

Ying, Qianwei; Wang, Liang

Article

Propping by controlling shareholders, wealth transfer and firm performance: Evidence from Chinese listed companies

China Journal of Accounting Research

Provided in Cooperation with:

Sun Yat-sen University

Suggested Citation: Ying, Qianwei; Wang, Liang (2013) : Propping by controlling shareholders, wealth transfer and firm performance: Evidence from Chinese listed companies, China Journal of Accounting Research, ISSN 1755-3091, Elsevier, Amsterdam, Vol. 6, Iss. 2, pp. 133-147, <https://doi.org/10.1016/j.cjar.2013.02.001>

This Version is available at:

<https://hdl.handle.net/10419/187585>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.



<https://creativecommons.org/licenses/by-nc-nd/3.0/>



Propping by controlling shareholders, wealth transfer and firm performance: Evidence from Chinese listed companies[☆]

Qianwei Ying^{a,*}, Liang Wang^b

^a Business School, Sichuan University, China

^b Minsheng Royal asset management co., LTD., China

ARTICLE INFO

Article history:

Received 6 February 2012

Accepted 7 November 2012

Available online 30 March 2013

Keywords:

Propping

Wealth transfer

Tunneling

Firm performance

ABSTRACT

Propping acts by controlling shareholders are common in Chinese listed firms. In this paper, we use data on related-party transactions of all listed Chinese firms from 2002 to 2008 to investigate the motivation behind controlling shareholders' propping acts and subsequent wealth-transfer behavior and how both affect firm performance. We find that such institutional motivators as the maintenance of shell resources and qualification for refinancing have a significant effect on the propping behavior of controlling shareholders of Chinese listed firms and that such behavior is often followed by more serious tunneling when shareholders are driven by these motivators. Compared with non-state-owned firms, state-owned firms with the motivation to qualify for refinancing exhibit more severe tunneling after engaging in propping behavior. We also find that while propping by controlling shareholders improves a firm's current operating performance, in firms whose controlling shareholders' are motivated by the desire to maintain shell resources or obtain a refinancing qualification their performance declines in the following year because of subsequent tunneling. The results presented in this paper provide us with a better understanding of the relationship between propping and tunneling, controlling shareholders' engagement in both and the consequences of that behavior.

© 2013 Production and hosting by Elsevier B.V. on behalf of China Journal of Accounting Research. Founded by Sun Yat-sen University and City University of Hong Kong.

* Corresponding author.

E-mail addresses: yingqw@scu.edu.cn, yingqianwei@gmail.com (Q. Ying).

[☆] This Study was supported by the National Natural Science Foundation of China (No. 71003108), Soft Science Foundation of Guangdong Province (2011B070400008) and Research Fund of Sichuan University (skqy201312).



Production and hosting by Elsevier

1. Introduction

Controlling shareholders' expropriation of minority shareholders in listed firms has caused widespread concern in academic circles. Numerous studies show that controlling shareholders often profit from minority shareholders through related-party transactions, particularly in emerging economies with poor protection of minority shareholders. For example, La Porta et al. (1997, 1998, 1999, 2000), Johnson et al. (2000), Glaeser et al. (2001) and Chang (2003) all find that major shareholders are able to profit from minority shareholders through tunneling. Cheung et al. (2006) investigates related-party transactions between companies listed in Hong Kong and their controlling shareholders. They discover that firms that announce these transactions earn significantly lower excess returns than those that do not. They also find that firms listed in Hong Kong with ultimate shareholders in mainland China are more likely to expropriate from minority shareholders through related-party transactions. Controlling shareholders can engage in such expropriation by occupying or shifting funds, by obtaining related-party loans and by selling assets or products below market price to companies with which they enjoy a close relationship. Jiang et al. (2010) finds that controlling shareholders of listed firms tunnel from these firms by means of inter-corporate loans. Zhou et al. (2003) reveal that asset transactions between listed firms and their controlling shareholders are accompanied by transfers of wealth, with the asset revaluation rate of these transactions often higher than that between the firms and their minority shareholders. Li et al. (2005) report that tunneling operations also exist in mergers and acquisitions (M&A) in China. Chen et al. (2003) investigate controlling shareholders' actions against minority shareholders and find that a high-dividend policy serves as a tool allowing these shareholders to shift resources from listed firms rather than increase firm value.

In reality, however, controlling shareholders do not always carry out related-party transactions to expropriate wealth from minority shareholders. Propping is also common in listed firms in China. Controlling shareholders sometimes "prop up" the firms they control for some specific purpose. For instance, Air China, China Southern Airlines and China Eastern Airlines collectively lost RMB27.8 billion in 2008 after engaging in unsuccessful hedging exercises. To ease the financial distress of these firms, their controlling shareholder, the State-owned Assets Supervision and Administration Co. (SASAC), provided them with an instant capital injection.¹ In the same year, Central Huijin Investment Ltd. injected funds into three major state-owned banks to satisfy their need for capital to better support listed companies. In 2009, after ST Zhangjiajie (000430) had a financial deficit for two consecutive years and investors had been warned of its delisting risk, the firm's controlling shareholder issued a written announcement promising to provide funding in the following year. By means of M&As, related-party transactions and equity selling, the controlling shareholder of ST Zhujiang (000505) successfully helped the firm to escape delisting, putting on a show of uncapping, capping and uncapping again.²

Controlling shareholders most commonly prop up their listed firms when the firms are facing financial distress or are in need of funding.³ The means by which they engage in such propping actions are capital injections, loan guarantees, related-party transactions and other types of profit transfers that are in the opposite direction to tunneling operations. Intuitively, the entire process is not only harmless to minority shareholders but may even promote their well-being.

Tunneling and propping are the two major behavioral patterns exhibited by controlling shareholders in conducting related-party transactions. The two opposing patterns may be found in the same company at dif-

¹ The majority shareholders of listed firms tend to support these firms in the face of financial distress. A case in point is China Eastern Airlines, which suffered tremendous losses in 2008 because of the failure of its aviation fuel hedging. The company's losses were so huge that its total debt exceeded its total assets. On April 17, 2009, the firm was tagged for special treatment (ST). Its controlling shareholder, the SASAC, injected 3 billion RMB and 4 billion RMB in capital in November 2008 and December 2009, respectively, thus saving the company from a severe crisis. The cases of China Southern Airlines and Air China are similar.

² The capping-uncapping-capping phenomenon is not uncommon among Chinese listed firms. *ST Zhujiang was saved from being delisted three times and was at risk of delisting in 2001, earning it the nickname "the firm best at fooling."

³ Friedman et al. (2003) find that in 1997 when the Asian financial crisis hit, controlling shareholders of listed firms in many emerging Asian markets provided funding, loan guarantees, capital injections and other forms of support to the firms they controlled if those firms were faced with financial distress.

ferent times. The question is when and to what extent shareholders choose to tunnel or prop. Friedman et al. (2003) develops a model suggesting that when a firm is facing a medium-level adverse impact, the optimal decision for its controlling shareholders is to prop up the firm. In cases with little or no adverse impact, in contrast, the optimal policy is to tunnel. In extreme cases, the optimal choice is complete tunneling. The model proposed by Friedman et al. (2003) helps us to better understand the essence of tunneling operations and the transfer of profits. However, as they themselves point out, there is insufficient evidence to support the theory of the transfer of profits. Friedman et al. (2003) also fail to provide evidence of tunneling. The stock market and its regulation in China provide us with an excellent opportunity to classify the extent and timing of tunneling and propping. Firms listed in China face two special risks: the risk of being delisted and the risk of losing their ability to issue new stocks. According to China Securities Regulatory Commission (CSRC) regulations, if a firm has a negative return on equity (ROE) for two consecutive years, it will be tagged for special treatment (ST) and face multiple transaction restrictions. If it continues to lose money in the third year, it will be delisted. Firms also face the risk of being deprived of the ability to issue new stocks because a firm that issues new stocks must have an average ROE no lower than 6% to be in compliance with existing regulations.

There is a very strict threshold for firms to gain listing status or issue new stocks in China. When firms are delisted or deprived of the right to issue new stocks, their controlling shareholders suffer. Accordingly, when a firm is at risk of either, its controlling shareholders have strong incentives to prop it up. Once they have succeeded in doing so, these shareholders may then engage in tunneling through related-party transactions. In this study, we examine the transaction data of listed firms from 2002 to 2008 to investigate the propping and tunneling operations of their controlling shareholders. Propping includes the sale of goods, provision of credit guarantees and capital injections. We discover that institutional factors, the maintenance of “shells” and the attainment of refinancing qualifications to be the most common reasons for controlling shareholders to prop up their firms. After successfully doing so, these listed firms are found to suffer from tunneling. Wealth transfers from controlling shareholders can significantly improve firm performance. However, when firms are supported for shell maintenance and refinancing reasons, a significant decline in performance is seen in the following year owing to tunneling.

A number of studies are closely related to our discussion in this paper. Jiang and Wang (2008), for example, find that controlling shareholders prop up earnings by using abnormal related sales when the listed firms they control are at risk of being delisted or deprived of their ability to refinance. Once such risks have been removed, however, significant cash transfers take place through related lending from the listed firms back to their controlling shareholders. The overall operation is in essence a way of manipulating earnings in reaction to specific regulations in the Chinese context. Liu and Lu (2007) are also of the opinion that earnings manipulation by Chinese listed firms is to a great extent caused by the need for tunneling on the part of their controlling shareholders. Peng et al. (2011) find that when listed firms are financially healthy, the market reacts unfavorably to the announcement of related-party transactions, thus indirectly suggesting that these transactions take place to expropriate from minority shareholders. When firms are in financial distress, in contrast, the market reacts favorably to such transactions, thus indicating that in this case they are taken as evidence of controlling shareholders propping up earnings.

The work presented in this paper differs from the aforementioned studies in several respects. First, we provide evidence to support the model developed by Friedman et al. (2003). We also provide evidence on the timing and consequences of propping and tunneling operations. The difference between our study and that of Peng et al. (2011) is that rather than adopt direct measures as we do, they attempt to indirectly determine whether controlling shareholders had conducted propping or tunneling operations using the market's reaction to related-party transactions disclosed at different times, whereas we identify the nature of these operations by observing the direction of related-party transactions.⁴ In this paper, we also confirm that shell maintenance and the attainment of a refinancing qualification are the two vital motivations for propping and tunneling

⁴ As Peng et al. (2011) point out, there are shortcomings to identifying the nature of related-party transactions, i.e., whether they constitute propping or tunneling, by their direction because the nature of such transactions is also related to detailed prices. However, with a few exceptions, the cash recipient is the beneficiary of a related-party transaction. In this paper, we at least provide additional evidence of the propping and tunneling behavior of controlling shareholders and the connection between them.

operations. Second, we prove that controlling shareholders with these motivations tend to tunnel from their firms after propping them up. Previous studies, such as that of [Jian and Wong \(2010\)](#), test this relation, but they only take into account two specific forms of related-party transactions, that is, related-party sales and inter-corporate loans. However, as [Peng et al. \(2011\)](#) point out, propping and tunneling can be implemented through any type of related-party transaction. Therefore, in this paper, we define related-party transactions as the sale of goods, provision of guarantees, inter-corporate loans, equity transfers and asset transactions. We confirm that controlling shareholders with the motivation to maintain shell resources and/or obtain a refinancing qualification can carry out earnings manipulation using any form of related transaction to prop up and then tunnel from their firms. Third, this paper compares controlling shareholder behavior in three cases: the motivation for shell maintenance, the motivation to obtain a refinancing qualification and other motivations. The results show that subsequent wealth transfers (tunneling) after propping are significant only in the first two cases. [Jian and Wong \(2010\)](#) make no such distinction or comparison. Furthermore, they fail to consider the behavioral differences among the controlling shareholders of firms with different types of ownership. In this paper, in contrast, we compare the behavior of the controlling shareholders of state-owned and privately owned enterprises. We find that when the motivation is to obtain a refinancing qualification, controlling shareholders' tunneling subsequent to propping is more prominent in state-owned enterprises than in their privately owned counterparts. Finally, our investigation of the influence of related-party transactions on firm performance further corroborates our rationale for using the direction of these transactions to measure propping and tunneling operations.

The remainder of the paper is arranged as follows. Section 2 provides the background to our research and presents our research hypotheses. Section 3 describes the data, variables and sample. Section 4 presents analysis of our empirical results and Section 5 concludes the paper.

2. Research background and hypotheses

2.1. Analysis of the intention to prop up operations

In the [Friedman et al. \(2003\)](#) model, the optimal policy for a firm facing a medium-level adverse impact is to prop up operations. In circumstances with little or no adverse impact, the optimal choice is to tunnel. In extreme cases, the optimal policy is to tunnel extensively. As previously noted, the CSRC regulations stipulating delisting and termination of the right to refinance in the face of poor firm performance affect the timing of controlling shareholders' tunneling and propping operations.

The Chinese stock issuance system is bureaucratic, with government approval needed for almost every step. The government controls the minimum requirements for and the scale and even pace of stock issuance, which results in difficulties in going public and, consequently, current listed firms become important shell resources. These shell resources are important because they are both scarce and provide a valuable platform for stockholders to obtain extremely high benefits, such as the qualification to refinance, firm popularity and fame, and the enjoyment of preferential policies. However, their value is finite. The risks of being delisted or having refinancing restrictions imposed constitute direct threats to firms' ability to profit from the capital market on an ongoing basis.

According to a CSRC provision that came into force in 1998, a firm that loses money for two consecutive years is tagged as a ST company. In 1999, the CSRC introduced the particular transfer (PT) rule, according to which a ST company was tagged as a PT company if it suffered a third consecutive financial loss. ST firms face multiple restrictions. For example, their pricing limit is 5%, they have to provide audited interim reports and they are prohibited from raising new funds in the stock market. PT stocks can only be traded on Fridays, with an upper limit of 5%. If a PT firm gains no profits in the subsequent year, it is delisted. In 2002, the CSRC repealed the PT rule, but retained the provisions for ST firms. If a firm suffers a financial deficit in three consecutive years, it is delisted directly without being tagged for PT. The CSRC's aim in enforcing these regulations is investor protection. However, as [Jian and Wong \(2010\)](#) point out, the ST provision has had many unexpected and serious consequences. For example, numerous healthy firms risk being delisted because of a temporary loss and the controlling shareholders of unhealthy firms are able to engage in earnings manipulation. [Bai et al. \(2004\)](#) find that it is not uncommon for controlling shareholders to prop up ST firms for the

purpose of maintaining shell resources. Consequently, ST firms enjoy an excess market rate of return of 31.8%. Peng et al. (2011) point out that if a firm listed in China is faced with a delisting crisis, the market reacts favorably to its related-party transactions, possibly in anticipation of the firm's shareholders providing it with support through these transactions.

In addition to the ST provision, the CSRC also places rigorous restrictions on refinancing activities through the allotment of shares. A provision that came into force in 1996 requires that a firm looking to qualify for refinancing must have net asset yields of 10% for three consecutive years. In 1999, the criterion was amended to average ROE over 10% and in each year no lower than 6%. There is empirical evidence to indicate that many firms carry out wealth transfers and earnings manipulation to meet this requirement (Chen and Yuan, 2004; Haw et al., 2005). In 2001, the CSRC amended the restriction again, now requiring that the average net asset yield should reach 6% in the past 3 years. Following this amendment, controlling shareholders began to display greater concern over how to obtain an average ROE of more than 6%.

As it is difficult to gain listing status and issue new stocks in China, when a firm is delisted and deprived of stock issuance rights, its controlling shareholders suffer tremendous losses. In the face of such threats, these shareholders thus have particularly strong incentives to prop up their firms, which in essence is a form of earnings management. Earnings management activities undertaken to maintain shell resources and refinancing qualifications circumvent government regulation and can thus be seen as institution-driven. Until the CSRC changes its policies, the motivation to maintain shell resources and refinancing rights will continue to drive propping-up activities. Hence, the controlling shareholders of both state- and privately owned firms will continue to have strong incentives to temporarily prop up their firms. We thus posit the following hypothesis.

Hypothesis 1. Maintaining shell resources and refinancing qualifications are important motivators for controlling shareholders to provide their firms with support.

2.2. Controlling shareholders' post-propping behavior

Controlling shareholders may engage in different types of propping operations for a variety of reasons. In addition to maintaining shell resources and refinancing rights, some controlling shareholders may support their firms to improve long-term profitability. The actions that take place after propping are also likely to differ depending on the purpose of the propping operations. Claessens and Fan (2002) report that shareholders' ownership proportion and share structure directly determine the extent of the separation between the right to receive cash payments and control rights. The extent of this separation further influences the behavior of controlling shareholders. Reducing the degree of separation helps to reduce controlling shareholders' expropriation and strengthening the right to receive cash payments increases the number of propping operations they carry out. Denis and McConnell (2003) find that when the largest shareholder holds a very large or very small proportion of shares, we see the alignment effect and entrenchment effect, respectively. The alignment effect occurs when the largest shareholder holds a very high proportion of shares and it thus takes stronger action to support the firm. In most cases, such supportive operations have the purpose of improving the long-term performance of the firm.

By the same logic, when the controlling shareholder's holding ratio and the firm's ownership structure meet certain requirements, or when the firm has a good governance structure, the controlling and minority shareholders may have consistent interests. In such cases, the former's propping operations are beneficial to the long-term development of the firm. Their timing is determined by the firm's long-term development plan and they are carried out with the purpose of increasing the intrinsic value of the firm. Accordingly, they do not necessarily have a connection with maintaining shell resources or refinancing qualifications. However, if the controlling shareholders instead provide support for these institution-driven purposes, the propping tends to be temporary. It is possible that these shareholders are merely making preparations to tunnel from minority shareholders in the future, which may not be good news for the long-term development of the firm. Zhang and Zeng (2006) use TopSoft to illustrate the drivers of controlling shareholders' propping and tunneling operations. They point out that the propping up of listed firms is generally an intermediate rather than ultimate goal. The ultimate goals of these firms' controlling shareholders are to qualify for financing in the stock market and to better prepare themselves for future tunneling activities. Jian and Wong (2010) also note

that it is not uncommon for the controlling shareholders of listed firms in China to ask for higher returns after propping. It is clear that the controlling shareholders of listed firms in China rarely prop up their firms out of concern over their long-term profitability. Instead, they do so to improve firm performance temporarily, thus allowing them to keep the shell resources in hand and qualify for refinancing. On achieving this goal, they often carry out tunneling operations. Minority shareholders are the victims of this process. At the same time, the weaknesses in China's legal system make it difficult to distinguish the legality of related-party transactions between controlling shareholders and listed firms. Without internal or external supervision, it is relatively easy for controlling shareholders to manipulate earnings by means of connected transactions to maintain shell resources and refinancing rights.

Furthermore, under the CSRC's current approval system, state-owned firms can generally obtain refinancing approval more easily than non-state-owned firms even when both meet the basic requirements to qualify for refinancing. Therefore, once a refinancing qualification has been obtained, state-owned firms find it easier to realize that refinancing. Thus, the controlling shareholders of these firms are more likely to request a higher return and engage in tunneling in the year after their propping activities. Accordingly, we posit the following two hypotheses.

Hypothesis 2A. There is a significant transfer of wealth in listed firms that have been propped up for shell maintenance and refinancing qualification purposes, whereas no such transfer takes place in firms that have been supported for other purposes.

Hypothesis 2B. When motivated by the desire to qualify for refinancing, the controlling shareholders of state-owned firms are more likely to transfer wealth from the listed firms that they propped up the previous year compared to their non-state-owned counterparts.

2.3. Propping, wealth transfers and firm performance

The propping operations of controlling shareholders influence the performance of listed firms. In compliance with the CRSC's regulations, firms try to improve current-period earnings to qualify for refinancing and maintain shell resources. To achieve this objective, their controlling shareholders conduct wealth transfers by means of related-party transactions, capital injections and M&As because such operations can improve firm performance in the current period. Bai et al. (2004) discover a special phenomenon in the Chinese capital market: ST firms have a rate of return that is 31.8% higher than that of the market in the 2 years after being so tagged. The reason, they note, is that the controlling shareholders of these firms shift resources to them to maintain control and refinancing qualifications, thereby temporarily improving firm performance. Li et al. (2005) illustrate that M&As carried out when a firm is facing allotment or is trying to avoid a deficit are usually carried out for propping purposes. These M&As can improve firm performance in the accounting sense, whereas those carried out for other purposes have a less significant influence on performance. As previously noted, controlling shareholders sometimes prop up firms for reasons other than improving long-term profitability. If their rationale is to maintain shell resources or qualify for refinancing, they tend to subsequently engage in tunneling or even require payback, thereby expropriating from minority shareholders. Peng et al. (2011) find that when a listed firm is in financial distress, the market reacts positively to information disclosed about its related-party transactions, which suggests that the propping operations of controlling shareholders can improve firm performance. However, when a firm is performing well financially, the market displays an unfavorable reaction to related-party transaction disclosures because it anticipates that such tunneling activities will have a negative effect on firm performance. Therefore, if controlling shareholders support a listed firm merely for the temporary purpose of shell maintenance and refinancing qualification, the firm will experience a temporary improvement in performance, but that performance will soon deteriorate because of the subsequent tunneling operations. This discussion brings us to our third hypothesis.

Hypothesis 3. Propping operations can significantly improve a listed firm's performance in the current year, but subsequent tunneling operations will result in a significant performance decline.

3. Empirical design

3.1. Sample and data sources

Our data comprises all related-party transactions undertaken from 2002 to 2008 by companies listed on the Shanghai and Shenzhen Stock Exchanges. The data was carefully screened for transactions between listed companies and related parties. We manually remove projects unrelated to propping and wealth transfers, such as joint investments and labor/management agreements, to isolate the related-party transactions of interest. We then refine the original sample by excluding listed financial institutions and companies with incomplete data. Finally, to avoid the effect of outliers, we winsorize the sample. Our final sample thus contains 9348 related-party transaction observations, including 2913 observations of propping operations by controlling shareholders. Our related-party transaction data is from the RESSET financial research database and other financial data is from the CCER financial research database.

3.2. Variable measurements

3.2.1. Measure of the propping behavior of controlling shareholders

Propping can be represented by specific types of related-party transactions, albeit in the opposite direction to tunneling (Jian and Wong, 2010). Peng et al. (2011) point out that related-party transactions constitute the major means of both propping and tunneling among the large shareholders of listed companies in China. Large shareholders not only transfer wealth through a variety of related-party transactions, such as the purchase of goods, loan guarantees and asset injections, they also exploit listed companies through the sale of goods, a reverse form of guarantees and the illegal use of funds.

In the absence of effective legal and regulatory systems, the motivations for related-party transactions are difficult for regulators and minority shareholders to detect and thus these transactions are frequently used as earnings manipulation tools by controlling shareholders. As a result, they constitute the best proxy variable for measuring controlling shareholder behavior. Khanna and Yafeh (2005) point out that related-party transactions, particularly the sale of goods to related parties, can act as a proxy variable for such measurement. Jian and Wong (2010) deduct normal related-party transactions from total related-party transactions using an ordinary least squares (OLS) regression and use the residuals as abnormal related-party transactions to measure excess propping or tunneling behavior on the part of controlling shareholders. In this paper, we employ the same approach to test whether controlling shareholders prop up their companies. Our empirical model is

$$Prop_rate_{i,t} = r_0 + r_1 \cdot Size_{i,t} + r_2 \cdot Lev_{i,t} + r_3 \cdot Tobinq_{i,t} + \sum r_j \cdot Industry_{i,t} + \varepsilon_{i,t}. \quad (1)$$

In this model, $Prop_rate_{i,t}$ represents possible propping transactions as a proportion of total assets. We first classify funding, guarantees, mortgages and other related-party transactions by controlling shareholders that generate income for the company as possible propping transactions. We then use the residuals of Model (1) to represent excess propping operations. Related-party transactions may constitute normal business and thus to calculate the number of actual propping operations, we must remove those transactions that are a normal part of business. A company's size, debt ratio, business development opportunities and industry are the most important variables affecting normal related-party transactions, and we thus use them as control variables. We set $Size_{i,t}$ as the logarithm of asset size, $Lev_{i,t}$ as the debt ratio and $Tobinq_{i,t}$ as Tobin's Q to measure business development opportunities. We also control for industry dummies in Model (1). If the residual term in the model is greater than 0, then the dummy variable $Prop$ takes the value of 1, thus indicating that there is excess propping. Otherwise, it takes the value of 0. $Prop$ thus serves as an indicator to show whether there is excess propping. In robustness tests, $Prop_rate$, the ratio of possible propping activities to total assets, is used as an alternative proxy variable for controlling shareholders' propping behavior.

3.2.2. Measurement of tunneling after propping

Subsequent tunneling is measured similarly to propping, although in the opposite direction of related-party transactions. For listed companies, the possible sources of tunneling are the purchase of goods or assets, guar-

antees, mortgages and other projects that generate income for related parties. Subtracting normal related-party transactions that confer cash upon the related parties of the listed firm, the residual amount of related-party transactions then indicates controlling shareholders' tunneling behavior. If the residual amount is greater than 0, then the dummy variable *Tunnel* takes the value of 1, indicating the presence of excess tunneling, and otherwise is 0. Thus, the dummy variable *Tunnel* serves as an indicator to show whether there is excess tunneling. In robustness tests, *Tunnel_rate*, the ratio of the possible tunneling amount (measured as the amount of related-party transactions with the related parties of listed firms as the cash recipients) to total assets is used as an alternative proxy variable for controlling shareholders' tunneling behavior.

3.2.3. Measurement of controlling shareholders' incentives to engage in propping

According to a special provision published by the CSRC in 2001, Chinese listed companies that operate at a loss for three consecutive years face delisting. This provision has prompted the controlling shareholders of many listed companies to prop up and support these companies after two consecutive annual losses. Therefore, to measure propping activities that are driven by the motivation to maintain shell resources, we use the dummy variable *Baoqiao*, which takes the value of 1 if the firm's ROE in the two previous consecutive years has been less than 0, and the value of 0 otherwise.

Pursuant to the 2001 CSRC regulations concerning refinancing ability, listed companies must have an average ROE of at least 6% in the past 3 years to qualify for new stock issuance. The controlling shareholders of companies whose average return on assets (ROA) in the past 2 years was in the vicinity of 6% have strong motivation to prop up these companies in the third year to ensure that they meet the conditions for refinancing. For companies with a 2-year average ROE far less than 6%, propping alone will not help them to satisfy the threshold conditions. For those with a 2-year average ROE far more than 6%, these conditions can be satisfied without propping. Thus, in neither circumstance do controlling shareholders have an incentive to prop up their firms. To measure propping behavior motivated by the desire to meet the threshold for refinancing, we use the dummy variable *Peigu*. If a firm's average ROE in the past 2 years is between 4% and 8%, the value of this dummy variable is 1, and otherwise is 0. In addition to the incentives to maintain shell resources and qualify for refinancing, we also consider propping driven by other motivations, for example, propping undertaken to protect the long-term interests of the firm. Furthermore, taking into account that the propping and wealth-transfer behavior of controlling shareholders is likely to be affected by independent directors, external regulation, ownership structure and property rights, we include them as control variables. All of the variables used in this paper and their definitions are provided in Table 1.

3.3. Empirical models

In Hypothesis 1, we propose the attainment of refinancing rights and maintenance of shell resources as important controlling shareholder motivations. To test this hypothesis, we design the following econometric models.

$$\text{Probit}(\text{Prop}_{i,t}) = \alpha_0 + \alpha_1 \cdot \text{Peigu}_{i,t} + \alpha_2 \cdot \text{Baoqiao}_{i,t} + \alpha_3 \cdot \text{Control}_{i,t} + \varepsilon \quad (2)$$

$$\text{Prop_rate}_{i,t} = \alpha_0 + \alpha_1 \cdot \text{Peigu}_{i,t} + \alpha_2 \cdot \text{Baoqiao}_{i,t} + \alpha_3 \cdot \text{Control}_{i,t} + \varepsilon \quad (3)$$

Peigu and *Baoqiao* measure controlling shareholders' motivation to qualify for refinancing and maintain shell resources, respectively. The proportion of independent directors on the board, external auditor type and firm ownership structure are included as control variables, as they are expected to influence shareholder behavior. To increase the robustness of the results, we also used the ratio of shareholders' supporting funds to total assets, *Prop_rate*, as an alternative proxy variable for propping in empirical testing.

In Hypothesis 2, we propose that propping by controlling shareholders can be classified according to its underlying motivation. Driven by the motivation to qualify for refinancing and maintain shell resources, controlling shareholders of listed companies are posited to display significant tunneling behavior. However, propping without a regulatory arbitrage purpose may imply careful consideration of the long-term interests of the company. In this case, the listed firm would exhibit no significant tunneling behavior. To test this hypothesis, we design the following econometric model.

Table 1
Variable definitions.

Variable	Abbreviation	Definition
Excess propping measure (dummy variable)	<i>Prop</i>	<i>Dummy variable</i> : if excess propping exists, denoted as 1; otherwise 0
Propping measure (continuous variable)	<i>Prop_rate</i>	Amount of propping funds/total assets
Excess tunneling measure (dummy variable)	<i>Tunnel</i>	<i>Dummy variable</i> : if tunneling occurs next year, denoted as 1; otherwise 0
Tunneling measure (continuous variable)	<i>Tunnel_rate</i>	Next year's tunneling amount/total assets
Return on equity	<i>ROE</i>	Current year's return/net assets
Return on assets	<i>ROA</i>	Current year's return/total assets
Motivation to obtain refinancing qualification	<i>Peigu</i>	<i>Dummy variable</i> : if past 2 years' average ROE is 4–8%, denoted as 1; otherwise 0
Motivation to maintain shell resources	<i>Baoqiao</i>	<i>Dummy variable</i> : if past 2 years' average ROE is negative, denoted as 1; otherwise 0
Propping carried out to qualify for refinancing	<i>Propping1</i>	<i>Dummy variable</i> : if propping behavior matches the obtaining–refinancing–qualification motivation, denoted as 1; otherwise 0
Propping carried out to maintain shell resources	<i>Propping2</i>	<i>Dummy variable</i> : if propping behavior matches the maintaining-shell-resources motivation, denoted as 1; otherwise 0
Propping carried out for other purposes	<i>Propping3</i>	<i>Dummy variable</i> : if propping behavior matches no specific purpose, denoted as 1; otherwise 0
Proportion of independent directors	<i>Indep</i>	Number of independent directors/board size
Big-4 CPA firm	<i>Top4</i>	<i>Dummy variable</i> : if firm is audited by a Big-4 CPA firm, takes a value of 1; otherwise 0
Concentration of three largest shareholders	<i>Share3</i>	Stake of the top-three shareholders/stake of the top-10 shareholders
Ownership	<i>State</i>	<i>Dummy variable</i> : takes the value of 1 for state-owned enterprises; otherwise 0
Asset size	<i>Size</i>	Logarithm of total assets
Debt ratio	<i>Lev</i>	Total debt/total assets
Tobin's <i>Q</i>	<i>Tobinq</i>	Total market capitalization/total assets

$$\text{Probit}(\text{Tunnel}_{i,t+1}) = r_0 + r_1 \cdot \text{Prop}_{i,t} + \text{Control}_{i,t} + \varepsilon \quad (4)$$

In this model, $\text{Tunnel}_{i,t+1}$ indicates whether controlling shareholders engage in excess tunneling behavior in the next year, and $\text{Prop}_{i,t}$ indicates whether they prop up the company in the current year. We include independent directors, external regulation and ownership structure as control variables. On the basis of this model, we classify propping behavior according to its underlying motivation and perform the same empirical tests. Considering the endogeneity of the *Prop* variable because of the “generated regressor” problem (Pagan, 1984), we apply the classical two-step treatment effects model (Maddala, 1983) to control for this endogeneity problem. To further test and verify the influence of propping and tunneling on firm performance, we further add the following difference models to our tests.

$$\begin{aligned} \Delta \text{Perf}_{i,t} = & \alpha_0 + \alpha_1 \cdot \Delta \text{Prop_rate}_{i,t} + \alpha_2 \cdot \Delta \text{Lev}_{i,t} + \alpha_3 \cdot \Delta \text{Tobinq}_{i,t} + \alpha_4 \cdot \Delta \text{Sales}_{i,t} + \alpha_5 \cdot \Delta \text{Assets}_{i,t} \\ & + \alpha_6 \cdot \sum \text{Ind} + \alpha_7 \cdot \sum \text{Year} + \varepsilon \end{aligned} \quad (5)$$

$$\begin{aligned} \Delta \text{Perf}_{i,t} = & \alpha_0 + \alpha_1 \cdot \Delta \text{Tunnel_rate}_{i,t} + \alpha_2 \cdot \Delta \text{Lev}_{i,t} + \alpha_3 \cdot \Delta \text{Tobinq}_{i,t} + \alpha_4 \cdot \Delta \text{Sales}_{i,t} + \alpha_5 \cdot \Delta \text{Assets}_{i,t} \\ & + \alpha_6 \cdot \sum \text{Ind} + \alpha_7 \cdot \sum \text{Year} + \varepsilon \end{aligned} \quad (6)$$

In these models, $\Delta \text{Perf}_{i,t}$ is the change in firm performance from the previous year to the current year. We use ROE and ROA as proxy variables for change in firm performance. $\Delta \text{Prop_rate}_{i,t}$ is the difference in the amount of propping demonstrated by controlling shareholders between the current and previous years, and $\Delta \text{Tunnel_rate}_{i,t}$ is the difference in their amount of tunneling between these 2 years. The other control variables we include are the asset-liability ratio, Tobin's *Q*, operating income and asset size, all of them in difference

terms. In addition, we take into consideration the effects of industry and time dummy variables. We use the difference in each variable to remove unobservable individual firm effects that do not change over time. These individual effects may be simultaneously related to shareholders' propping or tunneling operations and to firm performance. Removing individual effects by differences controls for the endogeneity problem to a certain extent.

4. Empirical results and analysis

4.1. Descriptive statistics of controlling shareholders' propping and tunneling behavior

The descriptive statistics of the relevant variables of controlling shareholders' propping and tunneling behavior are presented in Table 2.

Table 2 shows that of the Shanghai and Shenzhen Stock Exchange-listed companies with related-party transactions, those whose controlling shareholders engaged in excessive propping account for 35.14% on average. The amount of propping-oriented related-party transactions is RMB12.19 billion on average, accounting for 41.77% of total assets. The companies whose controlling shareholders engage in tunneling immediately after propping account for 78.37% of all propped-up companies, with the amount of tunneling accounting for 20.71% of total assets. We can conclude that controlling shareholders do transfer wealth after propping. Table 2 also shows that the proportion of companies displaying excess propping and the ratio of the propping amount to total assets are both significantly higher in 2007 and 2008 than in the other years. The most likely explanation is that the global financial crisis of 2007 and 2008 created business difficulties for the listed companies in the sample, which thus experienced poorer financial performance. In these circumstances, the firms' controlling shareholders significantly increased their propping activities to stabilize financial performance.

Table 3 presents the distribution of the suspected motivations for controlling shareholders' propping behavior. Overall, maintaining shell resources and qualifying for refinancing are the most important propping motivations, accounting for 14.82% and 11.78%, respectively, of all propping observations on average and for a considerable proportion in every year. Table 4 further describes shareholders' propping and subsequent

Table 2
Sample distribution of controlling shareholders' propping and tunneling behavior.

	2002	2003	2004	2005	2006	2007	2008	Average
Number of listed companies involved in related-party transactions	1029	1133	1260	1220	1367	1372	904	1184
Number of listed companies displaying excess propping behavior	287	373	354	394	457	675	373	416
Proportion of listed companies displaying excess propping behavior (%)	27.89	32.92	28.10	32.30	33.43	49.20	41.26	35.14
Number of listed companies exhibiting excess tunneling behavior after propping	243	322	297	363	397	389	268	326
Proportion of listed companies exhibiting excess tunneling behavior after propping (%)	84.67	86.33	83.90	92.13	86.87	57.63	71.85	78.37
Amount of suspected propping transactions (in RMB billion)	7.90	9.40	11.00	12.00	12.00	19.00	14.00	12.19
Ratio of propping amount to total assets (%)	34.90	36.00	37.70	37.30	40.50	63.00	43.00	41.77
Amount of post-propping tunneling (in RMB billion)	6.20	5.70	6.30	7.80	12.00	8.00	8.40	7.77
Ratio of post-propping tunneling amount to total assets (%)	19.70	18.10	16.00	19.20	33.50	19.10	19.40	20.71

Table 3
Distribution of suspected motivations for controlling shareholders' propping behavior.

	2002	2003	2004	2005	2006	2007	2008	Average
Number of excessively propped companies	287	373	354	394	457	675	373	416
Number of observations with suspected refinancing motivation	49	58	52	60	59	100	55	62
Proportion of observations with suspected refinancing motivation (%)	17.19	15.46	14.60	15.23	12.98	14.77	14.75	14.82
Number of observations with suspected shell resource motivation	22	43	43	41	46	104	44	49
Proportion of observations with suspected shell resource motivation (%)	7.67	11.53	12.15	10.41	10.07	15.41	11.80	11.78
Number of observations with other motivations	216	272	259	293	352	471	274	305
Proportion of observations with other motivations (%)	75.14	73.01	73.25	74.36	76.95	69.82	73.45	73.40

Table 4

Descriptive statistics for propping behavior of controlling shareholders under different motivations.

		2002	2003	2004	2005	2006	2007	2008	Average
Suspected refinancing motivation	Amount of propping to total assets (%)	50.20	51.90	55.70	44.30	60.50	75.80	51.00	55.63
	Amount of next year's post-propping tunneling to total assets (%)	22.40	20.70	23.60	24.60	46.30	13.50	15.80	23.84
Suspected shell maintenance motivation	Amount of propping to total assets (%)	60.30	39.90	71.90	51.20	64.80	90.00	78.20	65.19
	Amount of next year's post-propping tunneling to total assets (%)	21.30	33.40	23.70	16.50	25.40	16.90	28.10	23.61
Other motivations	Amount of propping to total assets (%)	33.10	39.30	47.60	43.40	45.80	69.90	48.30	46.77
	Amount of next year's post-propping tunneling to total assets (%)	15.60	13.20	12.50	16.50	26.70	11.00	13.20	15.53

transfer behavior under different motivations. Table 4 comparison of the “ratio of propping amount to total assets” suggests that observations whose suspected motivations were the maintenance of shell resources and attainment of a refinancing qualification exhibited more prominent propping activities than those with other motivations in any given year. These results reflect institutional factors’ strengthening of controlling shareholders’ willingness to prop up their companies when they reach the critical values for these two institution-driven motivations. The comparison of the “ratio of post-propping tunneling amount to total assets” suggests that observations driven by these motivations experience more intense subsequent tunneling than those driven by other motivations.

4.2. Empirical results and discussion

In this section, we report the results of further tests of the hypotheses using regression models. These results give us a more reasonable and convincing explanation of the motivations for and consequences of controlling shareholders’ propping behavior and its relationship with tunneling behavior and firm performance.

4.3. Propping motivations of controlling shareholders

We first need to verify whether controlling shareholders with suspected shell resource and refinancing qualification motivations have a greater propensity to prop up listed companies and whether that propping is more intense than when other motivations are in play. The empirical results presented in Table 5 show that both *Peigu* and *Baoqiao* have a significant positive relationship with the propping variables (both the propping dummy variable and propping continuous variable), which suggests that when driven by these two institution-oriented motivations, controlling shareholders tend to prop up their listed companies. We further find them to be important motivations for the controlling shareholders of both state- and non-state-owned enterprises, with no significant difference between the two. Hypothesis 1 is thus supported by the empirical evidence.

The results for the other control variables show that the ratio of independent directors on the board does not affect the behavior of controlling shareholders. Listed companies audited by Big-4 accounting firms are less likely to be propped up, possibly because a high-quality audit reduces earnings manipulation. A higher ownership concentration implies that the controlling shareholder has a greater stake in the listed company, which leads to a greater probability and amount of propping. In addition, asset size and the asset-liability ratio also affect the propping behavior of controlling shareholders.

To further test whether there is significant post-propping tunneling among listed companies whose controlling shareholders are driven by the motivation to maintain shell resources or qualify for refinancing, we run regressions using empirical Model (4). In addition, we use the two-step treatment effects model (Maddala, 1983) to control for the endogenous selection bias of the propping variable. More specifically, in the first step,

Table 5

Empirical results of motivation analysis of controlling shareholders' propping behavior.

	Prop (dummy variable)			Prop_rate (continuous variable)		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
<i>Peigu</i>	0.207*** (6.64)	0.187*** (3.59)	0.207*** (6.62)	0.043*** (7.29)	0.031*** (3.17)	0.043*** (7.27)
<i>Baoqiao</i>	0.198*** (4.82)	0.197*** (4.78)	0.172*** (2.65)	0.042*** (4.67)	0.041*** (4.58)	0.033*** (2.45)
<i>Peigu</i> × <i>State</i>		0.030 (0.49)			0.018 (1.54)	
<i>Baoqiao</i> × <i>State</i>			0.042 (0.53)			0.013 (0.75)
<i>Indep</i>	−0.015 (−0.15)	−0.015 (−0.15)	−0.014 (−0.14)	−0.002 (−0.10)	−0.002 (−0.09)	−0.002 (−0.10)
<i>Top4</i>	−0.272*** (−4.66)	−0.272*** (−4.66)	−0.271*** (−4.65)	−0.049*** (−4.33)	−0.049*** (−4.35)	−0.049*** (−4.31)
<i>Share3</i>	1.970*** (12.41)	1.965*** (12.35)	1.971*** (12.41)	0.335*** (13.25)	0.332*** (13.07)	0.336*** (13.27)
<i>State</i>	−0.006 (−0.18)	−0.018 (−0.45)	−0.013 (−0.39)	0.009 (1.52)	0.002 (0.26)	0.007 (1.09)
<i>Size</i>				0.014*** (4.90)	0.014*** (4.82)	0.014*** (4.90)
<i>Lev</i>				0.071*** (6.20)	0.070*** (6.14)	0.071*** (6.29)
<i>Tobinq</i>				−0.012* (−1.85)	−0.012* (−1.91)	−0.011* (−1.82)
<i>Constant</i>	−2.688*** (−9.55)	−2.671*** (−9.42)	−2.686*** (−9.55)	−0.402*** (−5.46)	−0.386*** (−5.20)	−0.402*** (−5.46)
<i>Year</i>	Controlled	Controlled	Controlled	Controlled	Controlled	Controlled
<i>Industry</i>	Controlled	Controlled	Controlled	Controlled	Controlled	Controlled
<i>N</i>	9348	9348	9348	9348	9348	9348
<i>Pseudo R²/R²</i>	0.039	0.039	0.039	0.102	0.101	0.101

Notes: The figures in parentheses are *t*-values. We also set the critical values of the two previous years' average ROE for the *Peigu* variable to 5–7% and 4.5–7.5%, and our conclusions remain unchanged.

* $p < 0.1$.

** $p < 0.05$.

*** $p < 0.01$.

we run the *Probit* regression model in Eq. (2) to predict the probability of excess propping. The first-step regression yields the endogenous selection bias correction term *Hazard*, which is then included in the second-step regression using Model (4). The detailed regression results are presented in Table 6.⁵

The regression results indicate that controlling shareholders' subsequent tunneling behavior is significantly related to their motivation for propping. Those motivated by the desire to maintain shell resources or obtain a refinancing qualification are significantly more likely to engage in tunneling in the year after propping relative to those whose propping have some other motivation. The implication is that controlling shareholders with another motivation may be providing real support that is in the long-term interests of the listed companies they control. Hence, no significant tunneling behavior is observed in the year after propping in these firms. Hypothesis 2A is thus verified. Furthermore, the coefficient on the interaction term between the ultimate controller of the listed company and the propping variable shows that in the shareholder sample whose propping was motivated by the desire to qualify for refinancing, state-owned enterprises display significantly more post-propping tunneling behavior than their non-state-owned counterparts. This result supports Hypothesis 2B. However, tunneling does not necessarily occur in the year immediately following the propping activity, but

⁵ In this paper, the propping variable is lagged to the tunneling variable by one period. Thus, the endogeneity problem should not affect the regression results to a great extent. We also run the regression using Model (4) directly without controlling for the selection bias term, and the main results remain the same. The detailed regression results are omitted here, but they are available from the authors upon request.

Table 6

Empirical analysis of whether tunneling takes place after propping by controlling shareholders.

	Sample of propping with the refinancing motivation		Sample of propping with the shell resources motivation		Sample of propping for other motivations	
	1	2	3	4	5	6
<i>Propping1</i>	0.263*** (5.48)	0.087 (1.14)				
<i>Propping1</i> × <i>State</i>		0.257*** (3.01)				
<i>Propping2</i>			0.142** (2.24)	0.170* (1.68)		
<i>Propping2</i> × <i>State</i>				−0.043 (−0.35)		
<i>Propping3</i>					−0.034 (−0.77)	−0.012 (−0.15)
<i>Propping3</i> × <i>State</i>						−0.030 (−0.32)
<i>Indep</i>	0.015 (0.15)	0.012 (0.12)	0.005 (0.05)	0.005 (0.05)	0.002 (0.02)	0.001 (0.01)
<i>Top4</i>	0.056 (1.05)	0.055 (1.03)	0.060 (1.12)	0.060 (1.12)	0.042 (0.78)	0.041 (0.77)
<i>Share3</i>	0.926*** (6.05)	0.920*** (6.01)	0.939*** (6.15)	0.939*** (6.15)	1.089*** (7.06)	1.087*** (7.05)
<i>State</i>	0.163*** (5.16)	0.126*** (3.75)	0.160*** (5.08)	0.163*** (5.01)	0.165*** (5.22)	0.169*** (5.05)
<i>Hazard</i>	0.094*** (4.27)	0.095*** (4.29)	0.148*** (7.75)	0.148*** (7.74)	0.253*** (11.52)	0.253*** (11.52)
<i>Constant</i>	−1.970*** (−7.12)	−1.896*** (−6.78)	−1.279*** (−6.28)	−1.282*** (−6.29)	−1.342*** (−6.60)	−1.343*** (−6.61)
<i>Year</i>	Controlled	Controlled	Controlled	Controlled	Controlled	Controlled
<i>Industry</i>	Controlled	Controlled	Controlled	Controlled	Controlled	Controlled
<i>N</i>	9348	9348	9348	9348	9348	9348
<i>Pseudo R</i> ²	0.038	0.036	0.039	0.040	0.036	0.040

Notes: The figures in parentheses are *t*-values. We also set the critical values of the two previous years' average ROE for the *Peigu* variable at 5–7% and 4.5–7.5%, and our conclusions remain unchanged.

* $p < 0.1$.

** $p < 0.05$.

*** $p < 0.01$.

may take place later. As a robustness test, we replace the dependent variable with controlling shareholders' tunneling behavior within 2 years of propping, and the main results remain unchanged.⁶

4.4. Behavior of controlling shareholders and performance of listed firms

To further determine what influence controlling shareholders' propping and wealth-transfer behavior has on firm performance, we apply the empirical models in Eqs. (5) and (6) and run further regressions. The results are presented in Table 7. It can be seen that a change in the amount of propping by controlling shareholders has a significant and positive relationship with a change in company ROE (Δ ROE) and that a change in the amount of tunneling in the following year has a significant negative effect on company ROE in the next year. These results suggest that the propping behavior of controlling shareholders does affect firm performance, which is in line with Hypothesis 3. These results also further confirm the validity of using the direction of related-party transactions to identify propping and tunneling.

In addition, the regression results in Table 7 also show that the relationship between changes in ROA and controlling shareholders' propping and tunneling behavior is not significant. The most likely explanation is

⁶ To save space, we omit the detailed regression results from this paper, but they are available from the authors upon request.

Table 7

Empirical analysis of whether propping and tunneling in the next year result in a change in firm performance.

	Current year Δ ROE Model 1	Current year Δ ROA Model 2	Next year Δ ROE Model 3	Next year Δ ROA Model 4
Current year $\Delta Prop_rate$	0.050** (2.47)	0.001 (0.39)		
Next year $\Delta Tunnel_rate$			−0.044** (−2.37)	−0.003 (−0.81)
Current year ΔLev	0.120 (0.90)	−0.294*** (−16.10)		
Current year $\Delta Tobinq$	0.068*** (3.26)	−0.005 (−1.40)		
Current year $\Delta Sales$	0.053*** (2.79)	0.023*** (7.67)		
Current year $\Delta Assets$	−0.038** (−2.54)	0.000 (0.14)		
Next year ΔLev			−0.234* (−1.80)	−0.297*** (−17.42)
Next year $\Delta Tobinq$			0.044*** (2.77)	0.001 (0.21)
Next year $\Delta Sales$			0.052*** (3.05)	0.027*** (9.51)
Next year $\Delta Assets$			−0.017 (−1.28)	0.001 (0.32)
Constant	−0.002 (−0.02)	−0.022* (−1.72)	−0.239*** (−5.22)	0.047*** (4.08)
Year	Control	Control	Control	Control
Industry	Control	Control	Control	Control
N	7501	7501	9348	9348
R ²	0.014	0.227	0.012	0.17

Notes: The figures in parentheses are *t*-values. The critical values of the two previous years' average ROE for the *Peigu* variable were also set at 5–7% and 4.5–7.5%, and the conclusions remain unchanged.

* $p < 0.1$.

** $p < 0.05$.

*** $p < 0.01$.

that a large number of related-party transactions, e.g. inter-corporate loans, do not change the size of equity but do change asset size and profits. As a result, related-party transactions may have a greater effect on ROE than ROA. To a certain extent, this result also suggests that it is easier for controlling shareholders to manipulate the ROE of their companies than the ROA. However, current CSRC regulations impose restrictions primarily on ROE rather than ROA, which provides room for controlling shareholders to manipulate firm earnings to get around these regulations.

5. Conclusion

Propping is one of the most important types of behavior displayed by controlling shareholders. In this paper, we examine related-party transaction data for listed firms in China during the 2002–2008 period and investigate the intentions, consequences and mechanisms of controlling shareholders' propping operations and their connections with tunneling behavior. We find the institution-driven intentions of shell resource maintenance and refinancing qualification to be the two most important reasons for the controlling shareholders of listed firms to prop up their firms. We also find that firms propped up for these reasons suffer tunneling in the following year. Supportive activities motivated by other goals are more likely to be long-lasting and are found not to be accompanied by significant wealth-transfer activities in the following year. Controlling shareholder propping can significantly improve firm performance in the current year, but when its motivation is shell maintenance or refinancing qualification, that performance will experience a significant decline in the following year because of controlling shareholders' subsequent tunneling activities.

The results of this paper show that controlling shareholders take different actions after propping depending on their motivation for it. Propping activities motivated by the two aforementioned institution-driven goals are usually transitory, whereas those that occur for other purposes are more sustainable. Therefore, the Chinese regulatory authorities should look more closely at the related-party transactions of listed firms, particularly those driven by the desire to maintain shell resources and qualify for refinancing, to better regulate the short-term activities of these firms' controlling shareholders.

References

- Bai, C.E., Liu, Q., Song, F.M., 2004. Bad News is Good News: Propping and Tunneling Evidence From China. University of Hong Kong Working Paper.
- Chang, S.J., 2003. Ownership structure, expropriation, and performance of group-affiliated firms in Korea. *Academy of Management Journal* 46, 238–253.
- Chen, C.W.K., Yuan, H.Q., 2004. Earnings management and resource allocation: evidence from China's accounting-based regulation of rights issues. *The Accounting Review* 79 (3), 645–665.
- Chen, X., Chen, D., Shi, X., 2003. Corporate governance and cash dividends: a case study based on the Foshan Illumination Company. *Management World* 8, 118–126.
- Cheung, Y.L., Jing, L.H., Rau, R., Stoutaitis, A., 2006. Tunneling, propping, and expropriation: evidence from connected party transactions in Hong Kong. *Journal of Financial Economics* 82, 343–386.
- Claessens, S., Fan, J.P.H., 2002. Corporate governance in Asia: a survey. *International Review of Finance* 3, 71–103.
- Denis, D.K., McConnell, J.J., 2003. International corporate governance. *Journal of Financial and Quantitative Analysis* 38, 1–36.
- Friedman, E., Johnson, S., Mitton, T., 2003. Propping and tunneling. *Journal of Comparative Economics* 31, 732–750.
- Glaeser, E., Johnson, S., Shleifer, A., 2001. Coase versus the Coasians. *Quarterly Journal of Economics* 116, 853–899.
- Haw, I.M., Qi, D., Wu, D., Wu, W., 2005. Market consequences of earnings management in response to security regulations in China. *Contemporary Accounting Research* 22, 95–140.
- Jian, M., Wong, T.J., 2010. Propping through related party transactions. *Review of Accounting Studies* 15, 70–105.
- Jiang, G., Wang, H., 2008. Should earnings thresholds be used as delisting criteria? *Journal of Accounting and Public Policy* 27, 409–419.
- Jiang, G., Lee, C., Yue, H., 2010. Tunneling through inter-corporate loans: the China experience. *Journal of Financial Economics* 98 (1), 1–20.
- Johnson, S., La Porta, R., Lopez-de-Silanes, F., Shleifer, A., 2000. Tunneling. *American Economic Review* 90, 22–27.
- Khanna, T., Yafeh, Y., 2005. Business groups and risk sharing around the world. *Journal of Business* 78, 301–340.
- La Porta, R., Lopez-de-Silanes, F., Shleifer, A., Vishny, R., 1997. Legal determinants of external finance. *Journal of Finance* 52, 1131–1150.
- La Porta, R., Lopez-de-Silanes, F., Shleifer, A., Vishny, R., 1998. Law and finance. *Journal of Political Economy* 106, 1113–1155.
- 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., 2000. Investor protection and corporate governance. *Journal of Financial Economics* 58, 3–27.
- Li, Z., Yu, Q., Wang, X., 2005. Tunneling, propping and M&A: evidence from Chinese listed companies. *Economic Research Journal* 1, 95–105.
- Liu, Q., Lu, Z., 2007. Corporate governance and earnings management in the Chinese listed companies: a tunneling perspective. *Journal of Corporate Finance* 13, 881–906.
- Maddala, G.S., 1983. *Limited-Dependent and Qualitative Variables in Econometrics*. Cambridge University Press, Cambridge.
- Pagan, A., 1984. Econometric issues in the analysis of regressions with generated regressors. *International Economic Review* 25, 221–247.
- Peng, W.Q., Wei, K.C., Yang, Z., 2011. Tunneling or propping: evidence from connected transactions in China. *Journal of Corporate Finance* 17 (2), 306–325.
- Zhang, G., Zeng, Y., 2006. Big shareholders propping and tunneling: a case study based on TopSoft Company. *Management World* 8, 126–135.
- Zhou, Q., Xia, L., Li, M., 2003. Tunneling motivation of large shareholder and the bias of asset valuation of listed companies. *Statistical Research* 10, 39–44.