities have also been measured through inter-corporate loans to controlling shareholders and market reactions to firms' announcement of related party transactions, but no direct evidence exists regarding the impact that excess control rights and tunneling has on firms' leverage policy. Leverage policy has again become an important topic since the global financial crises of 2007-2008 and the economic turmoil that followed, and indeed, one of the major causes of these events has been traced to the excess leverage policy adopted by some firms.

Conventional wisdom predicts that controlling shareholders should use less debt to avoid external monitoring from creditors (Jensen and Meckling, 1976; Jensen, 1986; Lang et al., 1996), but more recent studies by Faccio et al. (2010) show that leverage in countries with a weak legal system enables the controlling shareholders to control more resources without diluting their control over the corporation. They conjecture that value-destroying financial policies such as higher leverage are usually adopted in order to expropriate the interests of minority shareholders, especially when controlling shareholders have excess control rights (Faccio et al., 2010). Nevertheless, the question remains: How does the controlling shareholder adopt a specific leverage policy through which to control more resources for tunneling? How does the controlling shareholder use the extra resources obtained through excess leverage policy: Investing or tunneling? Is excess leverage alleviated when the incentive to tunnel is weakened? How do markets respond to these changes? This paper attempts to address these issues by examining the relationship between excess control rights and firms' leverage policy before and after the reform of non-tradable shares (NTS) in the Chinese capital market. As the existing literature describing the impact of excess control rights on leverage could suffer from endogeneity issues, albeit they are controlled (Faccio et al., 2010), both the leverage policy and firms' ownership structure (excess control rights) may be determined by unobservable activities. For these reasons this research uses NTS reform as an exogenous policy variable to address this issue.

Before the NTS reforms shares in the Chinese capital market were divided into tradable shares (TS) and non-tradable shares (NTS). NTS is a special class of shares which entitles the holders to exactly the same rights as holders of ordinary TS, except for public trading. Holders of TS are individual and institutional investors, while holders of NTS are usually the controlling shareholders, including the state for state owned enterprises (SOEs), and legal persons for non-state owned enterprises (non-SOEs). In this setting the controlling shareholder usually has a strong incentive to tunnel because the share price is irrelevant to their own wealth.

The aim of the NTS reform initiated in 2005 was to enable NTS to be tradable in the Chinese capital market, by requiring the holders of NTS to compensate the holders of TS (Firth et al., 2010). By the end of 2007, 1,254 firms, representing over 97% of the Chinese A-share market capitalization at the time, had completely reformed (Li et al., 2011).

This reform should have reduced the incentive of controlling shareholders' to tunnel because they can now sell their shares at market price after the lock-up period expires, which effectively ties the share price closer to the wealth of the controlling shareholder. So now the controlling shareholder cares more about the share price and possible punishment from the capital market. More importantly, NTS reform has an exogenous impact because the Chinese government implements them for all listed firms. These reforms provide us with a unique institutional environment, without an endogeneity bias, to examine the effect that the controlling shareholder has on a firm's leverage decision.

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<sup>1</sup> See, for example, Claessens et al. (2000), Claessens et al. (2002), Faccio and Lang (2002), Lemmon and Lins (2003), Maury and Pajuste (2004), Wei and Zhang (2008), Gompers et al. (2010), Lin et al. (2011a), Lin et al. (2011b), and Lin et al. (2012).

<sup>2</sup> See, for example, Cheung et al. (2006), Jiang et al. (2010), Peng et al. (2011).

Our empirical results show that the excess control rights of controlling shareholders is positively associated to excess leverage, which is consistent with previous literature such as Faccio et al. (2010). Moreover the high excess leverage in firms with excess control rights is associated with more inter-corporate loans to controlling shareholders rather than more investments in positive NPV projects, which confirms our tunneling story. By examining how NTS reform affect the relationship between excess control rights and firms' leverage policy, we find that firms with excess control rights reduce their use of excess leverage after the reform, but to prove that such a reduction in excess leverage is affected by controlling shareholders' tunneling rather than other factors, we conduct several additional tests.

We begin by conducting a change regression with control for market timing as the decrease of excess leverage after NTS reform can also be attributed to market timing, and find that while market timing has changed firm leverage, excess control rights still have incremental power of explanation. We then find that inter-corporate loans to controlling shareholders in firms with excess control rights also decreased, so we provide further evidence that after NTS reform, investors are more likely to react positively when firms announce a related party transaction. These results do suggest that the incentive for tunneling by the controlling shareholder decreases after NTS reform.

We also examine other factors that influence the relationship between excess control rights and firms' leverage decision and find that the leverage of firms with excess control rights decreases significantly, particularly those firms taking part in related party transactions and those with lower bank monitoring. This indicates that our main results are robust because participation in related party transactions and lower bank monitoring can result in more tunneling from controlling shareholders. We further show that firms with excess control rights perform better after NTS reform, which also supports our arguments. Finally, our analysis focuses on the pre and post NTS reform period, but it exclude the full flotation period in order to keep any shock from the NTS reform more exogenous<sup>3</sup>. For completeness, we also examine how the full flotation of NTS affects firms' excess leverage, and find that it had has no significant impact on firms' leverage policy and controlling shareholders' tunneling. Overall, our additional tests provide more direct evidence for our principle hypothesis, indicating that our main results are robust.

This study contributes to current literature because existing literature on the impact of ownership structure (excess control rights) on firm's leverage policy and performance could suffer from endogeneity, even though they are controlled. Using NTS reform as an exogenous shock, our results provide findings that greatly alleviated the endogeneity issues which extend the existing literature. Second, we extend Faccio et al. (2010)'s study on excess control rights and firms' leverage policy by proving that controlling shareholders of firms with excess control rights use their excess leverage to tunnel rather than invest it in positive NPV projects. Previous studies of the consequences of NTS reform mainly focused on how it affects CEO compensation incentives, stock market fundamentals, or stock market activity (Beltratti et al., 2010; Campello et al., 2010; Qing and Lin, 2011). This paper enriches this literature by finding evidence that firms' excess leverage is markedly alleviated when tunneling by controlling shareholders is reduced after NTS reform. Finally, we compare firms' leverage policy before and after NTS reform, under the institutional environment within China, the largest emerging market of the world. Fan et al. (2011) indicate that the corporate financial and managerial behavior of firms in emerging markets are usually influenced by various institutional factors quite different to those in developed markets. Studies focused on separate countries allow researchers to analyze the impact of ownership structure on firms' leverage decisions in more detail (Fan et al., 2011). Therefore our paper has important implications for understanding the financial policy of firms in emerging markets.

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<sup>3</sup> During the lockup period (post reform period), where controlling shareholders are allowed to sell a very limited percentage of their holdings, the pyramid ownership structure is barely influenced by any other factor, so we conduct our regressions using a sample of Chinese non-SOEs pre and post the NTS reform period (the latter is the lock up period). The excess control rights become less exogenous after the shares were fully floated, when the lockup period has expired. Controlling shareholders could then increase or decrease their holdings, and therefore the ownership structure will be affected by other factors. In addition, during the pre reform period, controlling shareholders are barely able to change the pyramid ownership structure, which was inherited and adopted before the firms were listed in the markets, by buying and selling their non-tradable shares in over-the-counter markets.

The remainder of this paper is organized as follows: Section 2 explains NTS reform and develops several testable hypotheses. Section 3 describes how the variables are measured and the methodology chosen. Section 4 presents our main empirical results and interpretation, and section 5 summarizes the main conclusions of this research.

## 2. NTS reform in the Chinese capital market and development of the hypothesis

### 2.1. Institutional background and NTS reform in the Chinese capital market

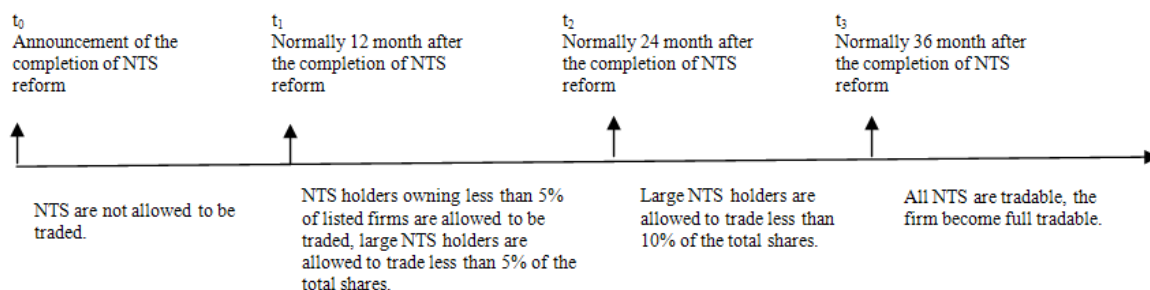
A characteristic of the Chinese capital market before NTS reform was a split share structure where almost 70 per cent of listed firms' outstanding shares were NTS and mainly held by block holders, including controlling shareholders, while the remaining shares were tradable and mainly held by domestic individuals and institutional investors (Firth et al., 2010; Li et al., 2011).

Many studies suggest that this split share structure creates a number of problems (see, e.g., Fan and Wong, 2002; Sun and Tong, 2004) such as a conflict of interest between controlling (non-tradable) and minority (tradable) shareholders because the wealth of controlling shareholders is insulated from the share price. Under these circumstances controlling (non-tradable) shareholders tend to tunnel resources (often through related party transactions) out of listed firms at the expense of tradable shareholders (see Cheung et al., 2006; Jian and Wong, 2010), which resulted in a large number of inter-corporate loans in firms' balance sheets (Jiang et al., 2010). This caused the Chinese government in 2005 to reform the NTS and solve the problems associated with a split share structure.

To implement this reform the China Securities Regulatory Commission (CSRC) announced two batches of pilot reforms that involved 4 and 42 listed companies in April and June 2005 respectively. In August 2005, the reform was expanded to include all listed firms, and by the end of 2007, the reform represented over 97% of total Chinese A-share market capitalization (Li et al., 2011) companies. To dilute any possible stock overhang from a massive sale of shares, NTS holders could only trade limited shares gradually within the lockup period. Firms usually became fully floated (fully tradable) 36 months after the reforms were completed<sup>4</sup>.

Figure 1 presents a time line of the change in status of TS for a firm after NTS reform. All NTS are non-tradable before day  $t_1$ , which is normally 1 year after the NTS reform was completed. Between the period  $t_1$  and  $t_2$ , shares held by small NTS holders (called xiaofei in Chinese) with less than 5% of a firm's outstanding shares, become tradable, while large NTS holders (called dafei in Chinese), including controlling shareholders, were allowed to trade a small proportion of their shares, usually less than 5% of the firm's outstanding shares. Then, between  $t_2$  and  $t_3$ , large NTS holders were usually allowed to trade their shares that were less than 10% of the firm's outstanding shares. Finally, all NTS become tradable after  $t_3$ .

**Figure 1. Change of tradable share status after NTS reform.**



<sup>4</sup> Usually there was a 12 month lockup period for NTS holders with less than 5% of total outstanding shares of the company. However, NTS holders owning more than 5% of the listed firms were further prohibited from trading on the stock exchange when more than 5% (10%) of the company's total share capital were within 12 (24) months (Beltratti et al., 2010).

## 2.2 Development of Hypothesis

### 2.2.1. Excess control rights and firms' leverage policy

As discussed above, previous literature implies that excess control rights are associated with more tunneling by controlling shareholders (Claessens et al., 2002; Faccio and Lang, 2002). More recent studies by Faccio et al. (2010) show that leverage enables controlling shareholders to control more resources without diluting their control over the corporation. They further document that in transition economies where creditor protection is weak, controlling shareholders with more excess control rights usually have an incentive to use more debt to expand their control of resources in order to commence tunneling. As a typical transition economy, China has a weak legal system that provides weak protection for creditors (Peng, 2001). As an example, bankruptcy laws are often poorly enforced and courts are often very costly for resolving conflicts (Fan et al., 2011). It is therefore reasonable to expect that the excess control rights of Chinese firms are also associated with high excess leverage due to controlling shareholders' tunneling activities. We define excess leverage as the difference between a firm's leverage and optimal leverage, measured by the industrial median leverage level of all Chinese listed firms in a specific year, and developed the following hypothesis to support this argument:

**H1:** The excess control rights of the controlling shareholder are positively associated to a firm's excess leverage.

### 2.2.2. How controlling shareholders use the excess resources associated with excess control rights

Previous studies indicate that excess control rights have a positive effect on firms' leverage policy due to tunneling by controlling shareholders when creditor protection is weak. The underlying economic rationale is neither simple nor direct, so to provide more evidence for our argument, we attempt to link excess control rights and excess leverage to inter-corporate loans, which is one of the direct measures of controlling shareholders' tunneling (Jiang et al., 2010). From this we expect that if controlling shareholders of firms with excess control rights use the associated high excess leverage for tunneling, these firms should have more inter-corporate loans to controlling shareholders. On this basis we develop the following hypothesis:

**H2a:** The interaction of excess control rights and excess leverage is positively associated to inter-corporate loans to the controlling shareholder.

However, firms with more excess control rights might use these resources to invest in new positive NPV projects, so we have one alternative hypothesis:

**H2b:** The interaction of excess control rights and excess leverage is positively associated to capital expenditure.

### 2.2.3. How firms' leverage policy and controlling shareholders' tunneling changed after NTS reform

NTS reform is expected to reduce the controlling shareholder's incentive for tunneling in firms with excess control rights because they must consider punishment from the market after the reform than before (Campello et al., 2011). We expect that NTS reform might weaken the relationship between excess control rights and firms' excess leverage, so we establish the following hypothesis to prove this argument:

**H3a:** The interaction of excess control rights and NTS reform is negatively associated to firms' excess leverage.

Similarly, tunneling by controlling shareholders as measured by inter-corporate loans in firms with more excess control rights should also decrease after NTS reform so we develop the following hypothesis:

**H3b:** The interaction of excess control rights and NTS reform is negatively related to inter-corporate loans.

#### *2.2.4. How minority shareholders react when firms announce related party transactions*

Previous studies show that tunneling and propping by controlling shareholders may lead to different market reactions when firms announce a related party transaction that is usually measured by market adjusted cumulative abnormal return (CAR). Specifically, announcing a tunneling activity may result in a negative market reaction while an announcement of propping is associated with a positive reaction (Cheung et al., 2006; Peng et al., 2011). Because the incentive for controlling shareholders to tunnel decreased after NTS reform, we expect more propping announcements to be made after NTS reform than before, so we hypothesize that:

**H4:** The interaction of excess control rights and NTS reform is positively related to CAR when firms announce related party transactions.

### **3. Methodology and Measurement of Variables**

#### *3.1 Data Collection*

The data used in this paper comes mainly from a series of datasets from the CSMAR database: The Chinese Listed Firm Annual Report Database (2004–2010); The Chinese Listed Firm Corporate Governance Database (2004–2010); The Chinese listed firm Non-tradable share reform database (2005-2008); The Chinese Stock Market Index Return Database (2004-2010); The Chinese Listed Company Connected Party Transactions Database (2004-2010). As indicated in earlier studies, the CSMAR is the most important and most widely used database on the Chinese capital market.

Our research period is from 2004 because since then all Chinese listed firms have been required by the CSRC to list the identities of their ultimate owners as well as the control chains in their annual reports. The CSRC defines the “ultimate owner” of a publicly listed company as: (1) the largest shareholder, or (2) the shareholder with more voting power than the largest shareholder, or (3) the shareholder with shareholding or voting rights above 30% of the total shares, or voting rights in the company, or (4) the shareholder who can determine over half of the board members.

We exclude: (1) SOEs (firms with the state as the controlling shareholder)<sup>5</sup>, (2) Financial firms (firms with unique accounting standards and capital structure), (3) ‘ST’ firms or negative-equity firms (financial distressed firms), (4) firms who went public after the NTS reform finished<sup>6</sup>, and (5) firms whose relevant data are not complete or cannot be acquired. The final sample consists of 2,215 firm-year observations from 2004 to 2010, and includes all the 12 industries in the Chinese capital market (According to the industry classification of CSRC. Listed firms in the Chinese capital market are classified into 12 industries, Manufacturing, Agriculture, Mining, Hot water and electricity, Construction, Transportation, Information technology, Wholesale & Retail, Real-estate, Social service, Culture & Broadcasting, and Comprehensive). To the best of our knowledge this is the largest data sample for publicly listed Chinese non state-owned firms available to us.

We divide our full sample of 2,215 observations into three sub-samples, including the prior reform period (740 observations), post reform period (1,057 observations), and the flotation period (418 observations). We mainly focus on the impact of the reform by comparing excess leverage between the prior and post reform periods. Prior reform covers the period from 2004 to the year when a firms’ reform is completed, while the post reform covers the lockup period. This results in 1,797 firm year

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<sup>5</sup> We exclude SOEs because most of the listed firms around the world are non-state owned and previous studies on this topic also focused on non-SOEs (Claessens et al. (2000); Claessens et al. (2002); Faccio et al. (2010); Second, Chinese non-SOEs have a similar ownership structure and corporate governance characteristics to firms in other East Asia countries, as documented by Faccio et al. (2010); Third, SOEs in China have different objectives and principal-agent framework, compared to these non-SOEs, so the main agency issue in SOEs is the agency conflict between shareholders and managers rather than between controlling shareholders and minority shareholders (Rousseau and Xiao, 2007).

<sup>6</sup> We exclude these types of firms because they did not implement NTS reform and we cannot compare the relationship between excess control rights and leverage decision before and after NTS reform.



observations in our main sample. To complete our study we also compare excess leverage in the post reform period to the flotation period with 1,475 observations.

### *3.2 Measuring Variables*

#### *3.2.1 Excess leverage*

Following previous studies (Rajan and Zingales, 1995; Booth et al., 2001; Antoniou et al., 2008), we take advantage of the book value and market value based leverage ratios as proxies of firms' leverage, and also use a firm's leverage minus the optimal leverage measured by the industrial median book/market leverage level of all Chinese listed firms, to measure firms' excess leverage. We then create two new variables for our regressions, the excess book value based leverage (EX\_BLEV) and the excess market value based leverage (EX\_MLEV)<sup>7</sup>.

#### *3.2.2 Controlling shareholders' tunneling*

In this study we measure the controlling shareholder's tunneling based on two variables: the first being inter-corporate loans (also called funds occupation) developed by Jiang, Lee and Yue (2010), the second being the CAR when a firm announces a related party transaction (Cheung et al., 2006).

Inter-corporate loan is a primary tool which controlling shareholders use for tunneling. Although the CSRC has issued repeated warnings and made its disclosure mandatory, weak regulatory enforcement has meant that the practice has not abated. Following Jiang et al. (2010), this study uses other receivables to total assets (ORECTA) to measure inter-corporate loans to controlling shareholders.

Related party transactions (RPTs), which refer to the transactions between the firm and its controlling shareholder, are another tool that is widely used by the controlling shareholder for tunneling. However, as it is difficult to justify whether a RPT is value-destroying or enhancing, this study uses the daily market adjusted cumulative abnormal return (CARs around the announcement of RPTs) to measure the value of RPTs. In addition, we also calculate long-horizon abnormal returns (CAR [MONTH 0]) for the month of the announcement of RPTs (month 0), following previous studies such as Ikenberry et al. (1995), Cheung et al. (2006)<sup>8</sup>. We calculate the long-horizon abnormal returns based on the four benchmarks<sup>9</sup> as indicated by Cheung et al. (2006). Moreover, Chinese firms are required to announce the RPTs on the financial statement and interim announcements within two working days after a contract has been signed. This study only includes the interim announcements for RPTs in order to eliminate other factors that impact on market reactions to announcements of financial statements. Finally, listed firms in China announce RPTs with both their affiliates and controlling shareholders. We only include those RPTs with controlling shareholders because RPTs with affiliates should not result in tunneling or propping by the controlling shareholders.

#### *3.2.3 NTS reform*

We define a dummy variable 'REFORM' that equals to 1 for a firm year observation in the post reform period, and equals to 0 for observations before NTS reform. To examine how the flotation of NTS affect firm's leverage policy and controlling shareholder's tunneling, we also include another dummy variable 'FLOTATION' that equals to 1 for observations in the flotation period when all the shares held by controlling shareholders become tradable, and equals to 0 for observations in the post reform period.

#### *3.2.4 Excess control rights of the controlling shareholder*

The definition of cash flows rights and control rights of the ultimate owners is the same as in Claessens et al. (2002) and Faccio and Lang (2002), where cash flow rights are measured by the sum

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<sup>7</sup> To check for robustness, we also use a firms' leverage as dependent variables and find that all the results using excess leverage as dependent variables are similar to ours.

<sup>8</sup> Longer horizon abnormal returns such as 12 months pre/post the announcement of related party transactions as indicated by Cheung et al. (2006) are not included in our paper because the period is too long to overlap with the NTS event.

<sup>9</sup> The four benchmarks are size, industry, size and industry, and size and market to book. To save space we only report the results based on size and market to book benchmark.

of the products of the proportion of ownership along the control chains, and the control rights are measured by the minimum proportion of ownership along the control chains. We compute the following two variables to measure the excess control rights of Chinese private firms, (1) the ‘excess control (EXCESS)’ are computed by subtracting the cash flow rights from the control rights, and (2) the ‘separate dummy (SDUMMY)’, which equals to 1 if the control rights of the ultimate shareholder exceed the cash flow rights.

### 3.2.5 Other variables

We also include several other dependent and independent (control) variables in our regression, including firms’ financial characteristics and corporate governance variables. A detailed definition and calculation of all the variables used in this paper is reported in Appendix A.

### 3.3 Regression Model

In this paper we establish the following equation as basic regression models.

$$\begin{aligned} \text{Excess leverage/Tunneling}_{i,t} = & \alpha_0 + \beta_1 \text{excess control}_{i,t} + \beta_2 \text{control variable}_{i,t} \\ & + \beta_3 \text{Year and Industry dummies} + \epsilon \end{aligned} \quad \text{Equation (1)}$$

$$\begin{aligned} \text{Excess leverage/Tunneling}_{i,t} = & \alpha_0 + \beta_1 \text{excess control}_{i,t} + \beta_2 \text{Reform Dummy}_{i,t} \\ & + \beta_3 \text{excess control} * \text{Reform Dummy}_{i,t} + \beta_4 \text{control variable}_{i,t} \\ & + \beta_5 \text{Year and Industry dummies} + \epsilon \end{aligned} \quad \text{Equation (2)}$$

In these equations the dependent variables for ‘Excess leverage’ can be excess book value based leverage (EX\_BLEV) and excess market value based leverage (EX\_MLEV), while the dependent variables for ‘Tunneling’ can be inter-corporate loans to controlling shareholders (ORECTA) and accumulated abnormal returns (CARs) for the announcement of RPTs. The key independent variables are proxies for excess control rights and NTS reform. Other independent variables include firm characteristics, corporate governance, and industry and year dummies. To provide more robust results, we conduct an OLS regression and firm fixed effect regression and reported the results in our paper<sup>10</sup>.

## 4. Empirical results

### 4.1 Sample description and univariate test

Table 1 presents the descriptive statistics of our sample where panel A reports the summary statistics for the full sample, while panels B, C, and D present the uni-variate tests of the main dependent variables based on different classifications of the sample. We adopt the difference in difference (DID) method, where firms without excess control rights are used as a control group to examine the change in leverage policy and controlling shareholders’ tunneling before and after NTS reform.

The results in panel A show that the average book and market value based excess leverage for our sample were 3.62 per cent and 9.00 per cent respectively, while other receivables account for approximately 3.52 percent of total assets on average. Jiang et al. (2010) show that the average ORECTA during 1996 to 2004 was 8.1 per cent, so our results indicate that the tunneling activities measured by inter-corporate loans to controlling shareholders decreased markedly in recent years. Further, the average capital expenditure accounts for 10.84 per cent of total assets and the average cumulative abnormal returns (measured by CAR [-1, +1]; CAR [-2, +2]; CAR [-5, +5] and CAR [MONTH 0]) around the announcement of RPTs are 0.84, 0.48, 0.63 and 0.98 per cent. We also show that about 83 per cent of Chinese non-SOEs have excess control rights, the average excess control

<sup>10</sup> To control the unobservable heterogeneity of different firms, we conduct firm fixed effect regressions for all our regression models with more than one observation for each firm. But due to space limitations, we just report the firm fixed effect of our main results in Table 2, Table 5, and Table 7. And we get similar results from the firm fixed effect models.

rights are 11 per cent, which indicates that the pyramid ownership structure is widely adopted by listed non-SOEs in the Chinese capital market.

Panel B presents the uni-variate tests for the main dependent variables of firms with and without excess control rights; firms with excess control rights have significantly higher excess leverage and more inter-corporate loans to controlling shareholders, and less capital expenditure than firms without excess control rights.

In Panel C we present the DID tests for inter-corporate loans to controlling shareholders of firms with high/low excess leverage, and with and without excess control rights. This panel also shows that firms with high excess leverage have significantly more inter-corporate loans than firms with lower excess leverage, although this is only found in firms with excess control rights. This supports our expectation that under China's weak creditor protection system controlling shareholders with more excess control rights usually have an incentive to use high excess leverage to expand their control of resources in order to tunnel. . In countries with weak shareholder/creditor protection, the private benefit of expropriation enjoyed by controlling shareholders' through a high leverage is greater than the costs of high leverage. Such net gains will either disappear or become very small in firms where the controlling shareholders have no excess control rights.

In panel D we present the DID tests of the excess leverage, inter-corporate loans to controlling shareholders, and CARs around the announcement of RPTs pre and post the NTS reform period. As expected, excess leverage and inter-corporate loans to controlling shareholders decrease significantly after NTS reform, while CARs increase significantly in firms with excess control rights. These changes are significant when the change in firms without excess control rights is controlled. This suggests that NTS reform significantly reduces firms' excess leverage and controlling shareholders' tunneling, which supports our hypothesis H3a, H3b and H4.

Overall, the results of the uni-variate tests indicate that excess control rights and high excess leverage are always associated with more tunneling from controlling shareholders, whereas excess leverage and controlling shareholders' tunneling decrease significantly in firms with excess control rights.

**Table 1**

Descriptive Analysis.

Panel A. Summary statistics. This panel presents the number of observations (Obs.), Mean, Median, Standard deviation (STD), Minimum (Min) and Maximum (Max) for all variables used in the paper. Definitions of all the variables are reported in [Appendix A](#).

Var.	Obs.	MEAN	MEDIAN	STD	MIN	MAX
EX_BLEV (%)	1797	3.62	4.34	17.41	-46.80	75.36
EX_MLEV (%)	1797	9.00	6.72	16.97	-30.68	76.18
ORECTA (%)	1797	3.52	1.63	4.91	0.00	39.16
CAPEXTA (%)	1797	10.84	6.80	22.02	-4.74	529.87
CAR [-1, +1] (%)	770	0.84	0.46	5.54	-22.85	23.15
CAR [-2, +2] (%)	770	0.48	0.14	9.85	-40.67	42.65
CAR [-5, +5] (%)	770	0.63	0.38	7.47	-46.58	36.46
CAR [MONTH 0] (%)	770	0.98	0.83	43.35	-143.58	122.41
Q	1797	1.95	1.52	1.36	0.55	12.85
SR	1797	0.08	-0.03	0.79	-1.86	9.93
ROA	1797	0.04	0.03	0.06	-0.64	0.46
ROE	1797	0.05	0.07	0.48	-16.77	2.92
EXCESS	1797	0.11	0.10	0.09	0.00	0.41
SDUMMY	1797	0.83	1.00	0.37	0.00	1.00
CASHFLOW	1797	0.21	0.18	0.14	0.00	0.92
TANG	1797	0.38	0.37	0.20	-0.00	0.98

SIZE (10 Million RMB)	1797	288.00	151.00	468.00	18.20	7300.00
ROA	1797	0.04	0.03	0.06	-0.64	0.46
GROW	1797	0.47	0.06	8.87	-1.00	400.68
TAX	1797	0.01	0.01	0.01	-0.05	0.12
MANAGER	1797	0.01	0.00	0.04	0.00	0.64
BOARDSIZE	1797	9.08	9.00	2.03	3.00	20.00
BOARDIN	1797	0.37	0.33	0.06	0.11	1.00

Panel B. Univariate test of firms with and without excess control rights. This panel presents the univariate test for firms' excess leverage and controlling shareholders' tunneling of firms with and without excess control rights. 'Excess' refers to firms with excess control right and 'Non-Excess' represents firms without excess control right. 'Difference Tests' columns reports both t value for T-test and z value for Wilcoxon test of difference in mean and median.

Obs.	Non-excess (%)		Excess (%)		Difference Tests	
	302		1495			
	Mean	Median	Mean	Median	T value	Z value
EX_BLEV	0.09	3.30	4.33	4.62	3.87***	3.09***
EX_MLEV	6.95	5.63	9.41	6.93	2.29**	1.90*
ORECTA	2.23	1.10	3.78	1.86	5.05***	6.06***
CAPEXTA	13.90	10.13	10.22	6.26	2.65***	7.13***

\*, \*\*, and \*\*\* indicate significance at the 10%, 5%, and 1% levels, respectively.

Panel C. Difference in difference test of inter-corporate loans to controlling shareholders of firms with different ownership structure and firms with high and low excess leverage. This panel presents the univariate test for inter-corporate loans to controlling shareholders (ORECTA) of firms with high and low levels of excess leverage. 'Excess' refers to firms with excess control right and 'Non-Excess' represents firms without excess control right. 'Low EX\_BLEV' refers to firms with low excess leverage and 'High EX\_BLEV' represents firms with high excess leverage. 'Difference Tests' columns reports both t value for T-test and z value for Wilcoxon test of difference in mean and median.

	Obs	Low EX_BLEV (%)		High EX_BLEV (%)		Difference (%)	
		Mean	Median	Mean	Median	Mean	Median
Excess	1495	3.53	1.45	4.01	2.11	0.48*	0.66***
Non-excess	302	2.19	1.12	2.26	1.09	0.07	-0.03
Difference		-1.33***	-0.33***	-1.75***	-1.02***	-0.42***	

\*, \*\*, and \*\*\* indicate significance at the 10%, 5%, and 1% levels, respectively.

Panel D. Difference in difference test for main dependent variables before and after NTS reform. This panel presents the univariate test for the main dependent variables before and after NTS reform. 'Excess' refers to firms with excess control rights and 'Non-Excess' represents firms without excess control rights. 'Difference Tests' columns reports both t value for T-test and z value for Wilcoxon test of difference in mean and median.

		Before NTS reform (%)		After NTS reform (%)		Differences (%)	
		Mean	Median	Mean	Median	Mean	Median
EX_BLEV	Excess	4.66	5.26	4.10	4.31	-0.56	-0.95
	No-Excess	-1.02	1.22	0.90	4.52	1.92	3.30
	Differences	-5.68***	-4.04***	-3.20**	0.21	2.48*	
EX_MLEV	Excess	15.75	14.15	5.10	2.05	-10.65***	-12.10***
	No-Excess	5.81	8.93	4.15	0.05	-1.66	-8.88***
	Differences	-9.94***	-5.22***	-0.95	-2.00	8.99***	
ORECTA	Excess	4.62	2.33	3.21	1.52	-1.41***	-0.81***
	No-Excess	2.74	1.25	2.25	1.01	-0.49	-0.24

	Differences	-1.88***	-1.08***	-0.96***	-0.51***	0.92***	
CAR [-1,+1]	Excess	0.02	0.49	1.32	0.45	1.30***	-0.04
	No-Excess	2.37	0.81	0.66	-0.05	-1.71	-0.86
	Differences	2.35**	0.32	-0.66	-0.50	-3.01***	
CAR [-2,+2]	Excess	-1.60	-0.27	1.13	0.19	2.73***	0.46**
	No-Excess	3.58	1.44	1.76	1.99	-1.82	0.55
	Differences	5.18***	1.71***	0.63	1.80	-4.55***	
CAR [-5,+5]	Excess	-1.60	-0.03	1.13	0.78	2.73***	0.81*
	No-Excess	3.37	0.31	0.88	0.26	-2.49	-0.05
	Differences	4.97	0.34	-0.25	-0.52	-5.22***	
CAR [Month 0]	Excess	-3.78	-0.12	2.96	14.51	6.74**	14.63**
	No-Excess	0.88	1.31	3.99	16.95	3.11	15.64
	Differences	4.66*	1.43	-2.03	2.44	-3.63*	

\*, \*\*, and \*\*\* indicate significance at the 10%, 5%, and 1% levels, respectively.

#### 4.2 Excess control rights and firms' leverage policy

Table 2 presents the results of the regression regarding the effect of excess control rights on excess leverage, using both the book and market value based excess leverage ratios as dependent variables.

As with evidence from the uni-variate tests, the coefficients of our measures of excess control rights are consistently positive and statistically significant at the 10% level of significance. We also obtain similar results after controlling for the firm fixed effect, which indicates the robustness of our results, and also that the controlling shareholder of firms with excess control rights tends to adopt high excess leverage policy, which is consistent with Faccio et al. (2010), and supports our hypothesis H1.

From the other explanatory variables we find that most have statistically significant explanatory power. The controlling shareholder's cash flow rights are included in the regression to account for their expected positive "incentive" effects on firm performance, as in Claessens et al. (2002) and Joh et al. (2003). Here we find that the controlling shareholder's cash flow rights have a negative relationship with firm's excess leverage, which indicates that controlling shareholders are less likely to tunnel through excess leverage when the cash flow rights are high, and furthermore, larger firms have more excess leverage. These results support the view that firm size serves as an inverse proxy for unobservable credit risk, which implies that larger firms should be more highly leveraged. As predicted by the pecking order theory, higher profitability is associated with a lower excess leverage. We also find that a higher effective tax rate is associated with a lower excess leverage, which is inconsistent with trade-off theory which argues that firms with higher tax rates should borrow more to utilize the tax shield effect. This result indicates that the tax advantages of debt capital are not attractive to firms in China, which is consistent with Booth et al. (2001).

Furthermore, we show that board size has a statistically significantly positive effect on debt level, which is consistent with Linck et al. (2008) who indicate that firms with a larger size board have higher leverage. However, there is no statistically significant relationship between board independence and firm's debt level, which indicates that under the weak investor protection in countries like China, monitoring by independent directors is usually ineffective (La-Porta et al., 2000).

**Table 2**

The effect of excess control right on leverage ratio. This Table presents the regression results on the effect of excess control right on firms' excess leverage. Definitions of variables are reported in Appendix A. P-values are displayed in italics.

Var	OLS regression		Firm fixed effect regression	
	EX_BLEV	EX_MLEV	EX_BLEV	EX_MLEV
EXCESS	0.25***	0.12***	0.26***	0.29***
	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>
SDUMMY	0.03***	0.01*	0.03**	-0.00

		0.00		0.07		0.03		0.88
CASHFLOW	-0.04	-0.00*	-0.05***	-0.07***	-0.08**	-0.07*	-0.13***	-0.08*
	0.16	0.10	0.01	0.00	0.02	0.06	0.00	0.09
TANG	0.05**	0.05***	0.02	0.01	0.07***	0.07***	0.01	0.02
	0.02	0.01	0.29	0.37	0.01	0.01	0.70	0.63
SIZE	0.07***	0.07***	0.08***	0.08***	0.04***	0.04***	0.03***	0.03***
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ROA	-0.90***	-0.91***	-0.95***	-0.96***	-0.48***	-0.48***	-0.72***	-0.72***
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
GROW	0.00	0.00	0.00	0.00	0.00*	0.00	0.00	0.00
	0.32	0.43	0.51	0.60	0.10	0.14	0.11	0.15
TAX	-0.76**	-0.69**	-1.01***	-0.98***	0.00	-0.01	-1.84***	-1.83***
	0.02	0.03	0.00	0.00	1.00	0.98	0.00	0.00
MANAGER	0.08	0.07	0.09	0.08	-0.07	-0.08	-0.04	-0.04
	0.40	0.51	0.23	0.29	0.36	0.33	0.72	0.67
BOARDSIZE	0.01***	0.01***	0.00	0.00	0.00	-0.00	0.00	0.00
	0.00	0.01	0.24	0.30	0.93	0.96	0.15	0.18
BOARDIN	-0.05	-0.06	0.04	0.04	-0.09*	-0.09**	-0.08	-0.09
	0.42	0.37	0.35	0.38	0.07	0.05	0.20	0.16
_cons	-1.44***	-1.49***	-1.76***	-1.79***	-0.74***	-0.73***	0.71***	0.73***
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Industry	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	1797	1797	1797	1797	1797	1797	1797	1797
R2	0.27	0.26	0.56	0.55	0.16	0.14	0.11	0.09

\*, \*\*, and \*\*\* indicate significance at the 10%, 5%, and 1% levels, respectively.

#### 4.3 Tunneling or investing: How controlling shareholders use the resources obtained through excess leverage

Whereas excess control rights do have a positive impact on excess leverage, it is still not clear whether controlling shareholders really use the resources for tunneling or investing in positive NPV projects. In the following two subsections we attempt to distinguish the effect of tunneling or investing by examining how the interaction of excess leverage and excess control rights affects inter-corporate loans and capital expenditure<sup>11</sup>. If tunneling (investing) is the incentive that drives the excess control rights-leverage relationship, there should be a positive relationship between the interactive terms between excess control rights and excess leverage and inter-corporate loans (capital expenditure).

##### 4.3.1 The effect of excess control rights and excess leverage on controlling shareholders' tunneling

Table 3 presents the results of the effect of excess control rights and high excess leverage on inter-corporate loans to controlling shareholders. The results in columns 1 and 2 in Table 3 show that firms with excess control rights also have more inter-corporate loans with controlling shareholders. More importantly, the estimated coefficients of the interactive terms between excess control rights and high excess leverage dummies are consistently statistically significantly positive, which supports our expectation that controlling shareholders of firms with more excess control rights do use high excess leverage to facilitate tunneling. This supports our hypothesis H2a.

<sup>11</sup> As indicated by Chen et al. (2009), capital expenditure is a proxy for firms' investment opportunities.

**Table 3**

The effect of excess control rights and excess leverage on inter-corporate loans. This Table presents the results of regressions on the effect of excess control rights and excess leverage on inter-corporate loans to controlling shareholders, which is the direct method that controlling shareholders use to tunnel. HEX\_BLEV is defined as a dummy variable that equals to 1 if the firm's EX\_BLEV is higher than median level and 0 otherwise; HEX\_MLEV is defined as a dummy variable that equals to 1 if the firm's EX\_MLEV is higher than median level, and 0 otherwise. Definitions of all variables are reported in Appendix A. P-values are displayed in italics.

Var	ORECTA					
EXCESS	0.10***		0.06***		0.07***	
	<i>0.00</i>		<i>0.00</i>		<i>0.00</i>	
SDUMMY		0.01***		0.01**		0.01***
		<i>0.00</i>		<i>0.02</i>		<i>0.00</i>
HEX_BLEV			-0.01*	-0.00		
			<i>0.09</i>	<i>0.84</i>		
HEX_MLEV					-0.01**	0.00
					<i>0.02</i>	<i>0.43</i>
HEX_BLEV*EXCESS			0.07***			
			<i>0.00</i>			
HEX_BLEV*SDUMMY				0.00		
				<i>0.45</i>		
HEX_MLEV*EXCESS					0.07***	
					<i>0.00</i>	
HEX_MLEV*SDUMMY						-0.01
						<i>0.32</i>
CASHFLOW	-0.01	-0.02***	-0.01	-0.02***	-0.01	-0.02***
	<i>0.44</i>	<i>0.01</i>	<i>0.46</i>	<i>0.01</i>	<i>0.47</i>	<i>0.01</i>
TANG	-0.03***	-0.03***	-0.03***	-0.03***	-0.03***	-0.03***
	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>
SIZE	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00
	<i>0.15</i>	<i>0.62</i>	<i>0.13</i>	<i>0.43</i>	<i>0.23</i>	<i>0.74</i>
ROA	-0.11***	-0.11***	-0.10***	-0.11***	-0.11***	-0.11***
	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>
GROW	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00
	<i>0.69</i>	<i>0.51</i>	<i>0.61</i>	<i>0.52</i>	<i>0.63</i>	<i>0.50</i>
TAX	-0.29***	-0.26***	-0.27***	-0.26***	-0.28***	-0.27***
	<i>0.00</i>	<i>0.01</i>	<i>0.00</i>	<i>0.01</i>	<i>0.00</i>	<i>0.01</i>
MANAGER	-0.00	-0.01	-0.00	-0.01	-0.00	-0.01
	<i>0.91</i>	<i>0.71</i>	<i>0.96</i>	<i>0.74</i>	<i>0.96</i>	<i>0.68</i>
BOARDSIZE	-0.00***	-0.00***	-0.00***	-0.00***	-0.00***	-0.00***
	<i>0.01</i>	<i>0.00</i>	<i>0.01</i>	<i>0.00</i>	<i>0.01</i>	<i>0.00</i>
BOARDIN	0.00	-0.00	-0.00	-0.00	0.00	-0.00
	<i>0.97</i>	<i>0.93</i>	<i>0.98</i>	<i>0.93</i>	<i>0.97</i>	<i>0.93</i>
_cons	0.09***	0.07**	0.10***	0.08***	0.09***	0.07**
	<i>0.00</i>	<i>0.02</i>	<i>0.00</i>	<i>0.01</i>	<i>0.00</i>	<i>0.04</i>
Industry	Yes	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	1797	1797	1797	1797	1797	1797
R2	0.14	0.12	0.15	0.12	0.15	0.12

\*, \*\*, and \*\*\* indicate significance at the 10%, 5%, and 1% levels, respectively.

#### 4.3.2 The effect of excess control rights and excess leverage on capital expenditure

Firms with more excess control rights and excess leverage are more likely to be tunneled by controlling shareholders, but they may also invest more in new positive NPV projects. To address this

concern we conduct new regressions to investigate whether firms with more excess control rights and high excess leverage invest more. The results are reported in Table 4.

We show from Table 4 that the coefficients of both excess control rights and the interactive terms between excess control rights and high excess leverage are consistently negative and statistically significant, which indicates that the excess leverage in firms with more excess control rights is not used to invest in new positive NPV projects. Thus our alternative hypothesis H2b cannot be upheld<sup>12</sup>.

**Table 4**

The effect of excess control rights and excess leverage on capital expenditure. This Table presents the results of regressions on the effect of excess control rights and excess leverage on capital expenditure. Independent variable is total capital expenditure to total assets. HEX\_BLEV is defined as a dummy variable that equals to 1 if the firm's EX\_BLEV is higher than median level and 0 otherwise; HEX\_MLEV is defined as a dummy variable that equals to 1 if the firm's EX\_MLEV is higher than median level, and 0 otherwise. Definitions of all variables are reported in Appendix A. P-values are displayed in italics.

Var	CAPEXTA					
EXCESS	-0.04		0.13		0.06	
	<i>0.55</i>		<i>0.14</i>		<i>0.45</i>	
SDUMMY		-0.03**		-0.02		-0.02
		<i>0.04</i>		<i>0.37</i>		<i>0.26</i>
HEX_BLEV			-0.01	-0.02		
			<i>0.61</i>	<i>0.44</i>		
HEX_MLEV					0.01	0.00
					<i>0.77</i>	<i>1.00</i>
HEX_BLEV*EXCESS			-0.27***			
			<i>0.01</i>			
HEX_BLEV*SDUMMY				-0.02		
				<i>0.40</i>		
HEX_MLEV*EXCESS					-0.19*	
					<i>0.08</i>	
HEX_MLEV*SDUMMY						-0.02
						<i>0.48</i>
CASHFLOW	-0.02	-0.03	-0.02	-0.03	-0.02	-0.04
	<i>0.61</i>	<i>0.42</i>	<i>0.66</i>	<i>0.44</i>	<i>0.55</i>	<i>0.35</i>
TANG	-0.02	-0.02	-0.02	-0.03	-0.02	-0.03
	<i>0.42</i>	<i>0.41</i>	<i>0.41</i>	<i>0.34</i>	<i>0.43</i>	<i>0.39</i>
SIZE	-0.01	-0.01	-0.00	-0.00	-0.01	-0.00
	<i>0.15</i>	<i>0.15</i>	<i>0.67</i>	<i>0.74</i>	<i>0.41</i>	<i>0.42</i>
ROA	0.27***	0.27***	0.20**	0.20**	0.24**	0.24**
	<i>0.01</i>	<i>0.01</i>	<i>0.05</i>	<i>0.05</i>	<i>0.02</i>	<i>0.02</i>
GROW	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00
	<i>0.74</i>	<i>0.77</i>	<i>0.79</i>	<i>0.74</i>	<i>0.76</i>	<i>0.75</i>
TAX	0.65	0.63	0.50	0.54	0.55	0.57
	<i>0.14</i>	<i>0.16</i>	<i>0.26</i>	<i>0.23</i>	<i>0.22</i>	<i>0.21</i>
MANAGER	0.04	0.02	0.03	0.01	0.05	0.02
	<i>0.78</i>	<i>0.90</i>	<i>0.81</i>	<i>0.93</i>	<i>0.75</i>	<i>0.89</i>
BOARDSIZE	-0.01**	-0.01**	-0.01**	-0.01**	-0.01**	-0.01**
	<i>0.02</i>	<i>0.02</i>	<i>0.05</i>	<i>0.05</i>	<i>0.03</i>	<i>0.03</i>
BOARDIN	-0.02	-0.03	-0.01	-0.02	-0.02	-0.02
	<i>0.79</i>	<i>0.77</i>	<i>0.87</i>	<i>0.80</i>	<i>0.81</i>	<i>0.80</i>

<sup>12</sup> We also conduct firm fixed effect regressions for the results reported in Table 3 and 4, and obtain similar results. However, the results of the firm fixed effect are not reported due to limited space.



_cons	0.83***	0.86***	0.71***	0.73***	0.76***	0.78***
	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>
Industry	Yes	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	1797	1797	1797	1797	1797	1797
R2	0.08	0.08	0.09	0.09	0.08	0.08

\*, \*\*, and \*\*\* indicate significance at the 10%, 5%, and 1% levels, respectively.

#### 4.4 The effect of excess control rights and NTS reform on firms' excess leverage and controlling shareholders' tunneling

Another intuitive way to examine whether controlling shareholders adopt excess leverage policy in order to tunnel is to see whether a firms' leverage policy changes when their incentive to tunnel decreases after NTS reform. We conduct several new regressions that consider the effect of NTS reform and excess control rights on both leverage policy and controlling shareholders' tunneling.

##### 4.4.1 The effect of excess control rights and NTS reform on excess leverage

Table 5 presents the results of NTS reform on the relationship between excess control rights and excess leverage. Table 5 shows that the estimated coefficients of the interaction between excess control rights and the NTS reform dummy are consistently negative, and are significant in both economic magnitude and statistical significance. Specifically, we suggest that a 1% increase of excess control rights results in an increase of 0.33% in book value based excess leverage before NTS reform and an increase of only 0.17% (the sum of 0.33% and -0.16%) after the reform. This result supports our hypothesis H3a.

**Table 5**

The effect of excess control right and NTS reform on excess leverage. This Table presents the results of regressions on the effect of excess control rights and NTS reform on firms' excess leverage. Definitions of variables are reported in Appendix A. P-values are displayed in italics.

Var	OLS regression				Firm fixed effect			
	EX_BLEV		EX_MLEV		EX_LEV		EX_MLEV	
EXCESS	0.33***		0.18***		0.55***		0.38***	
	<i>0.00</i>		<i>0.00</i>		<i>0.00</i>		<i>0.01</i>	
SDUMMY		0.04***		0.03**		0.07		0.05
		<i>0.01</i>		<i>0.02</i>		<i>0.13</i>		<i>0.16</i>
REFORM	0.01	0.01	0.02*	0.03*	0.06	0.05	-0.06*	-0.06
	<i>0.53</i>	<i>0.75</i>	<i>0.10</i>	<i>0.10</i>	<i>0.11</i>	<i>0.38</i>	<i>0.06</i>	<i>0.12</i>
EXCESS*REFORM	-0.16**		-0.11*		-0.54**		-0.45**	
	<i>0.04</i>		<i>0.07</i>		<i>0.05</i>		<i>0.03</i>	
SDUMMY*REFORM		-0.02		-0.02		-0.06		-0.05
		<i>0.36</i>		<i>0.13</i>		<i>0.35</i>		<i>0.27</i>
CASHFLOW	0.04	0.00	-0.05***	-0.07***	0.06	0.02	-0.01	-0.03
	<i>0.16</i>	<i>0.93</i>	<i>0.01</i>	<i>0.00</i>	<i>0.31</i>	<i>0.68</i>	<i>0.75</i>	<i>0.46</i>
TANG	0.05**	0.05***	0.02	0.01	0.06	0.07*	0.03	0.03
	<i>0.03</i>	<i>0.01</i>	<i>0.27</i>	<i>0.37</i>	<i>0.14</i>	<i>0.10</i>	<i>0.27</i>	<i>0.35</i>
SIZE	0.07***	0.07***	0.08***	0.08***	0.07***	0.08***	0.08***	0.08***
	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>
ROA	-0.87***	-0.88***	-0.94***	-0.95***	-1.28***	-1.31***	-1.30***	-1.33***
	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>
GROW	0.00	0.00	0.00	0.00	-0.00	-0.00	-0.00	-0.00

	<i>0.29</i>	<i>0.43</i>	<i>0.50</i>	<i>0.62</i>	<i>0.91</i>	<i>0.78</i>	<i>0.65</i>	<i>0.54</i>
TAX	-0.77***	-0.72**	-1.01***	-0.99***	-0.96	-0.87	-0.53	-0.49
	<i>0.01</i>	<i>0.02</i>	<i>0.00</i>	<i>0.00</i>	<i>0.22</i>	<i>0.27</i>	<i>0.36</i>	<i>0.40</i>
MANAGER	0.07	0.06	0.08	0.07	0.30	0.29	0.10	0.10
	<i>0.49</i>	<i>0.54</i>	<i>0.31</i>	<i>0.38</i>	<i>0.32</i>	<i>0.34</i>	<i>0.66</i>	<i>0.66</i>
BOARDSIZE	0.01***	0.01***	0.00	0.00	0.01	0.00	0.00	0.00
	<i>0.00</i>	<i>0.00</i>	<i>0.18</i>	<i>0.24</i>	<i>0.20</i>	<i>0.25</i>	<i>0.72</i>	<i>0.79</i>
BOARDIN	-0.05	-0.06	0.04	0.04	-0.14	-0.15	0.02	0.02
	<i>0.42</i>	<i>0.36</i>	<i>0.35</i>	<i>0.40</i>	<i>0.39</i>	<i>0.38</i>	<i>0.87</i>	<i>0.89</i>
_cons	-1.50***	-1.51***	-1.79***	-1.64***	-1.62***	-1.66***	-1.64***	-1.65***
	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>
Industry	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	1797	1797	1797	1797	1797	1797	1797	1797
R2	0.27	0.26	0.56	0.55	0.13	0.25	0.42	0.42

\*, \*\*, and \*\*\* indicate significance at the 10%, 5%, and 1% levels, respectively.

#### 4.4.2 Control for market timing

Market timing theory indicates that firms may issue new shares when their market valuation is high (Baker and Wurgler, 2002; Altı, 2006). Welch (2004) also finds that stock returns can explain about 40% of capital structure dynamics. Given that immediately after NTS reform the Chinese capital market peaked in 2007, the ensuing decrease in leverage of firms with excess control rights may also be caused by market timing, so after controlling with market timing we conduct a new regression by examining the effect of excess control rights on the difference in excess leverage between prior and post NTS reform. According to previous studies, this study uses the difference of market to book ratio ( $\Delta$  MTB) and the difference of market-adjusted share return ( $\Delta$  SR) between prior and post NTS reform, to address the effects from market timing. The results are reported in columns 1 to 4 and columns 5 to 8 of Table 6.

The results in Table 6 are consistent with our expectations and the results in Table 5. We first find that  $\Delta$  MTB and  $\Delta$  SR are both statistically significantly negatively associated to changes in market value based excess leverage, which implies that the increase in market valuation after NTS reform do decrease firms' excess leverage. This shows that although the effect of market timing does exist in the Chinese capital market, the excess leverage of firms with excess control rights did decrease significantly after NTS reform, even when the effect of market timing has been controlled. Therefore, our results in Table 6 suggest that although the decrease of excess leverage after NTS reform can be partially explained by market timing, excess control rights have incremental power in explaining the change in firms' excess leverage after NTS reform.

**Table 6**

The effect of excess control on change of excess leverage after NTS reform (control for market timing). This Table presents the results of regressions on the effect of excess control rights on change of excess leverage after the NTS reform with control for market timing. The dependent variables are  $\Delta$  EX\_BLEV and  $\Delta$  EX\_MLEV.  $\Delta$  EX\_BLEV is defined as the average post-NTS reform book value based excess leverage minus the average pre-NTS reform book value based excess leverage. While  $\Delta$  EX\_MLEV is defined as the average post-NTS reform market value based excess leverage minus the average pre-NTS reform market value based excess leverage. Please note we are using the post-NTS reform excess leverage minus pre-NTS excess leverage to measure changes in excess leverage, a negative result means a decrease and a positive result means increase.  $\Delta$  MTB and  $\Delta$  SR are two measures of market timing. Definitions of variables are reported in Appendix A. Please note the number of observations reduce from 2215 to 314 because one specific firm just have one change observation. P-values are displayed in italics.

Var	$\Delta$ EX_LEV		$\Delta$ EX_MLEV		$\Delta$ EX_LEV		$\Delta$ EX_MLEV	
$\Delta$ MTB	-0.00***	-0.00***	-0.00***	-0.00***				
	<i>0.01</i>	<i>0.01</i>	<i>0.00</i>	<i>0.00</i>				
$\Delta$ SR					0.01	0.01	-0.03***	-0.03***

					0.42	0.47	0.00	0.00
EXCESS	-0.27***		-0.22***		-0.28***		-0.23***	
	<i>0.00</i>		<i>0.00</i>		<i>0.00</i>		<i>0.00</i>	
SDUMMY		-0.06***		-0.07***		-0.06***		-0.08***
		<i>0.01</i>		<i>0.00</i>		<i>0.01</i>		<i>0.00</i>
CASHFLOW	0.12**	0.15***	0.13***	0.14***	0.12**	0.15***	0.12***	0.13***
	<i>0.04</i>	<i>0.01</i>	<i>0.01</i>	<i>0.00</i>	<i>0.04</i>	<i>0.01</i>	<i>0.01</i>	<i>0.01</i>
TANG	0.01	0.01	0.03	0.03	0.00	0.01	0.04	0.04
	<i>0.91</i>	<i>0.81</i>	<i>0.39</i>	<i>0.38</i>	<i>1.00</i>	<i>0.90</i>	<i>0.35</i>	<i>0.34</i>
SIZE	-0.01	-0.01	-0.04***	-0.04***	-0.01	-0.01	-0.03***	-0.03***
	<i>0.19</i>	<i>0.12</i>	<i>0.00</i>	<i>0.00</i>	<i>0.31</i>	<i>0.21</i>	<i>0.00</i>	<i>0.00</i>
ROA	-0.18	-0.23	0.39***	0.33**	-0.15	-0.20	0.37***	0.30**
	<i>0.29</i>	<i>0.19</i>	<i>0.01</i>	<i>0.02</i>	<i>0.39</i>	<i>0.27</i>	<i>0.01</i>	<i>0.04</i>
GROW	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
	<i>0.23</i>	<i>0.24</i>	<i>0.32</i>	<i>0.34</i>	<i>0.27</i>	<i>0.27</i>	<i>0.48</i>	<i>0.50</i>
TAX	0.63	0.66	0.90	0.91	0.56	0.59	0.60	0.61
	<i>0.38</i>	<i>0.36</i>	<i>0.14</i>	<i>0.13</i>	<i>0.44</i>	<i>0.43</i>	<i>0.34</i>	<i>0.32</i>
MANAGER	-6.11	-4.96	-18.40	-16.14	-5.70	-4.53	-17.70	-15.33
	<i>0.71</i>	<i>0.76</i>	<i>0.18</i>	<i>0.24</i>	<i>0.73</i>	<i>0.79</i>	<i>0.21</i>	<i>0.27</i>
BOARDSIZE	0.00	0.00	-0.00	-0.00	0.00	0.00	0.00	0.00
	<i>0.49</i>	<i>0.45</i>	<i>0.88</i>	<i>0.95</i>	<i>0.38</i>	<i>0.34</i>	<i>0.85</i>	<i>0.78</i>
BOARDIN	-0.37**	-0.34**	-0.30**	-0.27**	-0.38**	-0.34**	-0.27**	-0.24*
	<i>0.02</i>	<i>0.04</i>	<i>0.03</i>	<i>0.04</i>	<i>0.02</i>	<i>0.04</i>	<i>0.05</i>	<i>0.07</i>
_cons	0.23	0.24	0.78***	0.81***	0.18	0.19	0.69***	0.72***
	<i>0.33</i>	<i>0.31</i>	<i>0.00</i>	<i>0.00</i>	<i>0.45</i>	<i>0.43</i>	<i>0.00</i>	<i>0.00</i>
Industry	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	314	314	314	314	314	314	314	314
R2	0.08	0.07	0.22	0.23	0.06	0.05	0.19	0.21

\*, \*\*, and \*\*\* indicate significance at the 10%, 5%, and 1% levels, respectively.

#### 4.4.3 The effect of excess control rights and NTS reform on inter-corporate loans to controlling shareholders

Table 7 presents the effect of excess control rights and NTS reform on inter-corporate loans, which is a major tool used by controlling shareholders for tunneling (Jiang et al., 2010).

Table 7 also shows that the interaction between excess control rights and NTS reform is statistically significantly negatively related to inter-corporate loans, either in our OLS model or the firm fixed effect model. Likewise, a 1% increase of excess control rights resulted in an increase of 0.14% in inter-corporate loans before NTS reform and an increase of only 0.07% (the sum of 0.14% and -0.07%) afterwards, that is, the controlling shareholder's tunneling activities in firms with high excess control rights drops significantly after NTS reform. This result supports our hypothesis H3b.

**Table 7**

The effect of excess control right and NTS reform on inter-corporate loans. This Table presents the results of regressions on the effect of excess control rights and NTS reform on inter-corporate loans to controlling shareholders. Definitions of variables are reported in Appendix A. P-values are displayed in italics.

Var	ORECTA	
	OLS regression	Firm fixed effect
EXCESS	0.14***	0.22***
	<i>0.00</i>	<i>0.00</i>

SDUMMY		0.01***		0.04***
		0.00		0.00
REFORM	0.00	0.00	-0.01	-0.01
	0.99	0.59	0.45	0.59
EXCESS*REFORM	-0.07***		-0.23***	
	0.00		0.00	
SDUMMY*REFORM		-0.01		-0.03*
		0.40		0.06
CASHFLOW	-0.01	-0.02***	-0.00	-0.01
	0.52	0.01	0.90	0.56
TANG	-0.03***	-0.03***	-0.03***	-0.03***
	0.00	0.00	0.01	0.01
SIZE	0.00	0.00	-0.00	-0.00
	0.16	0.61	0.32	0.52
ROA	-0.10***	-0.11***	-0.23***	-0.24***
	0.00	0.00	0.00	0.00
GROW	0.00	0.00	-0.00	-0.00
	0.76	0.52	0.92	0.75
TAX	-0.28***	-0.26***	-0.29	-0.26
	0.00	0.01	0.21	0.26
MANAGER	-0.01	-0.01	0.03	0.03
	0.74	0.68	0.75	0.73
BOARDSIZE	0.00***	0.00***	-0.00	-0.00
	0.01	0.00	0.50	0.40
BOARDIN	0.00	0.00	0.02	0.02
	0.94	0.93	0.69	0.75
_cons	0.09***	0.09***	0.10*	0.08
	0.00	0.00	0.08	0.15
Industry	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes
Obs.	1797	1797	1797	1797
R2	0.15	0.12	0.12	0.10

\*, \*\*, and \*\*\* indicate significance at the 10%, 5%, and 1% levels, respectively.

#### 4.4.4 Evidence from the capital market

The positive relationship between excess control rights and excess leverage has been weakened significantly by NTS reform, suggesting that controlling shareholders used less (more) value-destroying (value-enhancing) RPTs after the reform than before, but to provide direct evidence for these expectations, we also examine how the capital market reacts to firms' announcement of RPTs before and after NTS reform. As discussed above, this study adopts 3 days, 5 days, and 11 days market adjusted CARs as short abnormal returns. Long-horizon abnormal returns (CAR [MONTH 0]) are calculated based on four different benchmarks, as indicated by Cheung et al. (2006), but to economize, we focus on the size and market to book ratio benchmark. The results based on the remaining approaches for estimating abnormal returns are qualitatively similar.

We then conduct new regressions to examine whether the value-destroying (value-enhancing) RPTs decrease (increase) after NTS reform. We first conduct a logistic regression where the dependent variable is positive CAR dummy variables, to examine whether controlling shareholders are more (less) likely to adopt value-enhancing (value-destroying) RPTs after NTS reform when they have

excess control rights. We then conduct a multi-regression model where continuous CARs are used as dependent variables to examine how minority shareholders react to the RPT announcement pre and post NTS reform period. The results are reported in Tables 8 and 9 respectively.

Table 8 shows that firms with excess control rights are less likely to have value-adding related party transactions with their controlling shareholders, which indicates that the interactive terms between excess control rights and NTS reform are significantly positively associated to the probability of a positive CAR. This implies that the probability of adopting value-adding RPTs in firms with excess control rights increases significantly after NTS reform.

**Table 8**

The effect of excess control right and NTS reform on probability of value added related party transaction. This Table presents the results of regressions on the effect of excess control right and NTS reform and their interaction on probability of value-enhancing related party transactions with controlling shareholders (probability of positive market reaction). The dependent variables are positive CAR dummies that equal to 1 if the announcement of related party transaction is associated to positive CARs. CARs include 3 days, 5 days and 11 days cumulative abnormal returns and size and market to book ratio adjusted abnormal returns for the month of the announcement of related party transactions. Definitions of all independent variables are reported in Appendix A. P-values are displayed in italics.

Var	POSITIVE CAR DUMMY							
	CAR[-1,+1]		CAR[-2,+2]		CAR[-5,+5]		CAR [MONTH 0]	
EXCESS	-6.32***		-2.47*		-3.16**		-3.95**	
	<i>0.00</i>		<i>0.10</i>		<i>0.04</i>		<i>0.02</i>	
SDUMMY		-0.92**		0.22		-0.20		-0.37
		<i>0.04</i>		<i>0.59</i>		<i>0.64</i>		<i>0.39</i>
REFORM	-1.04***	-0.81	-0.01	0.30	-0.78	-0.78	0.84*	1.27**
	<i>0.01</i>	<i>0.17</i>	<i>0.97</i>	<i>0.59</i>	<i>0.07</i>	<i>0.19</i>	<i>0.08</i>	<i>0.04</i>
EXCESS*REFORM	6.77***		1.65**		2.05**		8.03***	
	<i>0.00</i>		<i>0.04</i>		<i>0.03</i>		<i>0.00</i>	
SDUMMY*REFORM		0.70*		-0.06		0.34		0.57
		<i>0.10</i>		<i>0.91</i>		<i>0.52</i>		<i>0.29</i>
CASHFLOW	0.31	0.46	0.54	0.96*	-0.07	0.33	-0.80	-0.95
	<i>0.60</i>	<i>0.42</i>	<i>0.35</i>	<i>0.08</i>	<i>0.91</i>	<i>0.55</i>	<i>0.21</i>	<i>0.12</i>
SIZE	-0.20**	-0.16*	-0.12	-0.09	-0.04	-0.01	-0.34***	-0.32***
	<i>0.04</i>	<i>0.07</i>	<i>0.20</i>	<i>0.34</i>	<i>0.65</i>	<i>0.93</i>	<i>0.00</i>	<i>0.00</i>
ROA	-0.05	-0.08	1.91	1.88	1.68	1.59	0.28	0.32
	<i>0.97</i>	<i>0.96</i>	<i>0.19</i>	<i>0.19</i>	<i>0.25</i>	<i>0.27</i>	<i>0.86</i>	<i>0.84</i>
GROW	-0.07	-0.09	-0.05	-0.06	-0.07	-0.09	-0.03	-0.03
	<i>0.37</i>	<i>0.23</i>	<i>0.36</i>	<i>0.33</i>	<i>0.32</i>	<i>0.24</i>	<i>0.41</i>	<i>0.32</i>
MANAGER	5.39*	4.64	-2.09	-1.90	-3.01	-2.79	8.64**	7.85**
	<i>0.09</i>	<i>0.15</i>	<i>0.42</i>	<i>0.47</i>	<i>0.26</i>	<i>0.30</i>	<i>0.03</i>	<i>0.04</i>
BOARDSIZE	-0.03	-0.03	-0.02	-0.02	-0.02	-0.01	0.00	-0.01
	<i>0.54</i>	<i>0.51</i>	<i>0.59</i>	<i>0.61</i>	<i>0.71</i>	<i>0.72</i>	<i>0.96</i>	<i>0.85</i>
BOARDIN	-1.55	-1.52	0.44	0.40	-0.79	-0.86	-1.77	-1.90
	<i>0.23</i>	<i>0.24</i>	<i>0.73</i>	<i>0.75</i>	<i>0.53</i>	<i>0.50</i>	<i>0.21</i>	<i>0.17</i>
_cons	-2.01	-1.25	-2.37	-2.31	1.34	1.78	5.18**	4.83**
	<i>0.35</i>	<i>0.56</i>	<i>0.26</i>	<i>0.27</i>	<i>0.53</i>	<i>0.41</i>	<i>0.03</i>	<i>0.04</i>
Industry	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	770	770	770	770	770	770	770	770
Pseudo R2	0.05	0.04	0.03	0.02	0.05	0.04	0.17	0.16

\*, \*\*, and \*\*\* indicate significance at the 10%, 5%, and 1% levels, respectively.

Table 9 also shows that controlling shareholders' excess control rights have a statistically significantly negative impact on CAR, indicating that the market responded negatively when firms whose controlling shareholder has excess control rights announce an RPT with their controlling shareholders. Moreover, since the coefficients of interactive variables of excess control rights and NTS reform are consistently positive and statistically significant, we can conclude that investors in firms with excess control rights valued the related party transactions more after NTS reform.

Overall, our hypothesis H4 is also supported by our empirical results in Tables 8 and 9.

**Table 9**

The effect of excess control right and NTS reform on market reaction around the announcement of related party transactions. This Table presents the results of regressions on the effect of excess control rights and NTS reform on market reaction around the announcement of related party transactions. The dependent variables are market reaction (CARs) around the announcement of related party transactions with controlling shareholders (3 days, 5 days 11 days market adjusted cumulative abnormal returns and cumulative abnormal returns for the month of the announcement of related party transactions). Definitions of all independent variables are reported in Appendix A. P-values are displayed in italics.

Var	CARs							
	CAR[-1,+1]		CAR[-2,+2]		CAR[-5,+5]		CAR [MONTH 0]	
EXCESS	-0.55***		-0.29***		-0.13***		-1.19***	
	<i>0.00</i>		<i>0.00</i>		<i>0.00</i>		<i>0.00</i>	
SDUMMY		-0.08***		-0.03**		-0.02		-0.10
		<i>0.00</i>		<i>0.05</i>		<i>0.11</i>		<i>0.19</i>
REFORM	-0.07***	-0.07***	-0.03*	-0.02	-0.02	-0.02	0.10	0.28***
	<i>0.00</i>	<i>0.01</i>	<i>0.08</i>	<i>0.42</i>	<i>0.13</i>	<i>0.19</i>	<i>0.21</i>	<i>0.01</i>
EXCESS*REFORM	0.53***		0.26***		0.11**		1.76***	
	<i>0.00</i>		<i>0.00</i>		<i>0.03</i>		<i>0.00</i>	
SDUMMY*REFORM		0.08***		0.03*		0.02		0.05
		<i>0.00</i>		<i>0.10</i>		<i>0.13</i>		<i>0.60</i>
CASHFLOW	0.02	0.05**	0.02	0.04*	0.01	0.02	0.23**	0.25**
	<i>0.35</i>	<i>0.05</i>	<i>0.40</i>	<i>0.06</i>	<i>0.69</i>	<i>0.25</i>	<i>0.03</i>	<i>0.02</i>
SIZE	0.00	0.00	0.00	-0.01**	0.00	0.00	-0.06***	-0.06***
	<i>0.37</i>	<i>0.98</i>	<i>0.25</i>	<i>0.05</i>	<i>0.65</i>	<i>0.33</i>	<i>0.00</i>	<i>0.00</i>
ROA	0.06	0.05	0.05	0.05	0.04	0.04	0.02	0.04
	<i>0.37</i>	<i>0.46</i>	<i>0.27</i>	<i>0.32</i>	<i>0.26</i>	<i>0.30</i>	<i>0.95</i>	<i>0.89</i>
GROW	0.00	0.00*	0.00	0.00	0.00	0.00	-0.00	-0.00
	<i>0.17</i>	<i>0.09</i>	<i>0.29</i>	<i>0.21</i>	<i>0.25</i>	<i>0.23</i>	<i>0.91</i>	<i>0.57</i>
MANAGER	0.14	0.10	-0.08	-0.10	-0.07	-0.06	1.30***	1.01**
	<i>0.26</i>	<i>0.41</i>	<i>0.36</i>	<i>0.31</i>	<i>0.33</i>	<i>0.35</i>	<i>0.01</i>	<i>0.05</i>
BOARDSIZE	0.00	0.00	0.00	0.00	0.00	0.00	-0.00	-0.00
	<i>0.99</i>	<i>0.93</i>	<i>0.72</i>	<i>0.75</i>	<i>0.96</i>	<i>0.96</i>	<i>0.74</i>	<i>0.63</i>
BOARDIN	0.03	0.03	0.08	0.07*	0.05	0.05	-0.24	-0.23
	<i>0.59</i>	<i>0.64</i>	<i>0.08</i>	<i>0.10</i>	<i>0.13</i>	<i>0.15</i>	<i>0.32</i>	<i>0.35</i>
_cons	-0.03	0.04	0.15	0.18*	0.08	0.10	1.10**	1.03*
	<i>0.81</i>	<i>0.75</i>	<i>0.13</i>	<i>0.07</i>	<i>0.29</i>	<i>0.18</i>	<i>0.04</i>	<i>0.06</i>
Industry	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	770	770	770	770	770	770	770	770
R2	0.09	0.03	0.05	0.02	0.02	0.02	0.19	0.17

\*, \*\*, and \*\*\* indicate significance at the 10%, 5%, and 1% levels, respectively.

#### 4.5 Factors influencing the relationship between excess control rights, NTS reform and firms' leverage policy

In this subsection we investigate the factors that influence the relationship between excess control rights, NTS reform, and firms' leverage policy. We aim to shed light on the situation where the relationship between excess control rights, NTS reform, and firms' leverage policy is strengthened or weakened in firms that have or have not taken part in RPTs, and firms with high or low bank monitoring.

##### 4.5.1 Participation of related party transactions

We use the market reaction around the announcement of RPTs as a proxy for tunneling. This may cause a an issue with self selection because firms can choose to announce RPTs, so we investigate whether the effect of excess control rights and NTS reform on excess leverage is strengthened or weakened in firms with and without participating RPTs. To address this issue we divided our sample into two sub-samples where a firm has or has not taken part in RPTs, and then conduct our regression equation (2) using the two separate sub-samples. We believe that the negative effect of excess control rights and NTS reform on leverage should be weak in firms without any RPT because this means that controlling shareholders would not tunnel. The empirical results are presented in Table 10.

This table shows that the interactive terms of excess control rights and NTS reform are significantly negatively associated with excess leverage of firms with RPT, but there is no significantly negatively relationship in the subsample of firms without RPT. Our findings in this table confirm our conjecture that any decrease of excess leverage after NTS reform only exists in firms that have RPTs.

**Table 10**

The effect of excess control and NTS reform on excess leverage of firms with and without related party transactions. This Table presents the regression results on the effect of excess control rights and NTS reform on excess leverage of firms that have taken part in related party transactions and firms that never have taken part in related party transactions. The dependent variables are EX\_BLEV and EX\_MLEV. Columns 1 to 4 (RPT=1) present the results of firms that have taken part in related party transactions; Columns 5 to 8 (RPT=0) present the results of firms that never have taken part in related party transactions. Definitions of all independent variables are reported in Appendix A. P-values are displayed in italics.

Var	RPT=1				RPT=0			
	EX_LEV		EX_MLEV		EX_LEV		EX_MLEV	
EXCESS	0.19***		0.10**		0.50***		0.28***	
	<i>0.01</i>		<i>0.05</i>		<i>0.00</i>		<i>0.00</i>	
SDUMMY		0.05***		0.02*		0.01		0.01
		<i>0.01</i>		<i>0.09</i>		<i>0.63</i>		<i>0.46</i>
REFORM	0.03	0.04	0.03*	0.05**	-0.03	-0.05	-0.01	-0.02
	<i>0.18</i>	<i>0.16</i>	<i>0.06</i>	<i>0.02</i>	<i>0.32</i>	<i>0.28</i>	<i>0.73</i>	<i>0.45</i>
EXCESS*REFORM	-0.08**		-0.06**		-0.02		-0.16	
	<i>0.04</i>		<i>0.04</i>		<i>0.89</i>		<i>0.18</i>	
SDUMMY*REFORM		-0.02		-0.03		0.01		-0.00
		<i>0.36</i>		<i>0.13</i>		<i>0.85</i>		<i>0.90</i>
CASHFLOW	0.02	0.00	-0.07***	-0.08***	0.12	0.00	0.01	-0.03
	<i>0.54</i>	<i>0.91</i>	<i>0.00</i>	<i>0.00</i>	<i>0.06</i>	<i>0.96</i>	<i>0.76</i>	<i>0.55</i>
TANG	0.08***	0.09***	0.02	0.03	0.04	0.05	0.14***	0.14***
	<i>0.00</i>	<i>0.00</i>	<i>0.21</i>	<i>0.15</i>	<i>0.38</i>	<i>0.23</i>	<i>0.00</i>	<i>0.00</i>
SIZE	0.06***	0.07***	0.08***	0.08***	0.07***	0.07***	0.08***	0.08***
	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>
ROA	-1.10***	-1.09***	-1.23***	-1.23***	-0.67***	-0.71***	-0.63***	-0.64***
	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>
GROW	0.00	0.00	0.00	0.00	0.00	0.00*	0.00**	0.00**

	0.53	0.66	0.80	0.92	0.12	0.09	0.04	0.04
TAX	-0.42	-0.40	-0.59**	-0.57**	-0.79	-0.85	-1.20***	-1.19***
	0.27	0.28	0.04	0.05	0.21	0.19	0.01	0.01
MANAGER	0.04	0.04	0.04	0.03	0.24	0.09	0.20	0.17
	0.71	0.73	0.59	0.73	0.41	0.76	0.34	0.41
BOARDSIZE	0.01***	0.01***	0.00**	0.00**	0.00	0.00	0.00	-0.00
	0.00	0.00	0.04	0.05	0.28	0.38	0.91	0.92
BOARDIN	-0.04	-0.05	0.05	0.05	-0.04	-0.05	0.02	0.01
	0.53	0.49	0.36	0.38	0.74	0.73	0.82	0.92
_cons	-1.10***	-1.22***	-1.34***	-1.55***	-1.46***	-1.34***	-1.58***	-1.54***
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Industry	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	1357	1357	1357	1357	440	440	440	440
R2	0.28	0.28	0.59	0.59	0.28	0.23	0.52	0.50

\*, \*\*, and \*\*\* indicate significance at the 10%, 5%, and 1% levels, respectively.

#### 4.5.2 Strength of bank monitoring

Previous studies indicate that bank monitoring also plays an important role in controlling shareholders' tunneling activities, especially in firms with high excess control rights (Lin et al., 2011b; Lin et al., 2012). Moreover these studies indicate that China's banking system is still dominated by state owned banks (Firth et al., 2008), who primarily issue loans to state owned enterprises (SOEs), and still discriminate against non-SOEs (Li et al., 2009; Firth et al., 2009). Given the weak overall credit protection and discrimination against non-SOEs by state-owned banks in China, we expect state owned banks to have a strong incentive to monitor the tunneling activities of non-SOEs. The strength of bank monitoring may impact on our results because tunneling in firms with strong monitoring should be less prevalent than in firms where monitoring is weak. Thus, we expect that the decrease of excess leverage of firms with excess control rights caused by the reform should be more pronounced in firms with weak bank monitoring.

This study adopts two proxies for the strength of bank monitoring. First, previous literature indicates that private Chinese firms need to build political connections to obtain resources from bureaucrats due to intense governmental intervention (Chen et al., 2011; Chen et al., 2011), while private firms with political connections receive special treatment from banks which results in a lower level of bank monitoring (Firth et al., 2008; Firth et al., 2009). We therefore use political connections as one proxy for the inversed strength of monitoring. In addition, as banks can exercise their monitoring power more effectively through short term debt than long term debt (Jensen, 1986; DeAngelo et al., 2002), we expect that firms with higher levels of short term bank loans would be monitored more extensively, so we also use firms with a higher level of short term bank loans as another proxy, to provide robust evidence. Definitions for the classification variables are shown in Appendix A.

The results of excess control rights and NTS reform on firms' leverage policy and firms with different degrees of monitoring are presented in Table 11, where panel A presents the results of using political connections as a proxy for monitoring, while panel B presents the results using the level of short term loans.

Panel A shows that the interactive terms of excess control rights and NTS reform only has a consistently negative and statistically significantly effect on the leverage policy of firms with political connections, whereas the statistically significantly negatively relationship between excess control rights, NTS reform, and leverage policy is only found in firms with lower levels of short term loans in panel B. Therefore, our findings in Table 11 show that the decrease in leverage of firms with high excess control rights is more pronounced in those with a lower level of monitoring.

**Table 11**



The effect of excess control and NTS reform on excess leverage of firms with different bank monitoring.

Panel A Firms with and without political connections. This panel presents the regression results on the effect of excess control rights and NTS reform on excess leverage of firms with and without political connections, which is a proxy for the strength of bank monitoring. The dependent variables are EX\_BLEV and EX\_MLEV. Columns 1 to 4 (PC=1) present the results of firms with political connections; Columns 5 to 8 (PC=0) present the results of firms without political connections. Definitions of all independent variables are reported in Appendix A. P-values are displayed in italics.

Var	PC=1				PC=0			
	EX_BLEV	EX_BLEV	EX_MLEV	EX_MLEV	EX_BLEV	EX_BLEV	EX_MLEV	EX_MLEV
EXCESS	0.55***		0.29***		0.12		0.09	
	<i>0.00</i>		<i>0.00</i>		<i>0.12</i>		<i>0.11</i>	
SDUMMY		0.06**		0.02		0.03*		0.03**
		<i>0.05</i>		<i>0.43</i>		<i>0.10</i>		<i>0.03</i>
REFORM	0.02	0.00	0.02	0.03	0.00	0.01	0.02	0.03*
	<i>0.61</i>	<i>1.00</i>	<i>0.47</i>	<i>0.50</i>	<i>0.92</i>	<i>0.72</i>	<i>0.20</i>	<i>0.08</i>
EXCESS*REFORM	-0.22*		-0.26**		0.08		0.05	
	<i>0.10</i>		<i>0.02</i>		<i>0.42</i>		<i>0.47</i>	
SDUMMY*REFORM		-0.01		-0.04*		0.00		-0.01
		<i>0.75</i>		<i>0.07</i>		<i>0.94</i>		<i>0.54</i>
CASHFLOW	0.03	-0.05	-0.12***	-0.16***	0.04	0.02	-0.02	-0.04
	<i>0.62</i>	<i>0.37</i>	<i>0.00</i>	<i>0.00</i>	<i>0.23</i>	<i>0.51</i>	<i>0.38</i>	<i>0.14</i>
TANG	0.07*	0.08**	0.01	0.01	0.05**	0.05**	0.02	0.01
	<i>0.07</i>	<i>0.04</i>	<i>0.79</i>	<i>0.84</i>	<i>0.05</i>	<i>0.05</i>	<i>0.41</i>	<i>0.45</i>
SIZE	0.06***	0.06***	0.08***	0.08***	0.07***	0.08***	0.08***	0.08***
	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>
ROA	-0.90***	-0.92***	-0.84***	-0.86***	-0.93***	-0.93***	-1.05***	-1.05***
	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>
GROW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	<i>0.33</i>	<i>0.66</i>	<i>0.69</i>	<i>0.94</i>	<i>0.25</i>	<i>0.23</i>	<i>0.27</i>	<i>0.25</i>
TAX	-0.12	-0.24	-0.66	-0.74*	-1.04***	-0.95**	-1.07***	-0.99***
	<i>0.83</i>	<i>0.66</i>	<i>0.12</i>	<i>0.08</i>	<i>0.01</i>	<i>0.02</i>	<i>0.00</i>	<i>0.00</i>
MANAGER	-0.20	-0.25	-0.00	-0.03	0.24**	0.24**	0.13	0.12
	<i>0.27</i>	<i>0.18</i>	<i>0.98</i>	<i>0.86</i>	<i>0.05</i>	<i>0.05</i>	<i>0.16</i>	<i>0.19</i>
BOARDSIZE	-0.00	-0.00	-0.00	-0.00	0.01***	0.01***	0.00**	0.00**
	<i>0.98</i>	<i>0.68</i>	<i>0.76</i>	<i>0.53</i>	<i>0.00</i>	<i>0.00</i>	<i>0.03</i>	<i>0.04</i>
BOARDIN	0.16	0.18	0.12	0.11	-0.19***	-0.20***	-0.01	-0.02
	<i>0.14</i>	<i>0.11</i>	<i>0.17</i>	<i>0.20</i>	<i>0.01</i>	<i>0.01</i>	<i>0.88</i>	<i>0.78</i>
_cons	-1.22***	-1.19***	-1.68***	-1.50***	-1.63***	-1.67***	-1.75***	-1.78***
	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>
Industry	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	625	625	625	625	1172	1172	1172	1172
R2	0.27	0.24	0.56	0.55	0.29	0.28	0.56	0.56

\*, \*\*, and \*\*\* indicate significance at the 10%, 5%, and 1% levels, respectively.

Panel B Firms with low and high level of short-term bank loans. This panel presents the regression results on the effect of excess control rights and NTS reform on excess leverage of firms high and low level of short-term bank loans, which is another proxy for the strength of bank monitoring. The dependent variables are EX\_BLEV and EX\_MLEV. Columns 1 to 4 (HSTB=1) present the results of firms higher level of short-term bank loans; Columns 5 to 8 (HSTB=0) present the results of firms with lower level of short-term bank loans. Definitions of all independent variables are reported in Appendix A. P-values are displayed in italics.

Var	HSTB=0				HSTB=1			
	EX_LEV		EX_MLEV		EX_LEV		EX_MLEV	
EXCESS	0.37***		0.23***		0.22***		0.13**	
	<i>0.00</i>		<i>0.00</i>		<i>0.01</i>		<i>0.04</i>	
SDUMMY		0.01		0.02		0.06***		0.03*
		<i>0.60</i>		<i>0.18</i>		<i>0.00</i>		<i>0.06</i>
REFORM	0.02	-0.00	0.05**	0.05**	-0.01	0.00	-0.01	0.00
	<i>0.49</i>	<i>0.90</i>	<i>0.02</i>	<i>0.04</i>	<i>0.56</i>	<i>0.93</i>	<i>0.77</i>	<i>0.95</i>
EXCESS*REFORM	-0.13**		-0.20**		0.04		0.03	
	<i>0.03</i>		<i>0.02</i>		<i>0.73</i>		<i>0.69</i>	
SDUMMY*REFORM		0.01		-0.03*		-0.02		-0.01
		<i>0.74</i>		<i>0.10</i>		<i>0.49</i>		<i>0.78</i>
CASHFLOW	0.05	-0.01	-0.07**	-0.09***	0.02	-0.00	-0.04	-0.06**
	<i>0.26</i>	<i>0.87</i>	<i>0.02</i>	<i>0.00</i>	<i>0.56</i>	<i>0.93</i>	<i>0.19</i>	<i>0.05</i>
TANG	0.00	0.01	0.03	0.02	0.12***	0.13***	0.01	0.00
	<i>0.97</i>	<i>0.87</i>	<i>0.23</i>	<i>0.28</i>	<i>0.00</i>	<i>0.00</i>	<i>0.73</i>	<i>0.93</i>
SIZE	0.08***	0.08***	0.08***	0.08***	0.06***	0.06***	0.08***	0.09***
	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>
ROA	-1.00***	-1.03***	-1.06***	-1.07***	-0.80***	-0.80***	-0.88***	-0.88***
	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>
GROW	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00
	<i>0.18</i>	<i>0.14</i>	<i>0.19</i>	<i>0.14</i>	<i>0.30</i>	<i>0.43</i>	<i>0.69</i>	<i>0.82</i>
TAX	-0.83*	-0.83*	-0.70	-0.74**	-0.69	-0.58	-1.25***	-1.19***
	<i>0.10</i>	<i>0.10</i>	<i>0.06</i>	<i>0.05</i>	<i>0.08</i>	<i>0.15</i>	<i>0.00</i>	<i>0.00</i>
MANAGER	0.32**	0.29**	0.11	0.09	-0.17	-0.16	0.06	0.06
	<i>0.03</i>	<i>0.05</i>	<i>0.30</i>	<i>0.38</i>	<i>0.25</i>	<i>0.27</i>	<i>0.63</i>	<i>0.62</i>
BOARDSIZE	0.01**	0.00	0.00	0.00	0.00*	0.00*	0.00	0.00
	<i>0.04</i>	<i>0.11</i>	<i>0.37</i>	<i>0.50</i>	<i>0.09</i>	<i>0.08</i>	<i>0.59</i>	<i>0.58</i>
BOARDIN	0.12	0.09	0.12*	0.11*	-0.25***	-0.25***	-0.04	-0.04
	<i>0.17</i>	<i>0.30</i>	<i>0.06</i>	<i>0.08</i>	<i>0.00</i>	<i>0.01</i>	<i>0.55</i>	<i>0.60</i>
_cons	-1.65***	-1.60***	-1.55***	-1.53***	-0.95***	-1.04***	-1.69***	-1.75***
	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>
Industry	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	897	897	897	897	900	900	900	900
R2	0.28	0.26	0.56	0.56	0.28	0.28	0.55	0.55

\*, \*\*, and \*\*\* indicate significance at the 10%, 5%, and 1% levels, respectively.

Overall, our results in Table 10 and Table 11 suggest that the decrease of excess leverage in firms with excess control rights are more pronounced in firms associated with more tunneling from controlling shareholders, that is, firms that participate in related party transactions and firms with lower levels of monitoring. Our findings are also consistent with our expectations, indicating the robustness of our results in subsection 4.4.

#### 4.6 Additional tests

##### 4.6.1 The effect of excess control rights and NTS reform on firm performance

To provide some additional evidence for our results, we conduct a new series of regressions that directly linked excess control rights and NTS reform to firm performance<sup>13</sup>. Using exogenous shock with NTS reform, we examined the effect that the controlling shareholder has on a firm's performance without an endogeneity bias. The results are presented in Table 12. Panel A shows the interactive effect of excess control rights and NTS reform on firm performance, while panel B presents the effect of prior reforms' excess control rights on changes in firms performance caused by these reforms (post-NTS reform performance minus pre-NTS reform performance).

As expected panel A shows that excess control rights have a negative impact on firm performance but the interactive terms between excess control rights and NTS reform have a positive impact. This indicates that the performance of firms with more excess control rights improves significantly after NTS reform. Similarly, panel B shows that firms with more excess control rights before NTS reform are also associated with better performance. This is also consistent with our expectations.

**Table 12**

Excess control right, NTS reform and firm performance

Panel A The effect of excess control right and NTS reform on firm performance. This panel presents the regression results on the effect of excess control right and NTS reform on firm performance. The dependent variables are measure of firm performance. Definitions of all independent variables are reported in Appendix A. P-values are displayed in italics.

Var	PERFORMANCE							
	Q		SR		ROA		ROE	
EXCESS	-1.63***		0.00		-0.05*		-0.91***	
	<i>0.00</i>		<i>1.00</i>		<i>0.06</i>		<i>0.00</i>	
SDUMMY		-0.61***		0.02		-0.01**		-0.05
		<i>0.00</i>		<i>0.83</i>		<i>0.04</i>		<i>0.33</i>
REFORM	-0.07	-0.25	-0.23**	-0.38***	0.01*	0.01	0.02	0.07
	<i>0.65</i>	<i>0.16</i>	<i>0.02</i>	<i>0.00</i>	<i>0.09</i>	<i>0.21</i>	<i>0.78</i>	<i>0.35</i>
EXCESS*REFORM	1.36**		0.19		0.06*		0.88***	
	<i>0.03</i>		<i>0.63</i>		<i>0.06</i>		<i>0.00</i>	
SDUMMY*REFORM		0.38***		0.21**		0.01		0.05
		<i>0.01</i>		<i>0.04</i>		<i>0.32</i>		<i>0.38</i>
CASHFLOW	0.07	0.00	0.17	0.22	0.04***	0.04***	0.05	0.15*
	<i>0.77</i>	<i>0.99</i>	<i>0.26</i>	<i>0.12</i>	<i>0.00</i>	<i>0.00</i>	<i>0.55</i>	<i>0.08</i>
SIZE	-0.37***	-0.37***	0.05**	0.05**	0.01***	0.01***	0.05***	0.04***
	<i>0.00</i>	<i>0.00</i>	<i>0.03</i>	<i>0.02</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>
GROW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	<i>0.94</i>	<i>0.79</i>	<i>0.39</i>	<i>0.38</i>	<i>0.20</i>	<i>0.17</i>	<i>0.89</i>	<i>0.73</i>
MANAGER	0.10	-0.05	-0.29	-0.05	0.10**	0.09**	0.13	0.13
	<i>0.90</i>	<i>0.95</i>	<i>0.59</i>	<i>0.92</i>	<i>0.02</i>	<i>0.03</i>	<i>0.68</i>	<i>0.70</i>
BOARDSIZE	-0.01	-0.00	0.02*	0.02*	0.00	0.00	0.00	0.00
	<i>0.62</i>	<i>0.75</i>	<i>0.06</i>	<i>0.07</i>	<i>0.32</i>	<i>0.27</i>	<i>0.96</i>	<i>0.80</i>
BOARDIN	1.35***	1.38***	0.04	0.06	0.03	0.03	-0.07	-0.04
	<i>0.01</i>	<i>0.00</i>	<i>0.89</i>	<i>0.84</i>	<i>0.17</i>	<i>0.16</i>	<i>0.73</i>	<i>0.85</i>
_cons	9.82***	8.85***	-0.75	-1.24***	-0.23***	-0.21***	-1.25***	-1.13***
	<i>0.00</i>	<i>0.00</i>	<i>0.15</i>	<i>0.01</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>
Industry	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	1797	1797	1797	1797	1797	1797	1797	1797

<sup>13</sup> Following previous studies, this study uses Tobin's Q and yearly based market adjusted share return as proxies for market performance, and ROA, ROE as proxies for accounting performance, to ensure the robustness of our results.

R2	0.22	0.23	0.59	0.59	0.08	0.08	0.02	0.03
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\*, \*\*, and \*\*\* indicate significance at the 10%, 5%, and 1% levels, respectively.

Panel B The effect of excess control rights (before NTS reform) on performance change. This panel presents the regression results on the effect of excess control rights on change in firm performance after the NTS reform. The dependent variables are change of performance measures, which is defined as the average post-NTS reform firm performance minus the average pre-NTS firm performance. Definitions of variables are reported in Appendix A. Please note the number of observations reduce from 2215 to 314 because one specific firm just have one change observation. P-values are displayed in italics.

Var	Δ Performance							
	Δ Q		Δ SR		Δ ROA		Δ ROE	
EXCESS	1.79*		0.90*		0.11***		0.79***	
	<i>0.07</i>		<i>0.08</i>		<i>0.00</i>		<i>0.00</i>	
SDUMMY		0.49**		0.06		0.01		0.03
		<i>0.05</i>		<i>0.67</i>		<i>0.16</i>		<i>0.62</i>
CASHFLOW	0.66	0.55	-0.31	-0.50	0.03	0.01	0.15	-0.02
	<i>0.29</i>	<i>0.37</i>	<i>0.34</i>	<i>0.12</i>	<i>0.29</i>	<i>0.73</i>	<i>0.40</i>	<i>0.91</i>
SIZE	-0.39***	-0.37***	-0.03	-0.02	0.00	0.00	-0.03	-0.03
	<i>0.00</i>	<i>0.00</i>	<i>0.60</i>	<i>0.72</i>	<i>0.60</i>	<i>0.44</i>	<i>0.23</i>	<i>0.37</i>
GROW	-0.15	-0.15	-0.00	0.00	-0.01	-0.01	-0.03	-0.02
	<i>0.12</i>	<i>0.13</i>	<i>1.00</i>	<i>0.97</i>	<i>0.15</i>	<i>0.18</i>	<i>0.35</i>	<i>0.40</i>
MANAGER	-15.72	-29.49	-13.33	-9.75	4.44	4.50	38.89	42.80
	<i>0.93</i>	<i>0.87</i>	<i>0.89</i>	<i>0.92</i>	<i>0.52</i>	<i>0.52</i>	<i>0.43</i>	<i>0.39</i>
BOARDSIZE	-0.01	-0.01	-0.01	-0.01	0.00	0.00	-0.02	-0.02
	<i>0.91</i>	<i>0.88</i>	<i>0.75</i>	<i>0.73</i>	<i>0.46</i>	<i>0.49</i>	<i>0.23</i>	<i>0.21</i>
BOARDIN	-0.50	-0.69	0.61	0.49	-0.04	-0.05	-0.08	-0.19
	<i>0.77</i>	<i>0.69</i>	<i>0.50</i>	<i>0.59</i>	<i>0.58</i>	<i>0.45</i>	<i>0.87</i>	<i>0.70</i>
_cons	8.60***	8.41***	-0.20	-0.12	-0.09	-0.08	0.56	0.65
	<i>0.00</i>	<i>0.00</i>	<i>0.88</i>	<i>0.93</i>	<i>0.38</i>	<i>0.41</i>	<i>0.42</i>	<i>0.36</i>
Industry	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	314	314	314	314	314	314	314	314
R2	0.07	0.07	0.06	0.05	0.07	0.05	0.05	0.02

\*, \*\*, and \*\*\* indicate significance at the 10%, 5%, and 1% levels, respectively.

#### 4.6.2 The effect of excess control rights and flotation on leverage policy and controlling shareholders' tunneling

In this subsection we conduct a new regression that considers the interaction between excess control rights and flotation on excess leverage and controlling shareholder's tunneling. The results are reported Table 13.

From this table we find that the interactive terms between excess control rights and full flotation only have an insignificant effect on excess leverage, which indicates that NTS reform has more influence on a firm's leverage policy than the following full flotation of those vested shares. This is a reasonable result because controlling shareholders may expect that their shares would gradually be tradable after the NTS reform has been finalized, so they adjusted the firm's leverage policy immediately afterwards. We also find from columns 5 to 6 of Table 13 that the interaction between excess control rights and full flotation on controlling shareholder's tunneling is insignificant.

Our results show that controlling shareholders of firms with excess control rights reduce their tunneling activities and value-destroying leverage policies immediately after the NTS reform and these effects have continued since the lock-up period expired and NTS became fully tradable.

**Table 13**

The effect of excess control and full flotation on excess leverage and tunneling. This Table presents the regression results on the effect of excess control rights and flotation on firms' excess leverage. Definitions of variables are reported in Appendix

A. Please note the number of observations is 1475 because we exclude the observations before the NTS reform. P-values are displayed in italics.

Var	EX_BLEV		EX_MLEV		ORECTA	
EXCESS	0.26***		0.12***		0.06***	
	<i>0.00</i>		<i>0.01</i>		<i>0.00</i>	
SDUMMY		0.03***		0.01		0.01***
		<i>0.01</i>		<i>0.50</i>		<i>0.00</i>
REFORM	0.00	0.00	-0.03***	-0.03**	-0.00	-0.01
	<i>0.88</i>	<i>0.81</i>	<i>0.01</i>	<i>0.04</i>	<i>0.22</i>	<i>0.19</i>
EXCESS*FLOTATION	-0.05		0.01		-0.05	
	<i>0.62</i>		<i>0.94</i>		<i>0.15</i>	
SDUMMY*FLOTATION		-0.01		0.01		-0.00
		<i>0.56</i>		<i>0.67</i>		<i>0.54</i>
CASHFLOW	0.11***	0.07***	0.03	0.01	-0.01	-0.02**
	<i>0.00</i>	<i>0.01</i>	<i>0.31</i>	<i>0.82</i>	<i>0.12</i>	<i>0.03</i>
TANG	0.08***	0.08***	-0.01	-0.01	-0.04***	-0.04***
	<i>0.00</i>	<i>0.00</i>	<i>0.57</i>	<i>0.51</i>	<i>0.00</i>	<i>0.00</i>
SIZE	0.06***	0.06***	0.06***	0.06***	-0.00	-0.00
	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.15</i>	<i>0.34</i>
ROA	-1.03***	-1.03***	-0.83***	-0.83***	-0.08***	-0.08***
	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>
GROW	0.00	0.00	0.00	0.00	-0.00	-0.00
	<i>0.21</i>	<i>0.22</i>	<i>0.29</i>	<i>0.31</i>	<i>0.57</i>	<i>0.58</i>
TAX	-0.20	-0.13	-1.19***	-1.15***	-0.15*	-0.14
	<i>0.54</i>	<i>0.71</i>	<i>0.00</i>	<i>0.00</i>	<i>0.08</i>	<i>0.11</i>
MANAGER	0.00	-0.01	0.00	-0.02	-0.03	-0.03
	<i>0.98</i>	<i>0.91</i>	<i>1.00</i>	<i>0.85</i>	<i>0.23</i>	<i>0.22</i>
BOARDSIZE	0.01***	0.01***	0.00**	0.00**	-0.00***	-0.00***
	<i>0.00</i>	<i>0.00</i>	<i>0.02</i>	<i>0.02</i>	<i>0.01</i>	<i>0.01</i>
BOARDIN	-0.13**	-0.14**	-0.05	-0.05	0.03*	0.03*
	<i>0.02</i>	<i>0.02</i>	<i>0.33</i>	<i>0.29</i>	<i>0.06</i>	<i>0.07</i>
_cons	-1.14***	-1.20***	-1.20***	-1.22***	0.08***	0.07***
	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>
Industry	Yes	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	1475	1475	1475	1475	1475	1475
R2	0.31	0.30	0.36	0.36	0.12	0.12

\*, \*\*, and \*\*\* indicate significance at the 10%, 5%, and 1% levels, respectively.

## 5. Conclusion

Conventional wisdom predicts that controlling shareholders should use less debt to avoid external monitoring from creditors when creditor protection is strong. This paper examines the effect of excess control rights on the leverage decisions of Chinese non-SOEs before and after the NTS reform. We find that firms with more excess control rights actually borrow more debt, and controlling shareholders in these firms use these resources to tunnel rather than invest in new NPV-positive projects. We have also shown that both excess leverage and tunneling by controlling

shareholders in firms with excess control rights decrease markedly shortly after NTS reform, even when the effect from market timing is controlled. Moreover, we provide evidence that the decrease in leverage policy and controlling shareholders' tunneling in firms with more excess control rights after NTS reform is expected and welcomed by minority shareholders. We further find that after NTS reform, the decrease of excess leverage in firms with excess control rights is more pronounced in firms associated with more tunneling from controlling shareholders, that is, firms participating in related party transactions and with weaker bank monitoring, and that the performance of firms with more excess control rights also improved more than firms with less excess control rights.

Overall, our findings provide direct evidence that in emerging markets, when legal protection for both creditors and shareholders is weak, the value-destroying excess leverage policy is directly caused by controlling shareholders' tunneling. More importantly, our findings document that this policy has reduced after NTS reform because the controlling shareholders' tunneling decreases. This also results in a better market reaction to its related party transactions, and better firm performance. Our results suggest that the privatization process (such as NTS reform in China) in a transition economy is important for the development of capital market, which also improves firm value.

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## Appendix A. Variable Definition

Variable names	Variable definitions
<i>Panel A. Dependent variables</i>	
EX_BLEV	Book value based leverage for each firm minus the industrial median of book leverage of our universe of Chinese listed firms in a specific year.
EX_MLEV	Market value based leverage for each firm minus the industrial median of market leverage of our universe of Chinese listed firms in a specific year.
Inter-corporate loans (ORECTA)	Total other receivables to total assets.
CAR [-1,+1]	Market adjusted cumulative abnormal return around the announcement of related party transaction from -1 to +1
CAR [-2, +2]	Market adjusted cumulative abnormal return around the announcement of related party transaction from -2 to +2
CAR [-5, +5]	Market adjusted cumulative abnormal return around the announcement of related party transaction from -5 to +5
CAR [MONTH 0]	Size and market to book ratio adjusted abnormal return for the month of the announcement of related party transactions.
Capital expenditure (CAPEXTA)	Total capital expenditure to total assets
Tobin's Q (Q)	Market value/replacement value
Share return (SR)	Yearly market adjusted share return
Return on assets (ROA)	Total pre-tax profits to total assets
Return on Equity (ROE)	Net profit to total equity
<i>Panel B. Main independent variables</i>	
Excess control right (EXCESS)	Cash flow rights subtracted from control rights
Separate dummy (SDUMMY)	A dummy variable that equals 1 if the control rights of the ultimate shareholders exceed the cash flow rights
After NTS reform dummy (REFORM)	A dummy variable that equals to 1 if the observation is in the post reform period, and 0 if the observation is in the prior reform period.

After flotation dummy (FLOTATION)	A dummy variable that equals to 1 for observations in flotation period, and 0 for observations in the post reform period.
<b>Panel C. Classification variables</b>	
RPT	A dummy variable that equals to 1 if the firm has related party transaction with controlling shareholders in any of the observation year, and 0 if firm never has related party transactions
Political connections (PC)	A dummy variable that equals to 1 if the CEO or chairman of the board is currently or was formerly an officer of the government or military or a deputy of the National/Provincial People's Congress or People's Political Consultative Conference and 0 otherwise.
HSTB	A dummy variable that equals to 1 if the firms' ratio of short-term bank loans to total bank loans is above the median, and 0 if it's below the median.
<b>Panel D. Other control variables</b>	
Change in MTB ( $\Delta$ MTB)	Average market to book value ratio after the NTS reform minus average market to book value ratio before the NTS reform
Change in share return ( $\Delta$ SR)	Average market adjusted share return after the NTS reform minus average market adjusted share return before the NTS reform
Cash flow rights (CASHFLOW)	Total cash flow rights of the ultimate controlling shareholder
Tangibility (TANG)	Total fixed assets to total assets
Size (SIZE)	Natural logarithm of total assets of the firm
Profitability (ROA)	Total pre-tax profits to total assets
Growth (GROW)	Percentage change of sales revenue
Effective tax rate (TAX)	Total tax paid to total assets
Managerial ownership (MANAGER)	shares held by managers to total shares outstanding
Board size (BOARDSIZE)	Number of board of directors
Board independence (BOARDIN)	Number of independent board of directors to total number of board of directors
Industry dummy (Industry)	Dummy variables that reflect the firm's industry, we adopt the industry classification provide by the China Securities Regulatory Commission (CSRC), according to previous studies such as Li et al. (2008)
Year dummy (Year)	Dummy variables that reflect the year,

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## References

- Alti, A., 2006. How Persistent is the impact of market timing on capital structure. *Journal of Finance* 61, 1681–1710.
- Antoniou, A., Guney Y., Paudyal K., 2008. The determinants of capital structure: capital market-oriented versus bank-oriented institutions. *Journal of Financial and Quantitative Analysis* 43, 59–92.
- Baker, M., Wurgler, J., 2002. Market timing and capital structure. *Journal of Finance* 57, 1–32.
- Beltratti, A., Bortolitti, B., Cassevaio, M., 2011. Fiat privatization: the non-tradable share reform and stock market fundamentals in China. SSRN Working paper.
- Booth, L., Aivazian, V., Demirg-Kunt, A., Maksimovic, V., 2001. Capital structure in developing countries. *Journal of Finance* 56, 87–130.
- Campello, M., Ribas, R.P., Wang, A., 2011. Is the stock market just a side show? evidence from a structural reform. SSRN Working paper.
- Chen, G., Firth, M., Xu, L., 2009. Does the type of ownership control matter? evidence from China's listed companies. *Journal of Banking and Finance* 33, 171–81.
- Chen, C.J.P., Li, Z., Sun, X., Sun, Z., 2010. Rent-seeking incentives, corporate political connections, and the control structure of private firms: Chinese evidence. *Journal of Corporate Finance* 17, 229–243.
- Chen, S., Sun, Z., Tang, S., Wu, D., 2010. Government intervention and investment efficiency: evidence from China. *Journal of Corporate Finance* 17, 259–271.
- Cheung, Y.L., Rau, P.R., Stouraitis, A., 2006. Tunnelling, propping and expropriation: evidence from connected party transactions in Hong Kong. *Journal of Financial Economics* 82, 343–386.

- Claessens, S., Djankov S., Lang H.P., 2000. The separation of ownership and control in east Asian corporation. *Journal of Financial Economics* 58, 81–112.
- Claessens, S., Djankov, S. Fan, J.P.H., Lang, H. P., 2002. Disentangling the incentive and entrenchment effects of large shareholdings. *Journal of Finance* 57, 2741–2771.
- DeAngelo, H., DeAngelo, L., Wruck, K., 2002. Asset liquidity, debt covenants, and managerial discretion in financial distress: the collapse of L.A. gear. *Journal of Financial Economics* 64, 3–34.
- Faccio, M., Lang, H.P., 2002. The ultimate ownership of western European corporations. *Journal of Financial Economics* 65, 365–395.
- Faccio, M., Lang, H. P., Young, L., 2010. Pyramiding vs leverage in corporate groups: international evidence. *Journal of International Business Studies* 41, 88–104.
- Fan, J., Wong, T.J., 2002. Corporate ownership structure and the informativeness of accounting earnings in east Asia. *Journal of Accounting and Economics* 33, 401–425.
- Fan, J., Wei, K. C. J., Xu, X., 2011. Corporate finance and governance in emerging markets: a selective and an agenda for future research. *Journal of Corporate Finance* 17, 207–214.
- Firth, M., Lin, C., Liu, P., Wong, S., 2009. Inside the black box: bank credit allocation in China's private sector. *Journal of Banking and Finance* 33, 1144–1155.
- Firth, M., Lin, C., Wong, S., 2008. Leverage and investment under a state-owned bank lending environment: evidence from China. *Journal of Corporate Finance* 14, 642–653.
- Firth, M., Lin, C., Zou, H., 2010. Friend or foe? The roles of state and mutual fund ownership in the split share structure reform in China. *Journal of Financial and Quantitative Analysis* 45, 685–706.
- Gompers, P., Ishii, J., Metrick, A., 2010. Extreme governance: an analysis of dual-class firms in the United States. *Review of Financial Studies* 23, 1051–1088.
- Ikenberry, D., Lakonishok, J., Vermaelen, T., 1995. Market underreaction to open market share repurchases. *Journal of Financial Economics* 39, 181–208.
- Jensen, M.C., Meckling, W., 1976. Theory of the firm: managerial behaviours, agency cost and ownership structure. *Journal of Financial Economics* 58, 3–28.
- Jensen, M.C., 1986. Agency costs of free cash flow, corporate finance and takeovers. *American Economic Review* 76 (2), 323–329.
- Jian, M. Wong, T.J. 2010. Propping through related party transactions. *Review of Accounting Studies* 15, 70–105.
- Jiang, G., Lee C.M.C., Yue H., 2010. Tunnelling through inter-corporate loans: the China experience. *Journal of Financial Economics* 98, 1–20.
- Joh, S.W., 2003. Corporate governance and firm profitability: evidence from Korea before the economic crisis. *Journal of Financial Economics* 68, 287–322.
- Johnson, S., La Porta, R., Lopez-de-Silanes, F., Shleifer, A., 2000. Tunnelling. *American Economic Review* 90, 22–27.
- Lang, H. P., Ofek, E., and Stulz, R. M. 1996, Leverage, investment, and firm growth. *Journal of Financial Economics*, 40, 3–29.
- La-Porta, R., Lopez-de-Silanes, F., Shleifer, A., 1999. Corporate ownership around the world. *Journal of Finance* 54, 471–517.
- La-Porta, R., Lopez-de-Silanes, F., Shleifer, A., Vishny, R.W., 2000. Agency problems and dividend policies around the world. *Journal of Finance* 55, 1–33.
- Lemmon, M. L., Lins, K., 2003. Ownership structure, corporate governance, and firm value: evidence from the east Asian financial crisis. *Journal of Finance* 58, 1445–1468.
- Li, K., Yue H., Zhao L., 2009. Ownership, institutions, and capital structure: evidence from China. *Journal of Comparative Economics* 37, 471–490.
- Li, K., Wang, T., Cheung, Y.L., Jiang, P., 2011. Privatization and risk sharing: evidence from the split share structure reform in China. *Review of Financial Studies* 24, 2499–2525.
- Lin, C., Lin, P., Song, F., 2009. Property rights protection and corporate R&D: evidence from China, *Journal of Development Economics* 93, 49–62.
- Lin, C., Ma, Y., Xuan, Y., 2011a. Ownership structure and financial constraints: evidence from a structural estimation. *Journal of Financial Economics* 102, 416–431.
- Lin, C., Ma, Y., Malatesta, P., Xuan, Y., 2011b. Ownership structure and the cost of corporate borrowing. *Journal of Financial Economics* 100, 1–23.



- Lin, C., Ma, Y., Malatesta, P., Xuan, Y., 2012. Corporate ownership structure and bank loan syndicate structure. *Journal of Financial Economics* 104, 1–22.
- Linck, J.S., Netter, J.M. Yang, T., 2008. The determinants of board structure. *Journal of Financial Economics* 87, 308–328.
- Maury, B., Pajuste, A., 2004. Multiple controlling shareholders and firm value. *Journal of Banking and Finance* 29, 1813–1834.
- Peng, M.W., 2001. How entrepreneurs create wealth in transition economies. *Academy of Management Executive* 15, 95–110.
- Peng, W.Q., Wei, K.C.J., Yang, Z., 2010. Tunneling or propping: evidence from connected transactions in China. *Journal of Corporate Finance* 17, 306–325.
- Qin, Y., Lin, S., 2011. The impact of the split-share structure reform on compensation incentive based on firm performance. SSRN working paper.
- Rajan, R. G., Zingales, L., 1995. What do we know about capital structure? some evidence from international data. *Journal of Finance* 50, 1421–1460.
- Rousseau, P.L., Xiao, S., 2007. Change of control and the success of China's share issue privatization. SSRN working paper.
- Sun, Q., Tong, W. 2004. China share issue privatization: the extent of its success. *Journal of Financial Economics* 70 (2), 183–222.
- Wei, K.C.J., Zhang, Y., 2008. Ownership structure, cash flow, and corporate investment: evidence from east Asian economies before the financial crisis. *Journal of Corporate Finance* 14, 118–132.
- Welch, I., 2004. Capital structure and stock returns. *Journal of Political Economy* 112, 106–131.