

# **Related Lending: Evidence of Tunnelling and Propping in China**

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## **Abstract**

This study uses a comprehensive sample of listed firms in China from 2001 to 2004 to provide evidence of tunnelling and propping via related lending. My evidence shows that controlling owners engage in tunnelling and propping through related lending, although tunnelling dwarfs propping in terms of number and magnitude. State ownership and pyramidal structure increase the level of tunnelling lending, while the presence of large non-controlling shareholder reduces it. More cash held by firms leads to more tunnelling by controlling owners. High debt ratio contributes to tunnelling lending instead of deterring it. Related lending has different performance and valuation outcomes. While tunnelling lending adversely affect firms' operational performance and market valuation, propping lending shows a positive effect on market valuation although not on profitability.

*JEL classification:* **G32, G34**

**Key Words:** related lending, tunnelling, propping, control rights, Chinese listed firms

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## 1. Introduction

Apart from a few countries like US and UK, concentrated ownership is the norm all over the world<sup>1</sup>. Under this ownership pattern, the agency conflict between large (controlling) shareholders and minority shareholders is intense and worth noting. As Claessens et al. (2002, p.2770) indicate, "...the risk of expropriation of minority shareholders by large, controlling shareholders is an important principal-agent problem in most countries". Johnson et al. (2000) coin the word tunnelling for the transfer of assets and profits by controlling shareholders for their private benefits.

Interestingly, controlling owners in certain circumstances use their private funds to prop up firms in financial distress, which is titled propping by Friedman, Johnson and Mitton (2003). They find pyramid-controlled firms with more debt have much lower stock decline during the Asian financial crisis. They argue that this is because outside investors anticipate the potential propping. Riyanto and Toolsema (2004) develop a formal theoretic model in terms of tunnelling and propping. They prove that assuming resources shifting is impossible between horizontal firms, then "tunnelling may justify the pyramidal structure only in the presence of myopic investors or in combination with propping" to keep the lower-level pyramidal firm from bankruptcy. While tunnelling and propping are probably symmetric, direct and extensive evidence of propping is needed. This paper fills the void.

The objective of this study is to examine how controlling owners use related lending (not trade credit) for the purpose of tunnelling and propping. How related lending (tunnelling and propping) affects operating performance and firm valuation is also examined.

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<sup>1</sup> See La Porta, Lopez-de-Silanes and Shleifer (1999) for 691 firms in 27 wealthy countries; Claessens, Djankov and Lang (2000) for 2980 firms in nine East Asian countries; Faccio and Lang (2002) for 5232 firms in 13 Western European countries. La Porta, Lopez-de-Silanes and Shleifer (1999) show there is moderate ownership concentration even in the US. Using 20 percent control rights threshold, they find that 20 percent of U.S largest firms (10percent of medium-sized firms) have controlling shareholders.

China offers a perfect setting for tunnelling and propping research for three major reasons. First, the weak legal institutions make it possible for controlling owners to expropriate. China has been transforming its institutions over the past quarter century to suit a market-based economy, yet it still lags in many aspects. Allen, Qian and Qian (2005) show that China's law and institutions, including investor protection systems, corporate governance, accounting standards, and quality of government, are significantly less sophisticated than most of her western and even some of her developing counterparts. In its 2006 world competitiveness ranking, World Economic Forum (2006) notes a lower ranking in terms of China's quality of the institutional environment, with poor results across all 15 institutional indicators, both public and private institutions. As suggested by Shleifer and Vishny (1997) when there is little legal protection of minority shareholders, controlling entities may find it attractive to divert resources from the firms despite their large cash flow shareholding, "since in this way they do not need to share with outside investors at all (p.769)".

Second, share split structures provide the incentive for controlling owners to tunnel. In China, the majority of outstanding shares, that is shares owned by controlling shareholders, are not floatable on the two stock exchanges. Although the non-floatable shares are transferable (still non-floatable after the transfer), the transferable price is based on the face value of the firm, which is on average 20 percent of the price of floatable shares (Chen & Xiong, 2002). Given the huge share price discount, it can be seen that controlling shareholders are virtually isolated from the wealth effect derived from the fluctuation of the share price. On the contrary, controlling shareholders may have strong incentives to appropriate despite their large shareholding<sup>2</sup>. The so called "aligning effect" of large shareholders in addressing the agency problem such as active monitoring of management doesn't exist in Chinese listed firms because of the share split structures. Zheng, Zhao and He (2005) theoretically show that share split

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<sup>2</sup> Gomes (2000) proves that in a multi-period setting, to sell remaining shares (after IPO) at a higher price in the future, high ownership held by controlling shareholder can be taken by minority shareholders as a credible commitment not to expropriate, yet this mechanism can't work in China given the share split system.

structures exacerbate the agency problem among Chinese listed firms. In fact, the required cash flow ownership to deter tunnelling is so high that it makes the listing status illegal.

Third, listing quota and carve-out listing process impair the independence of listed firms and elaborate rampant related party transactions (RPTs)<sup>3</sup>. In China, because of the quota limit, listed firms are actually small spin-offs of original state owned enterprises (SOEs). Normally, it is the most profitable or productive assets are put into the carve-outs, the original SOEs will retain the unprofitable assets and become the parent or holding company after listing. The contributions made by the controlling shareholders give them extra incentive to take back by tunnelling. Furthermore, the spin-off listing process seems to build up an inherent and everlasting relationship between listed firms and their controlling owners. As stated by Coffee (1999, p.34) “in transitional economies, affiliated business group are the norm, meaning that intra-corporate transactions within such affiliated groups will be common. Yet such transactions can often be used to expropriate wealth from minority investors”

In all, incomplete listing and tangled operational and managerial relationship facilitate the controlling owners’ tunnelling activities. As Bebchuk, Kraakman and Triantis (2000) asserts that “a controller that owns other entities that are engaged in lines of business complementary to those of the controlled company has a greater ability to extract value by engaging in self-dealing or the taking of corporate opportunities than a controller that does not own such entities” (p.963).

This study contributes to an understanding of the literature on the association of tunnelling and propping between listed firms and controlling owners from the perspective of related lending in a dynamic yet unsophisticated emerging stock market. Substantial evidence indicates the prevalence of operational tunnelling especially in

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<sup>3</sup> In 2001, the listing quota was abolished in favour of an expert-review and a sponsor system later. However, the China Securities Regulatory Commission (CSRC) still tightly controls the number and the pace of IPOs. Even under the new system, going public is still very time-consuming and costly.

emerging markets (this study supplements the tunnelling evidence), yet there is no direct and convincing evidence on propping despite the prediction of theoretical studies. This study fills the void.

Second, previous research has added to the knowledge of negative association between ownership concentration (control rights) and firm performance and valuation, they haven't indicated what specific mechanisms contribute to this relationship. The present study supplements the missing chain between the two. Specifically, this study will show it is the tunnelling lending that causes lower firm value and performance. In addition, this study will be very helpful in solving the puzzle of the performance decline of Chinese post-IPO firms<sup>4</sup>.

Third, probably due to the difficulty in collecting data and understanding the special share split structures in China, many cross-country researches haven't included China as a sample (see La Porta et al., 2002; Classens et al., 2002). To those researches focusing only on China, they cover only a small sample in limited time frames such as those by Cheng et al. (2005) and Peng, Wei and Yang (2006). This study differs in that it observes all of the non-financial firms from 2001-2004. The inclusion of the nearly full population with a wide time frame means this study may not suffer sample selection bias and could obtain a more meaningful result.

Two articles are similar to mine. Jiang, Lee and Yue (2005) discuss the use of other receivables as tunnelling in China. While they find an overall high level of other receivables in the balance sheet, they make no difference between related party and arms length other receivables, let alone those of controlling and non-controlling owners. Yet there are probably lots of non-related-party (non-controlling) other receivables. Furthermore, while they indicate the tunnelling role of other receivables, they have no

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<sup>4</sup> Wang, Xu and Zhu (2004) find the post-IPO decline in financial performance in China's listed firms between 1994 and 2000. While they show that pre-IPO financial packaging plays a minor role in explaining it, they speculate that post-IPO tunnelling by controlling shareholders via RPTs is more worth exploring.

consideration for the propping role of other payables and the net effect of other receivables and payables. Jian and Wong (2006) show the presence of tunnelling via related lending in China. Yet when it comes to propping, they turn to the use of related sales, which could be used for earnings management as they previously show. This article clearly shows how related lending is used for propping for the first time.

The empirical findings suggest the frequent occurrence of tunnelling and propping in an emerging economy with weak legal systems. It shows that large shareholders, especially state owners, appropriate lots of money from listed firms although the presence of other block shareholder does reduce it. While controlling owners prop up the firm from delisting, not everyone of them does so. Tunnelling and propping are asymmetric. Furthermore, tunnelling lending adversely affect firm performance and valuation despite propping has a positive impact on firm value.

The remainder of this article is organised as follows. In section 2, recent literature on tunnelling and propping is reviewed and hypotheses are developed, followed in section 3 by a description of sample selection and variables definition. In section 4, univariate and regression results are presented. A conclusion is provided in section 5.

## **2. Literature Review and Hypothesis Development**

### **2.1 Ownership Structure and Tunnelling**

Jensen and Meckling (1976) discuss the relationship between agency costs and managerial control. They indicate that the increase in managers' ownership rights reduces their consumption of perquisites and thus generates a positive effect on stockholder wealth. Accordingly, large shareholders will have the incentives and resources to monitor the management (if they themselves are not managers) and thus reduce agency costs. As Shleifer and Vishny (1997, p. 754) point out, "Large shareholders thus address the agency problem in that they have both a general interest in profit maximisation, and enough control over the assets of the firm to have their

interest respected.”

Yet, the control of large shareholders comes at a cost as well. La Porta, Lopez-de-Silanes and Shleifer (1999) state that controlling shareholders “have the power to expropriate the minority shareholders as well as the interest in so doing” especially when their control rights are significantly in excess of their cash flow ownership and the legal protection of outside investors is weak. Using 1301 corporations from eight East Asian countries before the financial crisis, Claessens et al. (2002) find that firm value (in terms of market to book ratio) increases with the cash flow ownership of the largest shareholder (indicating an incentive effect) but falls when the wedge increases between its control rights and cash flow ownership (indicating an entrenchment effect). Lemmon and Lins (2003) examined 800 firms from the same region during the financial crisis period. They document that cumulative stock returns are 10-20 percent lower for firms where managers (from controlling families) have high levels of control rights and have separated their control from cash flow ownership.

After controlling for potential ownership- valuation endogeneity problem, Thomsen, Pedersen and Kvist (2006) show that high initial level of blockholder ownership in Continental Europe has a negative effect on future firm performance and valuation although this doesn't hold for firms in the US and UK. Dyck and Zingales (2004) find that high private benefits of control are associated with concentrated ownership and emerging markets. From the perspective of bank, La porta, López-de-Silanes and Zarrripa (2003) examine the impact of related lending (firms and banks have the same owner) using a new dataset for Mexico during the 1990s. They find that related lending are on more favourable terms than arm's-length lending. Furthermore, related loans are much more likely to default and, when they do, have considerably lower recovery rates than unrelated ones. They conclude that the evidence for related lending in Mexico is a manifestation of looting. Charumilind, Kali and Wiwattanakantang (2006) provide similar evidence in Thailand. The crony lending, they argue, may contribute to the high level of non-performing loans and banking collapse during the

financial crisis. Cheung, Rau and Stouraitis (2004) show that Hong Kong listed firms whose ultimate owners in mainland China are more likely to have tunnelling RPTs.

In China, ownership is highly concentrated. On average, the largest shareholder holds around 40percent of total shares (Jian & Wong, 2004; Liu & Lu, 2004; Bai et al., 2004). Given China's premature institutions, the following hypothesis is proposed:

**Hypothesis 1a:** Firms with controlling shareholders will report more tunnelling lending.

Controlling shareholders are not always alone. La Porta et al. (1999), Claessens, Djankov and Lang (2000) and Faccio and Lang (2002) find that in their cross-country firm samples, on average 25 percent, 32 percent and 45 percent of firms with controlling shareholders have another owner with at least 10percent of voting rights. Theoretical literatures indicate that multiple block shareholders may compete for corporate control (Bloch & Hege, 2001), monitor the controlling shareholder (Pagano & Roell, 1998), and form controlling coalitions to share private benefits (Bennedsen & Wolfenzon, 2000; Gomes & Novaes, 2001).

Yet whatever roles they play, given certain amount of private benefits, controlling shareholders may have to tunnel less although their share of private benefits could be higher than that of non-controlling parties. Faccio, Lang and Young (2001) show that multiple large shareholders increase dividend rate in Europe although not in Asia. Lins (2003) indicate that large non-management shareholdings are positively related to firm value in his 18 emerging markets. Mitton (2002) checks the relationship between firm-level stock returns and corporate governance in 398 firms from five East Asian countries. He reaches that better stock price is associated with higher outsider ownership concentration. In China, as argued by Bai et al. (2004), there is no active corporate control market, however, other large shareholders "are obstacles to tunnelling activities by the largest shareholder because these shareholders have

incentive to monitor and restrain the largest shareholder”, also they “have an incentive to monitor the management directly” (p.607). In fact, they find that high concentration of non-controlling shareholding (the natural logarithm of the sum of squares of the shareholding by the 2nd to the 10th largest shareholders) has a positive effect on firm value. Based on the literature, the following issues are testable:

**1b:** The level of tunnelling lending with controlling shareholders is higher than that with other parties.

**1c:** The presence of other block shareholder leads to a lower level of tunnelling lending.

## **2.2 Pyramidal Structure and Tunnelling**

Controlling owners normally have higher control rights than their proportional ownership because of the free-ride by small outside investors. Yet, they often use pyramids, crossholding and dual-class shares to enhance their control rights with less cash flow rights. La Porta, Lopez-de-Silanes and Shleifer (1999) show that controlling shareholders, families in most of the case, exert their control through pyramidal structures and management presentation. Similarly, Faccio and Lang (2002) discover the wide use of dual-class shares and pyramid structure in several Western European countries. In East Asia, Claessens, Djankov and Lang (2000) find the prevalence of pyramids and cross-holdings especially in family controlled firms and small firms<sup>5</sup>.

Bebchuk, Kraakman and Triantis (2000) coin the term “controlling minority structure (CMS)” for the mechanisms for separating control from cash flow rights. They demonstrate that CMS tends to cause larger agency costs than if otherwise. In China, the use of pyramidal structure is common. Wang and Xiao (2005) show that by the end

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<sup>5</sup> The definition of pyramid in La Porta Lopez-de-Silanes and Shleifer (1999) is different from that in Claessens, Djankov and Lang (2000). According to the former, there must have a publicly traded firm between ultimate owner and the sample firm that constitute a pyramid. While in the latter, just an intermediate firm (whether it is public or not) justify a pyramid. See Morck, Wolfenzon and Yeung (2005) for a detailed summary on the research of cross-country ownership concentration and control threshold.

of 2004, 94 percent of state-owned firms (more than 70 percent of total firms) are indirectly controlled although mainly through solely state-owned enterprises. Fan, Wong and Zhang (2005) examined the ownership structure of newly listed firms from 1993 to 2001. They indicate that both local government and private owners employ controlling pyramids, yet there is almost no deviation of control from cash flow rights for government-controlled firms (similar to the results found by Wang & Xiao, 2005). Yet for private owners, they show the gap (control rights/cash flow rights) is as big as 1.85, indicating the adoption of CMS in private-controlled firms<sup>6</sup>.

Based on the different reactions to the earnings shock by firms in which controlling owners have different cash flow rights (low or high), Bertrand, Paras and Sendhil (2002) illustrate that there exists significant amount of tunnelling among group-affiliated firms in India through the non-operating transactions. Jian and Wong (2004) provide strong evidence on Chinese group-controlled companies' tunnelling through related lending especially when firms have more free cash flow. Accordingly, the following hypotheses are proposed:

**H2:** Pyramid-controlled firms will report more tunnelling lending.

### **2.3 State Ownership and Tunnelling**

Initially, the setup of the stock exchanges in China is for the restructuring of state-owned enterprises (SOEs). Yet the nature of partial privatisation means that government still maintains considerable ownership and control of many listed firms. Liu and Sun (2003) find that by the end of 2001, approximately 84percent of listed firms in China are ultimately controlled by the government.

However, the government may have political objectives other than maximizing firm value. As argued by Bai, Lu and Tao (2006), to reform SOEs more smoothly, the state

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<sup>6</sup> The result should be interpreted with caution. The reason is they use year 2001 as the starting point, then trace back to the IPO year. Yet year 2001 is the first time listed firms are required to disclose their ultimate ownership structure in annual reports, thus the disclosure is coarse and incomplete.

has to enhance its involvement and control in the stock market. Yet such state involvement creates a conflict of interest between the state as controlling shareholder and other outside investors. The worst thing is the state plays two roles at the same time: controlling shareholder and market regulator, which makes the protection of minority shareholder politically impracticable. Much empirical evidence shows that state ownership is detrimental to firm value. Bai et al. (2004) investigate multiple governance mechanisms and their effect on firm value in China from 1999 to 2001. They find that government as the largest shareholder has a negative effect on firm value. Cheung et al. (2005) after examining 292 filings of RPTs between state-owned listed firms and their controlling shareholders during 2001-2002 find an inverse relationship between the percentage of state ownership and excess returns at the announcement of RPTs. They indicate that this relationship is mainly driven by the tunnelling transactions controlling state shareholder engage with the firms. Thus, the following hypothesis is proposed:

**H3:** State-owned firms will report more tunnelling lending.

## **2.4 Cash and Tunnelling**

To controlling shareholders, tunnelling may be easy to implement and is hard-to-detect in good times than in bad times. In good times, controlling owners may expropriate more as the pie grows bigger without getting caught. The free cash flow theory of Jensen (1986) shows that controlling managers have an incentive to increase the high level of cash under their control so as to consuming perquisites or making inefficient investment to expand their bureaucratic empire. The judgment applies to controlling shareholders as well. When listed firms have more funds (however they obtain them may not matter), controlling owners may expropriate more. In China given the State is controlling shareholder in most of the cases, the funds they tunnel could be used for other social objectives. Yet, minority shareholders always suffer.

As shown by Lee and Xiao (2004), listed firms in China will pay higher dividends after the rights offering while controlling shareholders always give up their pre-emptive rights. Jian and Wong (2004) document that listed firms tend to provide more generous credits to their related parties when they have more free cash flow. After examining an extensive sample of RPTs announcements between 1998 and 2004, Peng, Wei and Yang (2006) indicate that tunnelling RPTs tend to occur in firms in good financial conditions. Thus, the following hypotheses are proposed:

**H4:** Firms will report more tunnelling lending when they have more cash.

## **2.5 Propping**

Friedman, Johnson and Mitton (2003) indicate that pyramidal controlling owners may use their private funds to prop up firms in moderate adverse shock. Yet only a little evidence supports the propping claim. Claessens, Djankov and Klapper (2003) examined 644 financial-distressed firms in five East Asian countries during the crisis, they discover that the probability of filing bankruptcy is lower for group-affiliated firms. Yet, the role of propping can't be overemphasised. Obata (2001) documents that although pyramidal ownership structure facilitates the propping function of firms in financial distress, however controlling insiders do it at the cost of minority shareholders of lower layer firms. Bae, Kang and Kim (2002) examine rescue acquisition within Korean groups (chaebols). They find that the stock price of chaebols-affiliated firms (where controlling owners have low cash flow rights) declines when they announced to bail out financially distressed firms in the chaebols, while at the same time the controlling shareholders benefit because the value of other firms in the group increases, where controlling owners have high cash flow rights. While minority shareholders in propped firms also benefit, all these benefits come at the cost of minority shareholders in cash cow firms. Liu and Song (2004) also show "how much to prop up depends on how much the controlling shareholders can tunnel in the future" (p.3).

In China, when a firm sustains negative profit for two consecutive years, it will be given “special treatment” (ST). Because of the restrictive regulations imposed on ST firms<sup>7</sup>, to maintain their private benefits, controlling shareholders may want to get rid of the ST hat as soon as possible, thus the ST designation provides a good opportunity to test the propping hypothesis. Bai, Liu and Song (2004) find that firms wearing a ST-hat, a typical bad news, earn abnormal high returns (around 32 percent), they attribute this to the propping from controlling shareholders to avoid the bad-performing firms from delisting<sup>8</sup>. Cheung et al. (2005) provide direct propping evidence in firms in China. They show firms entering into potentially beneficial RPTs (based on their subjective classification) with controlling state shareholders earn significantly positive CARs of 2.6 percent, equivalent to a median value creation of RMB98 million (USD12 million). As a result, the following hypothesis is proposed:

**H5:** Firms in financial distress will report more propping lending.

## **2.6 Valuation Effect of Tunnelling and Propping**

There are mixed results on the valuation effect of expropriation. Bertrand, Paras and Sendhil (2002) indicate that tunnelling in Indian business groups are mainly undertaken via non-operating transactions. Jian and Wong (2004) document that market-to-book ratios are lower to firms with related lending. Cheng, Rau and Stouraitis (2004) argue that investors can’t discount firms before tunnelling, although they revalue firms when expropriation occurs. Berkman, Cole and Fu (2005) show that new regulations intended

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<sup>7</sup> According to the regulations from the CSRC, a listed firm will be given a ST if it has suffered a loss for two consecutive years (there are other reasons as well). The daily price change for a ST firm is limited to 5percent of its previous closing price. Its semiannual reports must be audited. A ST firm will be temporarily delisted if it sustains losses for another year and it will be only traded on Friday with a maximum 5percent upside limit to last Friday’s close, but no restriction on the downside. Temporarily delisted firm will be delisted if it is not profitable in half-year financial report or it is profitable in half-year but not profitable in the final-year financial report.

<sup>8</sup> There are many ways to prop up a financial-stricken firm. Apart from free or low-cost financing from controlling shareholders (the focus of this project), asset swap is frequently used in China as well, which means controlling shareholder exchange low-productive assets in listed firm with its high-productive ones. Yet, propping like this sometimes shows the form of tunnelling: sudden material increases of (net) other receivables to controlling shareholder. There are other ways of propping that are not discussed in this project. In sense of this, propping activities may be slightly underestimated.

to protect minority shareholders from the CSRC significantly increased firm value, especially those firms with weak governance. Therefore, the following hypotheses are developed:

**H6a:** Firms reporting more tunnelling lending have lower operating performance.

**H6b:** Firms reporting more tunnelling lending have lower firm value.

To firms in financial trouble, as investors anticipate the propping from controlling shareholders, it is reasonable that these firms have higher market values despite unimproved short-term financial performance. Therefore, the following hypotheses are developed:

**H7a:** Firms reporting more propping lending will have higher market value.

**H7b:** Firms in financial distress reporting more propping lending have higher market value.

### **3. Sample Selection and Variable Measurement**

#### **3.1 Sample Selection**

The sample consists of all A-share (Pure A, A+B, A+H) firms listed on the Shanghai Stock Exchange (SSE) and Shenzhen Stock Exchange (SZSE) during the 2001-2004 periods<sup>9</sup>. Pure B-share firms are excluded because the International Accounting Standards (IAS) are applied, which are different from Chinese Generally Accepted Accounting Principles (CGAAP). Financial firms are excluded as their financial conditions are not comparable to non-financial firms. Firms must be listed for one year to be included in the sample in each year. Firms delisted in any of the period are

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<sup>9</sup> A-shares are issued by domestic firms and are traded in Chinese RMB (1 USD=8.28 RMB in the sample) by domestic investors and QFII (qualified foreign institutional investors). B-shares are stocks issued by domestic firms but traded in HK dollar in SZSE and US dollar in SSE only by foreign investors until May 2001, when domestic investors could also hold these shares. H-shares refer to the shares issued by domestic firms to foreign investors through listings on Hong Kong Stock Exchange. Firms with only H-share issuance are not included in this study.

excluded. The sample period is chosen because starting from year 2001, listed firms are required to disclose their ultimate ownership, and accordingly the information is available on the nature of ultimate owners, controlling structure and control rights. Year 2004 is chosen because in 2005 the CSRC initialed a program to address the share split problem, which may change the incentives of controlling owners. All data (related lending, financial information and ownership) are extracted from the *China Stock Market & Accounting Research Database* (CSMAR). CSMAR is one of the most commonly used databases for China's stock market research, and has been used by lot scholars. Any doubtful data are cross-checked with original annual reports. Annual reports are obtained from Shanghai JuYuan Data Service Company Ltd, another major data provider in China. Table 6.1 indicates the process of sample selection.

**Table 1 Sample Selection**

	Year 2001	Year 2002	Year 2003	Year 2004	Total
Year-end listed firms	1136	1200	1263	1353	4952
- financial firms	7	8	10	10	35
Non-financial listed firms	1129	1192	1253	1343	4907
- firms listed less than one year	70	64	63	92	289
- firms delisted	21	14	10	5	50
- firms with incomplete data	18	39	41	107 <sup>10</sup>	205
Available firms	1020	1075	1139	1139	4373
percent of non-financial firms	90.35%	90.18%	90.9%	84.81%	89.12%

**Source: China Stock Market & Accounting Research Database**

It can be seen from Table 1 that the sample includes 90 percent of the non-financial firms.

### 3.2 Variable Measurement

<sup>10</sup> Firms listed in 2003 are deleted because there is only one year data when they are included in 2004.

### 3.2.1 Related Lending

In China, two opposite accounts are used for related lending. While other receivables (OR) are for the capital that lent out from the listed firm, other payables (OP), on the contrary, are for the capital that lent to the listed firm. Normally OR is for tunnelling, OP is for propping in terms of minority shareholders, the balance of OR and OP is used as well. Specifically, when the difference between OR and OP is negative, the related lending is considered a propping lending, while the difference between OR and OP is non-negative, the related lending is considered a tunnelling lending. Considering the fact that in China controlling shareholder and its subsidiaries are the major related parties, all related lending are classified into controlling-shareholder related (ORCS and OPCS) and others related (ORNCS and OPNCS). The dollar amount will be deflated by the year-end total assets to remove the size effect.

There are lots of RPTs between listed firms and controlling parties. Yet only related lending is focused on for two reasons: first, related lending is under the spotlight of the CSRC, which once issued several regulations to address it. Second, related lending is either free or based on the much-lower deposit rate, thus it is easy to judge who directly benefit from such transactions. Normally, most of related lending transactions are not publicly announced although they are disclosed in the notes in the annual reports, so event study methodology used by Cheung et al. (2004, 2005) can't be adopted.

It should be noted that the overall level of related lending could be significantly underestimated for three reasons. First, the lending amount obtained from the balance sheet is a presentation of year-end balance, which is very easy to be manipulated. In fact, quite a few firms display small year-end balance (or even positive other payables) yet large (accumulated) debit/credit amount in the account "other receivables". Actually, controlling shareholders can tunnel the fund up to the day before the last day of the financial year. In this case, the year-end balance actually loses its economic reality. Second, a large number of firms (mostly privately-controlled firms) manipulate the

presentation of balance sheet so that the appropriation of funds is not shown under the account “other receivable”, or even not RPTs. Third, many related lending just have not been disclosed intentionally.

### **3.2.2 Control Rights**

Lemmon and Lins (2003, p.1462) argue that “having a significant degree of control over the firm’s assets is a necessary condition for expropriation of minority shareholders” in firms in emerging economies. Given ownership concentration is high in China, it is reasonable to have a higher control threshold instead of using 20 percent or 10percent. Furthermore, 30 percent shareholding is believed by the CSRC for a party to exercise effective control and thus needs to seek the approval in case of an acquisition accordingly. Thus, if a firm has a shareholder who controls 30percent or more of its direct and indirect control rights, it will be classified as a firm with a controlling shareholder. A 20 percent cut-off will be used in the robustness test.

How control rights are measured is important. There are two methods of measuring control rights. The one used by La Porta et al. (1999) and Claessens, Djankov and Lang (2000) and Faccio and Lang (2002) assign control (to controlling shareholder) based on the weakest link along the control chain (direct and indirect), while Lins (2003) and Lemmon and Lins (2004) assign control with the nearest control level (direct and indirect). The two control rights will be the same when the nearest control level is the smallest along the control chain. While the control level is pretty conservative under the first measure, the latter measure captures the actual controlling power by a party, which is directly related to how controlling owners are capable of undertaking tunnelling activities. As the nearest control level is always available, the second method betters in keeping a large sample. Third, in China, overall disclosure of ownership is crude and deficient, especially private firms<sup>11</sup>, given state-owned firms normally don’t have a

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<sup>11</sup> Take Hua Sheng Da (a firm listed in SSE with sticker 600687) for example. 26.46 percent of its shares, the single largest shareholding, are owned by a holding company, which in turn is owned by two persons by 60 percent and 40 percent respectively. Based on the process used by La Porta et al. (1999), the control right is 26.46 percent (the result will be the same using Lins’s method), the cash flow right is 15.88

control-ownership gap, plus the share split structures already greatly reduce the incentive effect of cash flow rights, therefore Lins's (2003) method for measuring control rights is used although the control-ownership gap is not going to be measured.

### 3.2.3 Operating Performance and Firm Value

For firm valuation, accounting and market-based measures will be used. To accounting-based performance, ROA is used. ROA is measured by net income on total assets. Many scholars find return on equity (ROE) is more useful in China (because ROE is directly linked to the right for secondary equity issue), yet it is not used here to maximise the sample because some firms (ST firms in most of the case) have both negative owners' equity and net income, which will make up a positive yet distorted ROE.

To market-based performance, Tobin's Q (TQ) is used. Tobin's Q is calculated as share price multiply the total number of outstanding shares, plus the book value of debt, divided by the book value of total assets. Given the fact that the majority of outstanding shares are non-floatable, the discounted TQ is used. Chen and Xiong (2002) find the price of non-floatable shares are 78 percent to 86 percent lower compared with floatable shares. Thus, the price of non-floatable shares is assumed to be 20percent of that of floatable shares. Accordingly,

$$TQ = \frac{(TS * P + NTS * P * 20\%) + BVTD}{BVTA}$$

TS =total number of floatable shares; P=year-end closing price; NTS=total number of non-floatable shares; BVTD=book value of total debt; BVTA=book value of total assets. To firms issuing B or H share in addition to A share, the price is converted to Chinese RMB and the market capitalisation is calculated accordingly.

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percent (60 percent\*26.46 percent), thus the gap is 10.58 percent (26.46 percent-15.88 percent), the cash flow rights leverage is 1.67 (26.46/15.88). Actually these two persons are related by blood (father and son), yet this relationship is not disclosed in the ownership section in the annual report. Accordingly, based on the new information, there is no gap at all although there is a pyramidal structure. In fact, I doubt the large separation of ownership and control among private firms in China because many of them are actually jointly controlled in concert or voting agreements. Some private firm scandals have shown this.

### 3.2.4 Debt Level and Other Variables.

Debt plays different roles in tunnelling and propping. On the one hand, as Friedman, Johnson and Mitton (2003) argue, debt represents a commitment by the pyramidal controlling owner to prop up and bail out the firm when there is a moderately adverse shock. However, when it comes to a serious shock, debt also makes it possible that the controlling shareholder will abandon or loot the firm. On the other hand, the use of debt may restrict how much controlling shareholder can expropriate given the loan covenants; yet more available financial resources may also increase the likelihood of tunnelling. Debt is defined as the sum of long-term debt and short-term debt excluding non-financial liabilities such as accounts payable, deferred taxes and other provisions for liabilities.

Older firms tend to have incomplete corporatisation restructuring and weak corporate governance. Accordingly, there could be more tunnelling activities. Apart from this, the firm life-cycle could also influence ownership structure, which may affect the level of tunnelling. Firm age (AGE) is used and measured as the logarithm of the number of months from the IPO. Firm size (SIZE) is also used as a control variable. Larger firms tend to have better visibility and coverage in the financial press, yet they may also have more assets available to be tunnelled. On the other hand, given small firms are highly likely to have ownership separated from control (Claessens, Djankov & Lang 2000), there could be more expropriation associated with small firms. In all, firm size may have a mixed effect on the level of RPTs.

**Table 2 Variable Definitions**

Variable	Description
Control Rights (CR)	percentage of nearest shares owned by the largest shareholder <sup>12</sup> , directly and indirectly
Controlling Shareholder (CS)	Equals one if there is a shareholder owning at least 30

<sup>12</sup> While controlling shareholder must be the largest shareholder, the largest shareholder may not be the controlling shareholder given the threshold applies to controlling shareholder. See the definition of controlling shareholder. When the entire sample is used, CS, ORCS, ORNCS, OPCS and OPNCS are also used for firms who don't have a controlling shareholder, yet the actual meaning of above variables is for the items with largest shareholders or non-largest shareholders.

	percent of control rights
CSLOW	Equals one if there is a shareholder owning at least 20 percent of control rights
State (STATE)	Equals one if the state is the ultimate controlling shareholder, and zero otherwise.
Blockholder (BLOCK)	Equals one if there is another shareholder owning at least 10percent of control rights and zero otherwise.
Pyramid (PYRAMID)	Equals one if the ultimate shareholder controls the firm through an intermediate company and zero otherwise <sup>13</sup> .
ORCS	Other receivables related to controlling shareholders
ORNCS	Other receivables related to all other parties (excluding controlling shareholders)
OPCS	Other payables related to controlling shareholders
OPNCS	Other payables related to all other parties (excluding largest shareholders)
OROP	ORCS-OPCS
TUN	Equals OROP if OROP is equal or bigger than zero
PROP	Equals absolute value of OROP if OROP is less than zero
ROA	Net income divided by total assets.
Tobin's Q (TQ)	See the context.
Firms in Financial Distress (ST)	Equals one if a firm has sustained two consecutive years of negative net income and zero otherwise.
Firm Size (SIZE)	Log of total assets in millions Chinese Yuan.
SEO	Net capital raised from secondary equity offer, deflated by the year-end total assets
FCF	Cash from operating activities minus the amount used in investment activities plus the increase in receivables over the previous year, deflated by the year-end total assets
NLOAN	Change in the sum of short-term and long-term bank loan, deflated by the year-end total assets
Debt Ratio (DEBT)	Debt divided by total assets.
Firm Age (AGE)	Log of the number of months from the IPO.
Sales Growth (SALES)	Sales percentage growth over previous year
Industry Type (INDUSTRY)	Follow the criteria set by the CSRC, there will be 12 industry types after excluding financial industry. There will be 11 dummy variables after setting agriculture industry as the numeraire.

<sup>13</sup> Instead of using pyramid, many scholars use group (affiliation). These two terms are similar yet a bit different. Both terms involve at least three parties. While a pyramidal structure is definitely a group (Indian case), group is possible because of crossholding structure (Korean case). Group is especially appropriate if there is a combination of pyramids and cross-holding, which is quite common although probably one structure dominates. This is probably the reason why the concept of group is more empirically used while pyramid is mainly used in theory. In terms of Chinese sample, pyramid is much more common (or dominates) than crossholding, so pyramid is used.

## 4. Descriptive Statistics and Regression Results

### 4.1 Descriptive Statistics

**Table 3 Summary Statistics**

Variables	N	Mean	Median	Max	Min	StdDev
CS	4373	0.723	1	1	0	0.448
CSLOW	4373	0.951	1	1	0	0.217
CR	4373	0.451	0.446	0.85	0.073	0.17
Block	4373	0.32	0	1	0	0.467
Pyramid	4373	0.9	1	1	0	0.301
State	4373	0.768	1	1	0	0.422
ST	4373	0.037	0	1	0	0.188
Debt	4373	0.305	0.305	6.627	0	0.228
Size (log)	4373	3.176	3.144	5.663	1.562	0.396
ROA	4373	0.005	0.025	0.514	-6.337	0.2
TQ	4373	1.095	0.97	18.57	0.158	0.633
Age (log)	4373	1.846	1.878	2.391	0.97	0.272
Sales	4373	0.792	0.151	400.67	-1	9.356
FCF	4373	-0.013	-0.007	1.078	-1.335	0.104
SEO	4373	0.009	0	0.65	0	0.044
NLOAN	4373	0.025	0.019	0.775	-3.29	0.127

**Note: Definitions are provided in Table 2.**

Table 3 shows summary statistics of the sample. Using 30 percent control rights threshold, it can be seen that more than 72 percent of firms have controlling shareholders, while only 32 percent of firms have another block shareholder owning 10 percent of control rights. On average, largest shareholders have 45 percent of control rights, while the highest control rights are as high as 85 percent, indicating a highly concentrated ownership in China. 95 percent of firms have controlling shareholders when using 20 percent of control rights. 90 percent of firms are ultimately controlled in pyramid, indicating a dominance of pyramidal structures among Chinese firms. Because most of listed firms (state-owned in most of the case) are spin-offs, this result is no surprising. State controlling owners account for 77 percent of the sample. Average debt ratio is about 31 percent, although the ratio can be as high as 663 percent, indicating an extreme financial distress. There are large differences among firm size,

sales growth, ROA and TQ and other variables.

**Table 4 Summary Statistics of Related Lending**

	N	Mean	Median	StdDev	Min	Max
ORCS	4373	0.0264	0.001	0.089	0	2.514
ORNCS	4373	0.012	0	0.049	0	1.481
OPCS	4373	0.008	0	0.029	0	0.671
OPNCS	4373	0.003	0	0.014	0	0.454
OROP	4373	0.019	0	0.092	-0.671	2.476
ORNCS-OPNCS	4373	0.01	0	0.048	-0.447	1.457
ORCS-ORNCS	4373	0.014	0	0.099	-0.916	2.504
OPCS-OPNCS	4373	0.005	0	0.032	-0.379	0.671

  

Test if Mean>0	t-statistic (one-side) <sup>14</sup>
OROP	6.76***
ORNCS-OPNCS	6.57***
ORCS-ORNCS	4.74***
OPCS-OPNCS	5.27***

\*\*\* denotes significant at the 1 percent level

Table 4 shows the statistics of related lending in different forms. On average, controlling owners expropriate 2.64 percent of total assets in the form of other receivables (ORCS), with a maximum of 251.4 percent. At the same time, all other related parties tunnel 1.2 percent of total assets (ORNCS), with a maximum of 148.1 percent. When it comes to propping (other payables), controlling owners and all other parties prop into listed firms on average 0.8 percent and 0.3 percent of total assets respectively. The table following Table 4 shows that means of all related lending are significantly positive, it can be seen overall listed firms give more lending to controlling shareholders and other parties than they receive from them, related lending is used for tunnelling. Interestingly, the difference between ORNCS and OPNCS (ORNCS-OPNCS) is significantly positive, which indicates that non-controlling parties, the majority of them are previous controlling owners, also tunnel a lot, which implies that previous controlling owners didn't pay the money back, at least not

<sup>14</sup> t-statistics are adjusted for unequal variance.

promptly<sup>15</sup>. In all, listed firms are treated as cash cows by controlling shareholders and even other non-controlling parties.

The difference between ORCS and ORNCS (ORCS-ORNCS) is positive and significant. It means that share of controlling owner's related lending is larger than that of all other related parties. Thus, Hypothesis 1b is supported. When it comes to propping, it can be seen OPCS is significantly higher than OPNCS. It means controlling shareholders are the ones who actually prop up firms. Either tunnelling or propping, controlling shareholders account most of them.

**Table 5 Univariate Analysis**

Variables		Sample	ORCS	OROP
CS	1	3161	0.03	0.023
	0	1212	0.017	0.009
t-statistic <sup>16</sup>			-5.64***	-5.30***
CSLOW	1	4157	0.027	0.02
	0	216	0.009	0.006
t-statistic			-4.86***	-3.63***
BLOCK	1	1400	0.017	0.001
	0	2973	0.031	0.023
t-statistic			5.75***	5.38***
PYRAMID	1	3932	0.028	0.021
	0	441	0.011	0.004
t-statistic			-6.77***	-5.41***
STATE	1	3358	0.027	0.02
	0	1015	0.023	0.015
t-statistic			-1.87*	-1.71*

\*\*\* denotes significant at the 1 percent level \*\* denotes significant at the 5 percent level

\* denotes significant at the 10 percent level.

<sup>15</sup> The test for equity of means of ORNCS among yearly samples shows no difference (P-value is 0.184).

<sup>16</sup> t-statistics are adjusted for unequal variance.

Table 5 shows how tunnelling lending (ORCS and OROP) differ among major independent variables. It can be seen to firms with controlling shareholders, ORCS (OROPCS) on average accounts for 3 percent (2.3 percent) of total assets, which are higher than 1.7 percent (0.9 percent) associated with firms without controlling shareholders, with t-statistic as big as -5.64 (-5.3), indicating a 1 percent significant level. The results don't change when 20 percent of control rights threshold is used. Thus, Hypothesis 1a is supported. To firms with another block shareholder, ORCS (OROPCS) on average accounts for 1.7 percent (0.1 percent) of total assets, which are significantly (1percent significant level) lower than 3.1 percent (2.3 percent) for firms without other block shareholder, with t-statistic as big as 5.75 (5.38), indicating the positive role of other block shareholder in limiting tunnelling activities of controlling shareholders. Accordingly, Hypothesis 1c is supported. Firms controlled in pyramid have significantly more related lending than stand alone firms (2.8 percent vs 1.1 percent for ORCS, 2.1 percent vs 0.4 percent for OROP). Accordingly, Hypothesis 2 is supported. To firms that are ultimately controlled by the state, the level of related lending is significantly (10 percent significant level) higher with t-statistics -1.87 and -1.71 respectively. Accordingly, Hypothesis 3 is supported as well. To test whether the medians are different, Wilcoxon-Mann-Whitney test is used. The p-values are nearly the same except those on STATE. Tests for equality of medians on STATE show 1percent significant level compared to 10 percent significant level for the mean tests.

**Table 6a Univariate Analysis for ST**

Variable	Sample	ORCS	OPCS	OROP	
ST	1	160	0.08	0.027	0.053
	0	4213	0.024	0.007	0.018
t-statistic <sup>17</sup>		-2.711***	-3.197***	-1.618	

\*\*\* denotes significant at the 1 percent level

<sup>17</sup> t-statistics are adjusted for unequal variance. When Wilcoxon-Mann-Whitney median test is adopted, the significant level for OPCS doesn't change. To ORCS, it is still significant at 5 percent level. To OROP, it is still insignificant although the p-value is much higher.

Table 6a shows how related lending differentiates between ST firms and non-ST firms. It can be seen that ST firms have significantly more ORCS and OPCS, indicating a mix of tunnelling and propping. When it comes to OROP, the adjusted t-statistic is insignificant (unadjusted t-statistic is significant at 1 percent).

**Table 6b Univariate Analysis for ST<sup>18</sup>**

Variable	Sample	OROP $\geq 0$	Variable	Sample	OROP $< 0$		
ST	1	100	1	60	0.062		
	0	2956	0	1257	0.016		
t-statistic		-2.858***		t-statistic		-3.013***	

\*\*\* denotes significant at the 1 percent level

\*\*\* denotes significant at the 1 percent level

Table 6b is the univariate analysis based on the sign of OROP. Because OROP is the difference between ORCS and OPCS, thus the incidence of propping could be blurred by tunnelling. The results show significant yet opposite results, indicating the presence of both tunnelling and propping for ST firms. When OROP is negative (absolute value is used), it can be seen that ST firms are given (net) finance credit, accounting 6.2 percent of total assets. This is the clear evidence of propping by controlling owners (60 firms in this case). Accordingly, Hypothesis 5 is supported.

**Table 7 Yearly Samples of Related Lending**

Year	N	ORCS		ORNCS		OPCS		OPNCS	
		Mean	StdDev	Mean	StdDev	Mean	StdDev	Mean	StdDev
2001	1020	0.027	0.07	0.013	0.045	0.006	0.02	0.002	0.001
2002	1075	0.032	0.125	0.014	0.06	0.007	0.029	0.003	0.012
2003	1139	0.023	0.074	0.013	0.046	0.008	0.031	0.003	0.012
2004	1139	0.024	0.075	0.009	0.044	0.009	0.035	0.003	0.019
Test for Equality of Means				F-statistic					
ORCS				2.205*					
OPCS				1.449					

\*denotes significant at the 10 percent level

<sup>18</sup> When Wilcoxon-Mann-Whitney test is adopted, the significant levels are the same.

Table 7 presents related lending on a yearly basis. ORCS and OPCS show different tendency among years. To ORCS, it can be seen that year 2001 and 2002 have a higher level of ORCS than year 2003 and 2004 (2.7 percent and 3.2 percent vs 2.3 percent and 2.4 percent). Test for Equality of Means of ORCS show that there are significant differences among years with F-statistic 2.21 (10 percent significant level). While for OPCS, F-statistic (1.45) indicates no such difference. From year 2003, public auditors are required to have their specific opinions on related lending in annual reports (one of regulations required by the CSRC), this may contribute to the lower level of ORCS in year 2003 and 2004. This result is in line with the positive effect of new regulations imposed by the CSRC demonstrated by Berkman, Cole and Fu (2005).

## 4.2 Regression Results

Different forms of related lending are used to investigate the effect of various mechanisms based on fixed-effect unbalanced panel data. Stata is used for panel data analysis. Xttest3, Xtserial and Xtcsd are used for test of hetero, autocorrelation and cross-section dependence respectively. To control for these problems, command Xtsc is used (lag(0) is used when there is no autocorrelation). Pooled OLS is rejected using Xttest0. Hausman test shows that fixed effect is appropriate.

**Table 8 Evidence of Tunnelling and Propping**

ORCS and ORCS0 are used in first two models. OROP and OROP0 are used in Model 3 and 4. TUN and TUN0 are used in Model 5 and 6. ORCS0, OROP0 and TUN0 are used to isolate the effect of ST. \* denotes significant at the 10 percent level, \*\* denotes significant at the 5 percent level, \*\*\* denotes significant at the 1 percent level.

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Dependent Variable	ORCS	ORCS0	OROP	OROP0	TUN	TUN0	PROP
Constant	0.1237***	0.0491	0.0732	0.1148	0.2428***	0.1366***	0.0658
	0.004	0.133	0.157	0.156	0.003	0.009	0.195

CS	0.0082	0.0094*	0.0045	0.0068*	0.0078	0.0087*	0.0012
	0.14	0.069	0.346	0.065	0.242	0.071	0.723
Block	-0.0227***	-0.0159**	-0.0184**	-0.0112*	-0.0381***	-0.0316***	0.0116***
	0.002	0.014	0.012	0.077	0.001	0.002	0.003
Pyramid	0.034**	0.0129**	0.0395***	0.0131***	0.036**	0.0117**	-0.0382
	0.022	0.05	0.001	0.000	0.041	0.021	0.173
State	0.0124***	0.0068***	0.0142***	0.0061**	0.0118***	0.0035	NA
	0.000	0.000	0.004	0.02	0.000	0.23	
Nloan	0.0458	-0.0147	0.0579*	-0.0143	0.0824*	-0.0124	NA
	0.149	0.23	0.088	0.258	0.052	0.539	
Fcf	0.0182***	0.0117***	-0.0002	-0.0083	0.0219**	0.0122	NA
	0.001	0.001	0.983	0.294	0.04	0.141	
Seo	0.0266***	0.0132**	0.03***	0.0154***	0.0281**	0.0132	NA
	0.000	0.023	0.000	0.000	0.037	0.327	
Sales	0.0001*	0.0001***	0.0002***	0.0002***	0.0005***	0.0006***	NA
	0.097	0.001	0.000	0.000	0.000	0.000	
ST	-0.0035	NA	-0.0137	NA	-0.0023	NA	0.0304**
	0.777		0.2		0.904		0.003
Debt	0.0678***	0.0521***	0.0793***	0.0607***	0.0706**	0.0473**	-0.1065***
	0.004	0.000	0.000	0.000	0.026	0.014	0.000
Age	0.0209*	0.0158**	0.0306**	0.0226***	0.0305*	0.0202*	-0.0188***
	0.079	0.038	0.011	0.001	0.081	0.074	0.001
Size	-0.057***	-0.0249**	-0.0546***	-0.0265***	-0.0839**	-0.0389**	0.0069
	0.004	0.018	0.004	0.003	0.016	0.019	0.671
Year	Yes	Yes	Yes	Yes	Yes	Yes	NA
Industry	Yes	Yes	Yes	Yes	Yes	Yes	NA
R-Square	0.05	0.029	0.055	0.029	0.065	0.035	0.103
Obs	4373	4213	4373	4213	3056	2956	1317

Table 8 presents the regression results on the determinants of propping and tunnelling. As expected, the presence of controlling shareholders leads to more tunnelling. In Model 1, 3 and 5, all CS are positive yet insignificant<sup>19</sup>. In Model 2, 4 and 6, coefficients on CS are 0.94 percent, 0.68 percent and 0.87 percent respectively, all positive and significant at 10 percent level. The presence of other block shareholder reduces the tunnelling of controlling owners based on coefficients on BLOCK in Model 1 to 6. When TUN is used, the effect of other blockholder is significant at 1percent level. As expected, pyramidal structure has a positive effect on tunnelling lending. From Model 1 to 6, coefficients on PYRAMID are positive and significant at least 5 percent

<sup>19</sup> ORCS and TUN are not normally disturbed, so when using sqrt function, CS becomes significant on 1percent level in Model 1 and 3. Most other variables don't change. R-squares also increase a lot.

level. STATE also has a positive effect on tunnelling lending, mostly significant at 1percent level (in Model 6, coefficient on state is still positive yet insignificant). More cash (NLOAN, FCF and SEO) held by listed firms leads to more tunnelling although only SEO is consistently significant.

In Model 1, 3 and 5, ST is negative yet insignificant. This is no surprising given the mixed treatment of ST firms by controlling owners. However, when PROP is used, coefficient on ST is 3.04 percent, significant at 1percent level. It means ST firms are propped into funds by controlling owners. Accordingly, Hypothesis 5 is supported.

In Model 7 DEBT shows a negative and significant sign, opposite to that in Model 1 to 6. BLOCK is positive and significant while PYRAMID shows a negative although insignificant sign. This contradicts that pyramidal structure and high level of debt facilitate propping by controlling shareholders (Friedman, Johnson & Mitton, 2003). The reason is that in China it is the new owners who actually prop up the bad-performing firms, thus the effect of pyramid is not distinct. In fact, the results are in line with Bai, Liu and Song (2005), who find propping is pronounced when the competition for the control rights is tougher (the presence of other blockholder); also when a firm is more debt-stricken (private benefits is smaller), potential entrant may be reluctant to prop into financial resources.

Coefficients on Year 2002 (in Model 1 to 6) normally are positive and statistically significant at either 1 or 5 percent level, consistent with the univariate analysis of yearly samples. Debt doesn't seem to constrict the tunnelling activities by controlling owners; On the contrary, more debt leads to more tunnelling. This may explain why controlling owners in China offer loan guarantees to their-controlled firms to get bank loans. Older firms tend to have more tunnelling lending. Bigger firms tend to have less tunnelling lending, probably because they are under the spot of media. SALES seems to contribute to controlling shareholders' tunnelling activities.

**Table 9 Effects of Tunnelling and Propping on Operating Performance**

ROA is regressed on different forms of related lending. \* denotes significant at the 10 percent level, \*\* denotes significant at the 5 percent level, \*\*\* denotes significant at the 1 percent level.

	Model 1	Model 2	Model 3	Model 4
Constant	-0.9084**	-0.9508**	-1.1783***	0.9765***
	0.017	0.013	0.000	0.000
ORCS	-0.6875***			
	0.000			
OROP		-0.5094***		
		0.000		
TUN			-0.6547***	
			0.000	
PROP				-0.2795***
				0.000
SALES	0.00003	0.00007	0.00033	0.00082
	0.904	0.76	0.517	0.105
Debt	-0.4866**	-0.4931**	-0.7516***	0.5784**
	0.027	0.028	0.000	0.015
Size	0.3442***	0.3546***	0.4321***	-0.1733***
	0.002	0.002	0.000	0.009
Age	-0.0562*	-0.0563*	-0.0386***	-0.2587***
	0.087	0.07	0.006	0.000
R-Square	0.203	0.183	0.347	0.229
Year	Yes	Yes	Yes	Yes
Industry	Yes	Yes	Yes	Yes
Obs	4373	4373	3056	1317

Table 9 presents the effect of related lending on operating performance. In Model 1, 2 and 3, it can be seen that ORCS, OROP and TUN all have a negative effect on ROA, significant at 1 percent level. Clearly Hypothesis 6a is supported. Model 4 shows that PROP also has a significant negative impact on operating performance. The reason could be that more poor-performing firms need more propping and propping may take time to work into the performance.

**Table 10 Effect of Tunnelling and Propping on Market Valuation**

TQ is regressed on different forms of related lending. To isolate the effect of ST on firm value, ORCS0, OROP0 and TUN0 are used in Model 1 to 3. ORCS and OPCS are used in Model 4 and 5. \* denotes significant at the 10 percent level, \*\* denotes significant at the 5 percent

level, \*\*\* denotes significant at the 1 percent level.

	Model 1	Model 2	Model 3	Mode4	Mode5
Constant	4.8069***	4.8156***	5.7206***	5.1039***	4.9717***
	0.000	0.000	0.000	0.000	0.000
ORCS0	-0.0526				
	0.633				
OROP0		-0.2127**			
		0.012			
TUN0			-0.1844		
			0.111		
ORCS				0.034	0.0536
				0.898	0.836
OPCS				2.0942***	1.4035***
				0.000	0.000
ST				-0.0638***	
				0.000	
OPCS*ST					1.9894***
					0.000
SALES	0.005	0.0005	0.0037***	0.0004	0.0003
	0.517	0.479	0.000	0.636	0.732
Debt	1.3553***	1.3646***	1.7612**	1.5069***	1.5032***
	0.000	0.000	0.000	0.000	0.000
Size	-1.2562***	-1.2613***	-1.4799***	-1.3879***	-1.3432***
	0.000	0.000	0.000	0.000	0.000
Year	Yes	Yes	Yes	Yes	Yes
Industry	Yes	Yes	Yes	Yes	Yes
R-Square	0.443	0.444	0.511	0.471	0.474
Obs	4213	4213	2956	4373	4373

Table 10 shows the effect of tunnelling and propping on firm value. In Model 1 to 3, ORCS0, OROP0 and TUN0 are used. While coefficients on ORCS0 and TUN0 are negative, they are insignificant, implying investors are myopic to tunnelling lending. In Model 2, OROP0 has a negative effect on firms' TQ, significant at 5 percent level. So Hypothesis 6b is partly supported. In Model 4 and 5, OPCS shows a positive impact on TQ, significant at 1percent level, indicating a clear positive impact of propping lending on TQ. Thus, Hypothesis 7a is supported. In Model 5, an interaction term between OPCS and ST is added. With OPCS still keeps significant, the interaction term is also significant at 1percent level. Thus, Hypothesis 7b is supported.

Sales growth has a positive sign, although it is significant in only one model. Debt has a positive effect on market valuation while SIZE has a negative and significant impact on TQ.

**Table 11 Correlation Matrix (partial variables for saving space)**

P-value	BLOCK	CS	CR	SALES	ROA	DEBT	OROP	ORCS	OPCS	PYRAMID	ST	STATE
BLOCK	1.000											
CS	-0.425	1.000										
	0.000	----										
CR	-0.505	0.744	1.000									
	0.000	0.000	----									
SALES	0.025	-0.061	-0.042	1.000								
	0.100	0.000	0.005	----								
ROA	-0.024	0.065	0.075	-0.002	1.000							
	0.107	0.000	0.000	0.875	----							
DEBT	0.064	-0.145	-0.156	0.005	-0.456	1.000						
	0.000	0.000	0.000	0.745	0.000	----						
OROP	-0.066	0.067	0.058	-0.006	-0.246	0.115	1.000					
	0.000	0.000	0.000	0.681	0.000	0.000	----					
ORCS	-0.069	0.068	0.071	-0.003	-0.296	0.142	0.948	1.000				
	0.000	0.000	0.000	0.837	0.000	0.000	0.000	----				
OPCS	0.000	-0.003	0.033	0.010	-0.121	0.065	-0.278	0.042	1.000			
	0.990	0.822	0.029	0.502	0.000	0.000	0.000	0.006	----			
PYRAMID	0.028	0.083	0.130	0.016	0.066	-0.085	0.054	0.058	0.006	1.000		
	0.064	0.000	0.000	0.275	0.000	0.000	0.000	0.000	0.712	----		
ST	0.041	-0.075	-0.075	0.036	-0.081	0.139	0.071	0.117	0.131	0.009	1.000	
	0.006	0.000	0.000	0.016	0.000	0.000	0.000	0.000	0.000	0.568	----	
STATE	-0.226	0.366	0.313	-0.056	0.046	-0.113	0.022	0.023	0.002	-0.163	-0.063	1.000
	0.000	0.000	0.000	0.000	0.002	0.000	0.155	0.125	0.872	0.000	0.000	----
TQ	0.067	-0.132	-0.137	0.013	-0.418	0.410	0.015	0.089	0.223	-0.084	0.170	-0.036
	0.000	0.000	0.000	0.399	0.000	0.000	0.335	0.000	0.000	0.000	0.000	0.018

Table 11 presents the correlation between independent variables. It can be seen that CS has a high correlation with CR, which is because most of the firms have a controlling shareholder. ORCS has a high correlation with OROP, which is because nearly all the related lending is for tunnelling.

#### 4.4 Robustness Test

#### 4.4.1 Control Rights Threshold

There are no specific rules on choosing the threshold of control rights. La Porta et al. (1999) and Claessens, Djankov and Lang (2000) use 10 percent and 20 percent to classify the presence of controlling shareholders. 20 percent control cutoff is used to see if the choose of control rights affect the overall results. To isolate the effect of ST, ORCS0 is used in first model. OROP0 is used in Model 2. TUN0 is used in Model 3.

**Table 12 Robustness test using CSLOW**

	Model 1	Model 2	Model 3
Dependent Variable	ORCS0	OROP0	TUN0
Constant	0.0524	0.0371	0.144**
	0.155	0.305	0.012
CSLOW	0.0032**	-0.0058***	-0.00004
	0.034	0.000	0.987
Block	-0.0196***	-0.0144***	-0.0352***
	0.000	0.002	0.000
Pyramid	0.0129**	0.0136***	0.0116**
	0.045	0.000	0.014
State	0.0088***	0.0075**	0.0051*
	0.001	0.019	0.079
NLOAN	-0.0146	-0.0142	-0.0124
	0.229	0.26	0.538
SEO	0.0123**	0.0138***	0.0123
	0.017	0.000	0.336
FCF	0.0118***	-0.0084	0.0127
	0.001	0.283	0.136
SALES	0.0001***	0.0003***	0.0006***
	0.002	0.000	0.000
Debt	0.0521***	0.0603***	0.0475**
	0.000	0.000	0.015
Age	0.0165**	0.0231***	0.0209*
	0.022	0.000	0.058
Size	-0.0246**	-0.0265***	-0.0392**
	0.019	0.003	0.022
Year	Yes	Yes	Yes
Industry	Yes	Yes	Yes
R-Square	0.028	0.029	0.034
Obs	4213	4213	2956

\* denotes significant at the 10percent level, \*\* denotes significant at the 5percent level, \*\*\* denotes significant at the 1percent level.

Table 12 presents the results based on the lower level of control rights. Compared to those in Model 2, 4 and 6 in Table 8, coefficients on CSLOW show inconsistencies. Other blockholder normally is more powerful when controlling owners have lower control rights. As expected, coefficients on BLOCK are more economically and statistically significant. From Model 1 to 3, BLOCK respectively has coefficients -1.96 percent, -1.44 percent and -3.52 percent, all are significant at 1 percent level. Other variables like PYRAMID and STATE basically are the same. SEO also has a positive effect on tunnelling. All other variables have the similar outcomes as well. As coefficients on CSLOW provide mixed effect, it can be seen 20 percent of control rights may be not enough for effective control. This is in line with the conclusion from Lemmon and Lins (2003), who argue that a significant level of control is a necessary condition for expropriating minority shareholders.

#### **4.4.2 Causality between ST and OROP**

As shown before, tunnelling may cause the deterioration of firm performance. Because ST is for firms which have two consecutive year of loss, it can be seen that tunnelling may cause the occurrence of ST. Granger Causality test shows that OROP doesn't Granger Cause ST is rejected (p-value is 0). Thus, the inclusion of ST in the regressions for estimating tunnelling could be inappropriate. To control this potential weakness, ST firms are excluded from related regressions. Table 8 shows that the exclusion of ST although decreases R-square, it does make CS significant. The exclusion of ST doesn't affect Table 9. To Table 10, the exclusion of ST increases the effect of tunnelling lending on firm value.

#### **4.4.3 Endogeneity of Ownership**

Many scholars argue that ownership could be endogenously determined (see Chui, Titman & Wei, 2000; Demsetz & Villalonga, 2001 and others). If that is the case, regression results based on the use of controlling shareholders and control rights could be biased. While ownership endogeneity could be a problem in developed countries, in

emerging economies, as argued by Djankov and Murrell (2002), ownership is “largely determined through political and administrative processes rather than endogenously determined in markets with low transactions costs”. Lins (2003) indicates that the consideration of ownership endogeneity doesn’t change the relationship between ownership and firm valuation. Sun and Tong (2003) argue that in China, the amount and type of ownership is largely based on government policy, ideology and quota system. They find no evidence in China that SOEs profitability prior to privatisation affects the government’s consideration of how much ownership to retain after its privatisation. In fact, as shown by Bai, Liu and Song (2005), it is the ST designation system that triggers the only corporate control market in China between SOEs and non-SOEs. Overall, ownership endogeneity is not an issue in this research.

## **5. Conclusion**

This study uses a comprehensive sample of listed firms in China from 2001 to 2004 to provide evidence of tunnelling and propping via related lending. China offers a perfect scenario for studying shifting of funds between controlling owners and listed firms due to its premature institutions such as weak legal protection of minority shareholders, concentrated state ownership, share split structures and close operational and managerial relationship between controlling owners and listed firms caused by listing quota and the spin-off listing process.

My evidence shows that controlling owners engage in tunnelling and propping through related lending, although tunnelling dwarfs propping in terms of number and total volume. While state ownership and pyramid-controlled firms increase tunnelling lending, non-controlling blockholder reduce the level of tunnelling. When firms have more cash (SEO or high debt ratio), controlling owner will tunnel more. While there is strong evidence of propping in China yet it is mostly from outside new entrant instead of incumbent controlling owners. Tunnelling lending by controlling owners has a

negative effect on accounting performance and market valuation, at the same time propping has a positive impact on market performance although not on profitability. Yet, the role of propping can't be overemphasised (only part of ST firms is propped up) if there are no effective changes in legal institution and corporate governance.

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