



## **Institutional Investors and Blockholder Tunneling in China: The Impact of Firm Characteristics and Institutional Investor Centrality**

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### **ABSTRACT**

Using data from Chinese public companies listed in both Shanghai Stock Exchange and Shenzhen Stock Exchange from 2007-2016, this paper tests whether institutional investors can mitigate blockholders' tunneling through related party transactions. The results show that independent institutional investors deter blockholders from tunneling in related party transactions. Furthermore, the network centrality of institutional investors is negatively related to blockholders' benefit expropriation. Finally, institutional investors are more effective monitors in state-owned companies than in non-state-owned companies. However, there is no significant difference in their mitigating effect between centrally and locally managed state-owned companies.

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## 1. Introduction

In Chinese public companies, the majority of capital is often controlled by the state, a company, a family, or several persons. Majority rule gives controlling shareholders decision-making power at the general meeting of shareholders. This creates the potential of a few blockholders benefiting from expropriating capital at the expense of minority shareholders. In China, due to poor legal enforcement, weaker investor protection systems and inefficient markets, controlling shareholders have greater opportunities for tunneling and embezzling. Many studies have demonstrated that the controlling shareholders harm the interests of medium and small shareholders through a number of ways including directly occupying capital, dividend policies, directional private placements, mergers and acquisitions, related party transactions and other means. Over time, the expropriating methods become increasingly subtle and indirect. Controlling shareholders use cross-shareholding, pyramid structures, and group organizations to construct an external network which separates the cash-flow right from the control right.

Related party transactions (RPT) is an important method used by the large shareholders with external networks to obtain private benefits (Cai and Gao, 2010). According to resource-dependence theory, the related party transaction network is a complex relational network that combines several enterprises into a long-term, purposeful organizational arrangement. On the one hand, this gives an enterprise a long-term competitive advantage; on the other hand, it can serve controllers' individual interests through network or internal trading. The complexity and diversity of a related-transactions network, such as a bigger operating space, more channels, and more forms of concealment, allow RPTs of controlling holders to benefit from companies more directly and substantially than those within a company. Accordingly, it is important to study corporate governance of large-shareholder networks from the perspective of RPTs.

In China, the problem of how to effectively solve the conflicts of interests between controlling and minority shareholders is a core issue in corporate governance. Academia and regulatory departments have proposed several solutions to the problem. First, establishing an independent board of directors. The China Securities Regulatory Commission (CSRC) requires a minimum of one-third of the board to be composed of independent directors, thus decreasing the influence of large shareholders. In China, however, the function of independent directors is very limited. Tunneling behavior will only be stopped when directors object to illegal RPTs (Wang and Zhang, 2010). However, in most cases, independent directors do not want or dare to object to tunneling behavior (Liu et al., 2012). Second, establishing an audit committee. Although the board's audit committee aims to reduce the tunneling behaviors of RPTs, Cheung et al. (2009b) claim that there are various types of related parties and RPTs, and it is difficult for the audit committee to identify RPTs. Sometimes the audit committee is controlled by controlling shareholders and is not independent. Third, establishing a shareholders' network voting mechanism. To give voice to medium-small shareholders, the CSRC has established a shareholders' network voting system, calling for minority shareholders to take action to protect themselves. But only shareholders who are registered on stock registration day can vote at the general meeting, leading to inefficiency in internet voting governance systems (Kong et al., 2012).

Some researchers show that the inclusion of institutional investors in the governance mechanism effectively restricts large shareholders' tunneling (Jiang et al., 2010). On the one hand, institutional investors with larger holdings have the motivation and ability to challenge and monitor controlling shareholders against expropriation on large shareholders' capital and reduce their losses (Wang and Xiao, 2005); on the other hand, institutional investors can benefit more from their activism (Demiralp et al, 2011).

With the progressive realization of full circulation in the Chinese stock market and the development of financial markets, China's institutional investors are continuously growing. At the end of 2017,

institutional investors held shares in more than 3,000 listed companies. Thus, institutional investors have the motivation and the ability to participate in corporate governance. Our study investigates whether institutional investors can reduce blockholder tunneling in China.

Our sample consists of 18,136 public companies-years including 8,190 for state-owned enterprises (SOEs), accounting for 45% of the sample, and 9,946 for non-state-owned enterprises (NSOEs), accounting for 55% of the sample. Because of the existence of various management systems, institutional backgrounds, political purposes and so on, there are significant differences in blockholder control patterns between SOEs (*within the system*) and NSOEs (*outside the system*). Due to hierarchical control systems, even in SOEs there are different management systems, political purposes, and social responsibility goals between companies controlled by the central government and those controlled by the local government. Thus, tunneling methods in RPTs might differ between SOEs and NSOEs and between central SOEs and local SOEs.

Large shareholders in SOEs and NSOEs have different institutional backgrounds, management structures, and corporate networks. The ultimate principal of a SOE is abstract, consisting of all citizens. As the first-stage agent, the central government is trusted by the citizenry to manage SOEs. However, the distribution of SOEs is spread throughout the country. Because the central government does not have enough resources to directly manage all of them, it employs a hierarchical control system, with some companies controlled by the central government and the majority entrusted to local government administration.

State-owned listed companies and NSOEs have different characteristics and behaviors. Most state-owned listed companies are restructured from previous state-owned firms. Usually, the relationship between listed companies and the parent company or other companies under the common control of the parent company is complicated. The parent or other holding company forms a knitted network constructed by the major shareholders, using control rights based on specific contracts. There is a natural network among a state-owned listed company, its parent firm and other companies controlled by the parent company, in which they prefer to make RPTs. In contrast, NSOEs follow a different development pathway. At the beginning of the startup stage, NSOEs usually experience difficulties. Since the expected earnings of the non-state-owned company are uncertain, they have difficulty obtaining external resources such as financing, technology, and human resources. Only close family members or friends support start-up entrepreneurs with money and other resources to help them survive the startup phase. As the company grows, many founders will expand their operations. Controlling individuals magnify the wealth effect through cross shareholding, pyramidal structures and so on. They can grab private interest through RPTs in the complex and invisible shareholders' network.

Institutional investors can mitigate blockholders expropriation of small and medium shareholders' assets. Referencing prior theories, practices, and Chinese institutional structure, this paper analyzes the nature of the ultimate controlling shareholders, the characteristics of the institutional investors, and the effect of heterogeneous institutional investors on the entrenchment of controlling shareholders.

We add to the literature by including in the analysis the institutional investor characteristics of independence and network centrality, the corporate characteristics of non-state-owned enterprises and central and locally controlled state-owned enterprises and the type of tunneling such as related-party transactions. Using data from the Wind, China Center for Economic Research (CCER) and China Stock Market and Accounting Research (CSMAR) databases, we find that independent institutional investors deter blockholder tunneling with network centrality and independence augmenting the impact. The effect of network centrality on blockholder tunneling suggests that communication between institutional investors enhances their monitoring effectiveness. We also find that the impact varies based upon corporate characteristics with the largest for centrally-controlled state owned enterprises and the

smallest for non-state-owned enterprises.

Our results on the impact of institutional investors on blockholder tunneling are consistent with previous research. The main contributions of this paper are the role of network centrality in amplifying the monitoring effectiveness of institutional investors and the differential impact that institutional investors have upon local and centrally managed state-owned enterprises and non-state owned enterprises.

The remainder of the paper is organized as follows. Section 2 discusses related literature and develops our hypothesis. Section 3 describes our research design, data sources and sample. Section 4 presents the empirical evidence. Section 5 concludes.

## **2. Related Literature and Hypothesis**

In the case of concentrated ownership, controlling shareholders dominate shareholders' meetings, which often are a mere formality, so that minority shareholders' control rights and property rights are separated, which facilitates major shareholders' efforts to obtain the private benefits by misappropriating minority shareholders' interests. Especially in China, where the state-owned enterprise has an absentee owner, the investor protection mechanism and judicial system are incomplete, large shareholders are motivated to infringe on the interests of small shareholders.

A company builds a powerful interest group by constructing an enterprise group with a multi-level equity structure and an interest conveyor chain using complex related relationships. Large shareholders can engage in unfair transactions in the networks that they control and transfer resources from a listed company to related firms owned by themselves or their relatives. RPTs by large shareholders can either increase or decrease the enterprise's value. According to the transaction costs theory, RPTs are efficient when they contribute reduce transaction costs and overcome the difficulties in enforcing property rights and contracts that are essential for the company (Jian and Wong, 2010). Conversely, when listed companies are in financial distress, their controlling shareholders are more likely to conduct connected transactions to prop up their companies (Peng, et al., 2011). A large number of empirical studies indicate that RPTs occur in companies with weaker corporate governance mechanisms. In such companies, the controlling shareholders' primary motivation for engaging in RPTs is tunneling (Gordon et al. 2004; Kohlbeck and Mayhew, 2010).

Listed companies controlled by enterprise groups and listed companies in areas with relatively low levels of economic development are more likely to experience unfair RPTs (Jian and Wong, 2010). The illegal appropriation of capital by the controlling shareholders in SOEs is higher than that of in NSOEs (Li et al., 2004). In short, in the process of related-party transactions by Chinese listed companies, the tunneling effect of controlling shareholders is far greater than the support effect (Cheung et al., 2009a). However, in the case of blockholder control, larger shareholders can individually or collectively resist the controlling shareholder's predatory behavior, producing a restrictive effect (Shleifer and Vishny, 1997).

### **A. Institutional investors and blockholders' tunneling**

As the largest non-controlling shareholders, the institutional investors can reduce both the incidence of RPTs and expropriation of company and shareholder interests by RPTs engaged in by the controlling shareholders (Lv and Li, 2010). To earn excess returns, institutional investors, have both the motivation and ability to supervise inside controller behaviors and protect the interests of small and medium-sized investors (Chuang and Lee, 2011; Cheng et al., 2010; Tang and Yuan, 2010; Ramalingegowda and Yu, 2012).

Although institutional investors may experience a "free-rider" problem in monitoring managers, they will emerge to maintain the rights of small and medium-sized investors and spread the message about tunneling in the network when controlling shareholders hollow out corporate resources, damage the interests of minority shareholders, and foster conflicts between large and small shareholders. The alignment of institutional investors' interests may inspire them to unite and take actions resisting the expropriation of minority shareholder wealth by controlling shareholders (for example, Smith, 1996; Hartzell et al., 2013). Chen et al. (2007) found that if outside equity is concentrated in one or a few institutions, those institutions would have strong will and power to participate in corporate governance and would voluntarily assume the role of a supervising internal controller. When institutional investors' shareholding ratio reaches a certain proportion, the capital taken from small and medium shareholders by controlling shareholders through RPTs is significantly less than in other companies (Wang and Xiao, 2005).

Recent empirical studies suggest that institutional investors have the motivation and ability to engage in shareholder activism. For example, institutional investors can exert an influence on controlling shareholders, reduce hollowing-out behaviors, and protect investors' rights and interests (Lu and Hua, 2009; Jiang et al., 2010). Indeed, different types of institutional investors have significant differences in incentive mechanisms, management systems, cultural backgrounds, etc. These differences prompt some institutional investors to become leaders in corporate governance and some followers (Bennett, Sias, and Starks, 2003). Chen et al. (2007) find that independent institutional investors, those that either have no potential business connection with firms or experience little government intervention, do not share the interests of block shareholders and therefore typically will not collude with block shareholders. Moreover, such institutions' supervision costs are less than the potential gains. They also find that gray institutions, such as insurance companies and banks, have business contacts with the company and are more easily affected by company management compared to independent institutions. The costs of supervision are also more expensive for gray institutions.

Using six years of data from 23 countries, Aggarwal et al. (2011) found that foreign institutional investors and institutional investors from countries with strong legal protections can improve company governance, increase company value, and reduce the internal controller's private benefits. With respect to conflicts of interest between large and small shareholders, institutional investors that have potential business relationships with the firms may engage in RPTs with blockholders and are less likely to supervise blockholders' RPTs. Institutional investors lacking potential business relationships with a firm are harmed by blockholders' unfair RPTs. In this case, they would call on other institutional investors to prevent large shareholders' tunneling behavior. It seems that independent institutional investors are active and willing to participate in various types of shareholder activism; and the larger the institutional investor's holdings are, the greater the investor's motivation (McCahery et al., 2010).

According to Embedded Theory, like all other actors, the governance behavior of institutional investors is affected by their social network. That is, the governance behavior of institutional investors is not a single investor's behavior but is a product of multiplayers making decisions in a dynamic interactive process which is restricted by the relationship and structure of their social network (Fracassi and Tate, 2012). Institutional investors play a valuable role in capital markets as they serve as a link between minority investors and blockholders. They generally have relatively strong financial strength and professional competence (Burns, et al., 2010). According to social capital theory, institutional investors have natural advantages to gain information and resources. The main social capitals embedded in the network of institutional investors are expertise, heterogeneous information, and reputation capital.

First, usually, an institutional investor holds stocks in multiple companies and stocks of any one specific company are usually held by many institutional investors. The communication between

institutional investors accelerates the liquidity of professional knowledge in their network and enhances their professional competency and governance capacity through learning from each other (Li, et al., 2017).

Second, the network relationship of institutional investors is a weak tie relationship. The institutional investors located in the center of the network can obtain more information, which motivates them to disseminate information and increase their governance capacity.

Third, the institutional investors located in the center of the network have higher reputations, which induces other institutional investors to follow and support their actions. This paper uses the institutional investors in the top ten shareholders to build the network and to measure the institutional investors' governance impact by calculating their network degree centrality. When the centrality is higher, an institutional investor more directly connects with other institutional investors and increases its reputation within the entire network. Additionally, institutional investors with a higher reputation can attract more followers and individual investors, leading to a greater responsibility to monitor insiders' unfair transactions and a stronger capital capacity to reduce investment risk.

Consistent with the above analysis, the hypothesis is formulated as follows:

**H1:** Institutional investors can effectively monitor blockholders' tunneling behavior and their shareholding ratio is negatively related to the blockholders' capital occupation in RPTs.

**H1a:** Other things being equal, relative to non-independent institutional investors, independent institutional investors are more likely to reduce blockholders' tunneling in RPTs.

**H1b:** Other things being equal, the higher the network centrality of institutional investors the more likely they reduce blockholders' RPTs tunneling.

## **B. Institutional investors and blockholders' tunneling in companies with different ultimate controllers**

Nearly half of the listed companies in the Chinese capital market were restructured from state-owned enterprises. There are inextricable connections between state-owned listed companies and their parent company and the parent's other subsidiary companies. For a number of reasons, state-owned listed companies make a lot of related purchases, reorganizing assets, exchanging of funds, and guaranteed mortgages with their ultimate controller.

Generally, the ultimate owners of state-owned enterprises are the citizens of the entire country or local citizens. As the first-level agent, the central government delegated its duties by those citizens to manage all SOEs. Because SOEs have spread throughout China, the central government does not have enough resources to manage all of them directly, and therefore, has authorized local governments to manage most SOE. Although all citizens have controlling rights in listed companies, in practice, the controlling rights are held by various institutions depending on the restructuring mode. When state-owned enterprises are established by a department or an institution which represents the nation and holds more than 50% of the total assets in a listed company, the SOE is controlled by the department or institution.

After the reform, early SOEs were usually wrapped up or assigned to other departments and listed companies usually originated in a workshop or a branch company of the original SOE. When the right to control a listed company is retained by the original SOE, listed companies usually make business connections with the controlling shareholders. In the process of divestitures, SOEs left their non-core assets to their parent companies, which needed the listed company's support and thus, the controlling shareholder and local governments have a strong incentive and enough power to transfer profits from the listed company to the parent company. The executives of SOEs are appointed or nominated by government, not selected from the manager's market, which make external supervision systems and

internal control systems inefficient. Figure 1 depicts the various control and administration structure for SOEs.

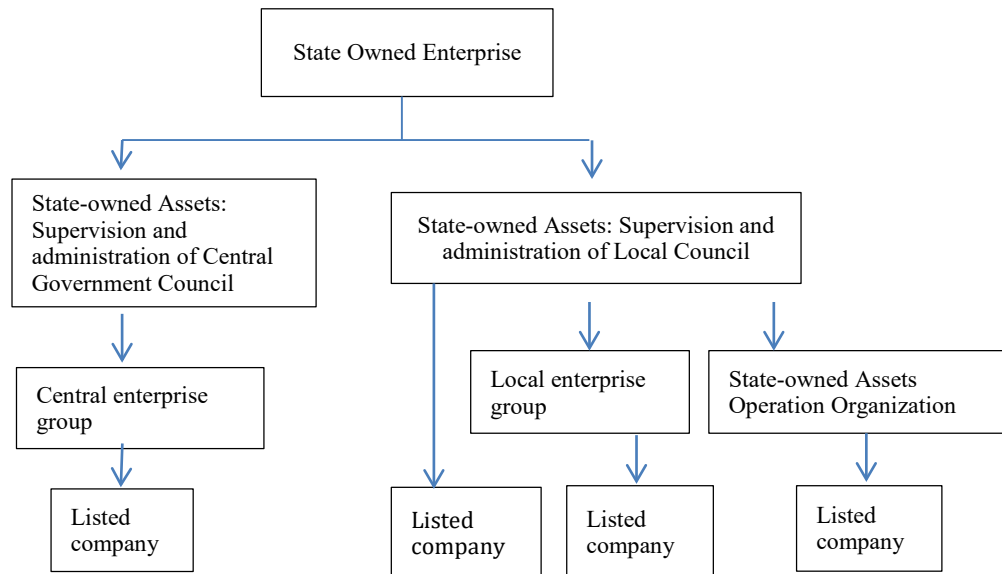


Figure 1 Ownership control structure of state-owned listed companies

As the most common form of business organization, non-state-owned firms play an important role in the global economy. In developing countries, non-state-owned enterprises (NSOEs) are gradually increasing in importance. With the growth of NSOEs, property rights and organizational frameworks, such as pyramid structures, enterprise groups, and family companies, provide a space for blockholders to engage in tunneling.

Previous researchers find differences in corporate governance between state-owned and non-state-owned enterprises and there are three theories explain it. First, according to the principal-agent theory and in contrast to non-state-owned enterprises, although the owners of SOEs of the locality or of China, in practice, the ownership of SOEs is vacant and there is a lack of real supervision to RPTs. Therefore, the main goal of SOE managers is maximization of personal income during his or her term. Second, according to corporate governance theory, relative to NSOEs, there is ownership concentration and organizational redundancy in SOEs, which enable blockholders to override control systems, leading to inefficiencies in internal and external supervision systems. Third, according to policy catering theory, relative to NSOEs, SOEs bear more social and policy enforcement responsibility. Sometimes, they achieve their responsibilities through RPTs.

Property-right theory emphasizes the role of state governance and corporate governance mechanisms in restricting controlling shareholders' tunneling behavior. In markets with relatively weak state governance, corporate governance mechanisms can have an important impact on the behavior of the controlling shareholder. In the condition of China's imperfect market economy and judicial and investor protection systems, corporate governance mechanisms have a potential role in restricting tunneling behavior of controlling shareholders. Similarly, under the existing institutional environment, the private-contract model has important effects on the behavior of the controlling shareholder.

As shareholders, blockholders and institutional investors have consistent interests and relative benefits. The consistency of interests prompts them to take joint responsibility for supervising management, whereas the relativity of benefits prompts them to compete for the company's residual

claims. Based on the private-contract mode, different from the conflicts of interest between shareholders and managers, there is a fight for the company's residual claims between large and small shareholders. Institutional investors' positive actions can reduce blockholders' tunneling.

Government plays a dual role of "practitioner" and "watchdog" in the contractual relationship of SOEs in China (Wang and Ma, 2014). So, in SOEs, self-supervision of government induces the failure of corporate governance, which makes it more complex and easier to conceal the unfair transactions between the related parties. Meanwhile, because of lack of shareholders in SOEs, the RPTs of blockholders are actually the inside dealings of managers or of the ultimate controllers. It is difficult for institutional investors to discover internal RPTs. In contrast, the government only acts as a "watchdog" in the contractual relationships of NSOEs. That's to say, NSOEs do not receive government assistance. As the controllers of NSOEs worry about receiving citations from the government, they are more prudent in disclosing information. Besides, as NSOEs' management is organized by the owners, managers and other internal members of the enterprise, the decisions are made by multiple individuals and it is difficult to keep information secret. Therefore, it is easier for institutional investors to collect information and identify unfair related-transaction behaviors.

According to the above analysis, the hypothesis is formulated as follow:

**H2:** Other things being equal, institutional investors are more effective in reducing unfair RPTs in NSOEs compared to SOEs.

As mentioned previously, there are two controlling levels of SOEs in China, central and local. Due to different regulatory environments and institutional restrictions, the RPTs in central SOEs are different from those in local SOEs. Correspondingly, the supervision effects of institutional investors in central SOEs are also different from those in local SOEs.

Central SOEs are supervised and administrated by the central government, whose goal is to maximize the public interests of the entire society, including economic and political objectives. Usually, central SOEs have more centralized control than local SOEs and central SOEs are usually larger in size and have more levels than local SOEs. Furthermore, the central government makes policy and strategy decisions for central SOEs, and sometimes protects them. Therefore, due to the central government's authority, it is difficult for institutional investors to monitor the blockholders' RPTs in central SOEs.

Local SOEs are supervised and administrated by local government, whose goals are to realize the objectives set by the central government and local government. The managers of local SOEs are appointed and evaluated by the local government, which reduces information asymmetry among government, investors, and companies. Moreover, because of better access to local government officials and the managers of local SOEs, institutional investors can obtain information easier and timelier from the local government than from the central government managed firms. On the other hand, information disclosure in central state-owned company is more transparent and more standardized than those that apply to local SOEs. Therefore, it is easier for institutional investors to collect information and identify blockholders' related-transaction behavior and controlling shareholders' unfair transactions in central government managed SOEs. As a result, we will put forward three competing hypotheses.

According to the above analysis, the hypothesis is formulated as follow:

**H3a:** Other things being equal, institutional investors are more effective in reducing unfair RPTs in local SOEs compared with central SOEs.

**H3b:** Other things being equal, institutional investors are less effective in reducing unfair RPTs in local SOEs compared with central SOEs.

**H3c:** Other things being equal, there is no difference in the effectiveness of institutional investors in reducing unfair RPTs in local and central government managed SOEs.



### 3. Research Design

#### A. Models

To address the endogenous problem on the test results and disentangle large shareholders' tunneling from the institutional shareholding, we adopt lagged institutional shareholding to explain the influence on large holders' interest occupation.

Equation (1) tests the hypothesis that institutional investors exert influence on controlling shareholders' tunneling behaviors:

$$\begin{aligned}
 Tunneling_t = & a_0 + a_1 INSH_{t-1} + a_2 First_t + a_3 Z_{(2-10)_t} + a_4 DIV_t + a_5 State_t + a_6 LEV_t \\
 & + a_7 Size_t + a_8 Growth_t + a_9 Indr_t + a_{10} SSize_t + a_{11} Dual_t + a_{12} COMT_t \\
 & + a_{13} BH_t + a_{14} Group_t + a_{15} Age_t + a_{16} Audit_{t-1} + a_{17} Law_{t-1} \\
 & + \sum Year + \sum Industry + \varepsilon
 \end{aligned} \tag{1}$$

#### B. Variables

##### i. Blockholders' benefits occupation

The variable  $Tunneling_t$  represents large shareholders' capital expropriation in the current year measured by three variables described earlier in this paper and defined in Table 1: RPTs and Other Capital Occupation. Controlling blockholders may use various strategies to expropriate minority shareholder wealth: obtaining loan guarantees from listed companies, diluting equity, stealing company investment opportunities or forcing companies to invest in unprofitable ventures that benefit the controlling shareholder, and so on. Early scholars indirectly measured controlling shareholders' benefits expropriation using macroscopic proxy variables such as non-operating income and non-recurrent profit and loss (Bertrand et al., 2002), the legal and regulatory environment related to investor protection (La Porta et al., 2000), or separation of controlling shareholders' control right and cash-flow right (which is derived from pyramid and cross-holdings (Claesens et al., 2002)). In recent years, it has become popular to use the consequences produced by a specific tunneling behavior, especially related-party transactions (Cheung et al., 2006), to measure the damage incurred by small shareholders. To test controlling shareholders' tunneling behaviors involving related-party transactions in the Chinese market, scholars have used several proxy variables: loan guarantees (Berkman et al., 2009), the difference between accounts receivable and payable (Gao and Kling, 2008), the transfer price of RPTs (Cheung et al., 2009b) and so on. It is a common phenomenon for controlling shareholders of Chinese listed companies to expropriate capital in the form of a loan, usually documented as "other receivables." When control power is significantly greater than cash flow rights, this form of tunneling is more serious (Jiang et al., 2010). Various types of related-party transactions have various results: Zheng (2009) mentions asset acquisitions, asset sales, asset replacements, the purchase and sale of goods and services, and cash payments as tunneling behaviors, whereas cash received and other transactions with the unlisted subsidiary are classified as "support" behaviors.

Based on the previous research, this paper chooses two variables to measure the tunneling behavior of large shareholders in related-party transactions: (1) other receivables occupancy in related-party transactions ( $O\_Occup$ ), which is equal to other receivables between the listed companies and the controlling shareholders or their parent or subsidiary corporations, divided by total year-end assets (Wang, Ji and Li, 2009, Jiang et al., 2010); and (2) expropriation-related-party transactions occupancy ( $ERPT$ ), which is equal to the total expropriation-related-party transactions between the listed

companies and the controlling shareholders, or their parent or subsidiary corporations, divided by total year-end assets (Cai and Gao, 2010). According to Cheung et al. (2009a) and Lv and Li (2010), commodity trading, asset transactions, labor transactions, and equity transactions between the listed companies and the controlling shareholders, or their parent or subsidiary corporations, are defined as expropriation-related-party transactions. The reason for choosing these two variables is that they are relatively stable after using several methods to test. One method involves dividing the companies into two categories according to their performance and then comparing the large shareholders' expropriation for each of the categories<sup>1</sup>.

## ii. Institutional ownership

There may be a reverse causality between institutional investors' holdings and blockholders tunneling, so, in order to alleviate endogeneity between independent and dependent variables, the independent variables are lagged one time period.

### 1) Total ownership

We consider two measures of concentrated holdings by total institutions, all measured as of the year-end prior to the deal announcement: (1) ownership controlled by total institutions (*TINSH*)—we study those institutions' supervision ability related to controlling shareholders' capital expropriation; and (2) ownership controlled by institutions within the firm's top ten shareholders (*INSH10*)<sup>2</sup>. We verify whether the large institutions have taken action to check the largest shareholder in robustness testing.

### 2) Institutional investors' independence

To test the supervisory role and counterbalance the effects of the various types of institutional investors on large shareholders' expropriation, we refine the institutional classification into two groups based on the institution's potential business ties with the invested firm and the degree of government intervention<sup>3</sup>: (1) independent institutional investors; and (2) non-independent institutional investors. Following Chen et al. (2007) and Ferreira and Matos (2008), we group securities investment funds and QFII (Qualified Foreign Institutional Investors) as independent institutional investors, whereas social insurance funds, securities traders, insurance companies and trust companies are regarded as non-independent institutional investors. The shareholding proportion of all independent institutional investors (firm-specific) at the end of a year is defined as independent institutional ownership (*IDINSH*), whereas the shareholding proportion of all non-independent institutional investors (firm-specific) at the end of a year is defined as non-independent institutional ownership (*UIDINSH*).

### 3) Institutional Investors' Network Centrality

Consistent with Li et al. (2017), we chose Degree Centrality which popularly used in social network research to measure the position of institutional investors in their network and the advantages of institutional investors' information and resources.

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<sup>1</sup> We use industry- adjusted main business profit rate to measure company performance since the main business is not easy to manipulate. The main business profit rate is compared to the respective industry profit rate. We regard the companies with a greater-than-average value as good, others are bad. Next, we compare shareholders' tunneling from the two groups.

<sup>2</sup> Samples whose largest shareholder is an institutional investor are eliminated.

<sup>3</sup> There are nine main categories of domestic institutional investors: (1) securities investment funds, (2) QFII, (3) social security funds, (4) brokerages, (5) insurance companies, (6) investment trust companies, (7) financial companies, (8) annuities, and (9) banks. Because the last three categories of institutional investors started late in China and their investments are small and irregular, we do not take them into account in the classification of institutions, instead considering only the first six.

**Degree Centrality** measures the number of direct connections between an institutional investor and other institutional investors in a network. i.e. the number of nodes that the institutional investor at node  $i$  contacts directly with institutional investors on the other nodes, which implies the relevance and vitality between the institutional investors at node  $i$  and institutional investors on the other nodes. The equation is:

$$Degr\_Cent_i = \frac{\sum_{j=1}^n X_{ij}}{g-1} \quad (2)$$

In which,  $i$  is an institutional investor, and  $j$  is another institutional investors except  $i$ .  $X_{ij}$  denotes a *network connection relation*.  $X_{ij}$  equals one if  $i$  and  $j$  are two of the top 10 shareholders in at least one company, zero otherwise;  $g$  denotes the total number of institutional investors in the top 10 shareholders in a company. The sum is normalized by dividing by  $g-1$ . Pajec software is used to calculate the variable.

### iii. Other independent and control variables

$INSH_{t-1}$  represents the proportion of institutional investors' shareholdings in last year. Based on previous research (Jiang et al., 2010; Cheung et al., 2006, 2009a, et al.), this paper controls for several factors. At first, this paper controls for companies' ownership structure: the largest shareholder's proportion ( $First_t$ ) and the second to tenth largest shareholders counterbalance the largest shareholder ( $Z_{(2-10)_t}$ ). The separation of the control rights and cash flow rights of the ultimate controller impacts the private benefits of control. Controlling shareholders in group companies can utilize cross-shareholding, pyramid structures and double-coupling stock to improve the private benefits of control. The greater the difference between control and cash rights of the ultimate controller ( $DIV_t$ ), the greater the tunneling (Claessens et al., 2002). The characters of ultimate property rights ( $State_t$ ), the value is equal to 1 if the company is state-owned and 0 otherwise. Because different owners have different business objectives, the methods and amounts of large shareholders' capital occupation are different depending on whether a listed company is state-owned or non-state-owned. Second, this paper controls for corporate financial characteristics: Leverage ( $LEV_t$ ), measured as debt to assets and predict the relationship between financial risks and large shareholders' embezzlement could either be positive or negative, that is, large shareholders are relatively unconcerned about the company's debt situation when they expropriate capital. Company size ( $Size_t$ ) will be controlled to reduce the influence of scale on the research results. The growth rate may affect the RPTs of blockholders, as a company's growth forecasts its future; blockholders make decisions based on their expectations ( $Growth_t$ ). Third, this paper controls the corporate internal governance features by including the proportion of independent directors to all directors ( $Indr_t$ ). The higher the proportion of independent directors, the higher the level of corporate governance and large shareholders occupy less (Gao and Kling, 2008). Furthermore, we consider the size of the board of supervisors ( $Ssize_t$ ) ; if the chair of board is the CEO ( $Dual_t$ ) in a company; the number of board committees ( $COMT_t$ ): a larger number of regular committees are more likely to find unfair RPTs by large shareholders. Companies cross-listing in B and H markets are considered too ( $BH_t$ ). Fourth, this paper considers the internal market structure of RPTs: group mode is another reason for the existence of tunneling RPTs. This internal structure causes RPTs generally to lack of elasticity of supply and demand, thus limiting the execution efficiency of the corporate governance system (He, Sun and Li, 2010). The group company ( $Group_t$ ), its value is equal to 1 if the company is a group company and 0 otherwise. Listed companies are always subsidiaries or associate companies of the enterprise group: the formation of enterprise groups provides the most well-hidden tunneling approach for controlling shareholders (Li et al., 2004), thus intensifying asset stripping (Jian and Wong, 2010; Gao and Kling, 2008). Companies with different listing ages ( $Age_t$ ) may make different decisions regarding RPTs. External governance factors can't be ignored. Audit opinions ( $Audit_{t-1}$ ) are represented by the one-

phase-lagged value, which is equal to 1 if the company received unqualified audit opinions and 0 otherwise. External audits play a supervisory role. Companies that occupy more benefits are more likely to receive qualified audit opinions (Jiang et al., 2010). Large shareholders in a company that received qualified opinions in the previous year will be more careful in the current year and will take the initiative to reduce their benefits occupancy. The legal environment ( $Law_{t-1}$ ) is also important factor to the blockholders' tunneling: the more complete the legal system, the more difficult it is to perform tunneling behaviors. In addition, these equations control both industries and years.

The above mentioned variables are shown as Table 1.

Table 1 Variables Definitions

Variables		Definitions
Dependent variables	Rt_ERPT	Embezzlement-related-party transactions which is the aggregation of RPTs involving commodities, assets, labor, and equity divided by year-end total assets.
	Nb_ERPT	The number of embezzlement-related-party transactions.
	Rt_OAR	Other capital occupation which equals other receivables in RPTs divided by year-end total assets.
	Nb_OAR	The number of other capitals occupation.
Independent Variables	INSH	The lagged proportion of overall institutional investor shareholding of A shares.
	IDINSH	The lagged proportion of independent institutional investor shareholding of A shares.
	UIDINSH	The lagged proportion of dependent institutional investor shareholding of A shares.
	Degr_Cent	Degree Centrality. The average value of ( $\text{Degree}_i = \frac{\sum_j X_{ij}}{g-1}$ ) for each institutional investor in the top ten shareholders in a company.
Control Variables	FIRST	The lagged proportion of the largest shareholder's ownership of A shares.
	Z <sub>2-10</sub>	The lagged proportion of second to tenth shareholders' ownership of A shares.
	DIV	The two rights separation of ultimate controller, equals the difference of ultimate control right and ownership of the ultimate controller.
	STATE	Dummy variable indicating whether the firm is state-owned (equal to 1 for state-owned and 0 otherwise).
	LEV	Debt-to-assets ratio: year-end total liabilities divided by year-end total assets.
	SIZE	The firm size which is the natural logarithm of year-end total assets.
	Growth	Operating income growth rate: Average growth rate of operation sales of the company in three years(current year and the two year before)
	IndR	The proportion of independent directors on the board of directors.
	SSIZE	Supervisors size: the number of the supervisors.
	DUAL	Whether the chairman and the general manager are same (equal to 1 for same and 0 otherwise).
	COMT	The number of four key board of directors committees (strategy and budget, nomination, audit, compensation).
	BH	Whether A shares and Hong Kong shares are listed at the same time, equals 1 if yes and 0 otherwise.
	GROUP	The dummy variable indicating whether the firm is a group company (equal to 1 for group company and 0 otherwise).
	Age	The number of years that the company was listed.
	AUDIT	Dummy variable of lagged audit opinion, equal to 1 for standard and unqualified auditor's report and 0 otherwise.
	LAW	Legal environment, using the one year lagged law score (Wang, et al., 2017)
Year	Dummy variables for year, which controls for macroeconomic effects, there are 9 dummy variables for different year.	
Industry	Dummy variables for industry, which according to the Commission classification standards (Manufacturing), there are 11 dummy variables for different industry.	

### C. Sample selection

In this paper, Chinese listed companies with A-shares in both Shanghai Stock Exchange and Shenzhen Stock Exchange from 2007-2016 that released annual reports are taken as the initial samples. For data consistency, we chose samples beginning from 2007 because China implemented new accounting standards in 2007. To meet our research needs, the following companies were eliminated from the sample: (1) Companies that have been listed for less than two years; (2) Financial companies; (3) Companies whose largest shareholder is an institutional investor; (4) ST (special treatment) companies and companies with incomplete data; (5) Companies that experienced a shift in control power during the study year. In addition, the continuous variables were Winsorized with 1% and 99%. The data are primarily taken from the Wind, China Center for Economic Research (CCER) and China Stock Market and Accounting Research (CSMAR) databases. The data of related-party transactions are collected by hand and the degree centrality of institutional investors are calculated by Pajek software. Additionally, some of the variables in this study are calculated based on the one-year-lagged data.

## 4. Empirical Evidence

### A. Descriptive statistics of samples

Table 2 Descriptive Statistics of Main Variables

	N	Mean	S. D.	Min	Max	0.25	0.5	0.75
Nb_ERPT	11781	11.760	18.330	1	464	2	6	14
Rt_ERPT	11781	0.118	0.263	0	1.999	0.005	0.028	0.107
Nb_OAR	6081	3.880	4.893	1	105	1	2	4
Rt_OAR	6081	0.011	0.040	0.000	0.707	0.000	0.001	0.006
INSH	17043	0.089	0.112	0.000	0.966	0.014	0.049	0.120
INSH10	14956	0.052	0.049	0.000	0.539	0.015	0.038	0.075
IDINSH	15298	0.064	0.086	0.000	0.823	0.008	0.029	0.086
UNIDINSH	10647	0.022	0.031	0.000	0.918	0.005	0.013	0.029
Degr_Cent	14665	0.135	0.144	0.000	0.888	0.029	0.082	0.196
First	18136	0.358	0.152	0.022	0.900	0.236	0.338	0.463
Z_2-10	18136	0.209	0.129	0.010	0.663	0.101	0.193	0.299
DIV	18136	0.053	0.079	0	0.638	0	0	0.098
LEV	18136	0.457	0.236	0.007	2.923	0.287	0.453	0.618
Size	18136	21.960	1.300	13.076	28.509	21.068	21.797	22.676
Growth	18136	0.262	1.132	-1.000	17.318	-0.026	0.116	0.287
IndR	18136	0.370	0.054	0.091	0.800	0.333	0.333	0.400
SSize	18136	3.72	1.194	1	14	3	3	5
COMT	18136	3.82	0.509	0	4	4	4	4
Age	18136	9.71	6.027	1	26	4	9	15
Law	18136	7.858	4.395	0.410	16.190	4.127	7.090	11.550
	N	Max	Min	1 frequency		0 frequency		
STATE	18136	1	0	8190 (centr.3027and loc.5163)		9946		
DUAL	18136	1	0	4002		14134		
BH	18136	1	0	1228		16908		
GROUP	18136	1	0	5633		12503		
AUDIT	18136	1	0	17612		524		

From the descriptive statistics for variables (Table 2), we find significant tunneling by large shareholders with the average expropriation of 11.8% of total assets in RPTs including commodity trading, trading assets, service transactions, and equity trading. The average number of times of such RPTs is 11.76, and the maximum is 464 times in one year. The average of other receivables accounted for 1.1% of total assets with an average annual occurrence of 3.88.

Institutional investors' average shareholding accounted for 8.9% of A-shares in the sample firms during the 10-year time period. The average proportion of institutional investors among top-ten shareholders accounted for 5.2%, and they enjoy a certain level of voice power. The share of independent institutional investors (with an average shareholding proportion of 6.4%) is much higher than the share of non-independent institutional investors (with an average shareholding proportion of 2.2%), whereas the average of degree centrality of top 10 institutional investors is 0.135, and the minimum is 0, and the maximum is 0.888. The largest shareholders' average shareholding ratio accounted for 35.8%, whereas the second- to tenth-largest shareholders in the company hold an average of 20.9% over eleven years, far less than that of the largest shareholder. The average value of the degree of separation between control power and ownership of the ultimate controller is 5.3%. There is an obvious difference among the various companies: the minimum separation degree is 0 and the maximum separation degree is 63.8%. State-owned holding companies accounted for 45% of the total sample and non-state-owned businesses accounted for 55% of the total sample. In SOEs, central SOEs account for 37%.

## **B. Total institutional holdings and blockholders' tunneling**

To test hypothesis H1, we use equation (1) to perform an OLS random effects regression and the results are shown in Table 3. Columns (1) to (4) show the relationship between the proportion of total institutional-investor shareholding and blockholders' capital occupation in related-party transactions, which is significantly negatively correlated with both embezzlement-related-party transactions (*ERPT*) and other capital occupancy (*O\_Occupy*) at 10% significance level in ratio of ERPT (the regression coefficient is -0.035, -0.012. The t value is -1.73 and -1.85), and at 1% level significance in number of ERPT (the regression coefficient is -2.782, -0.683. The t value is -3.29 and -3.06). The results imply that institutional investors have played a supervisory role over block shareholders' benefits occupancy to protect their own interests. These results verify hypothesis H1.

The regression results between the other control variables and the large shareholders' capital occupancy indicate that external audits have played a prominent role in supervision and that a good legal system will reduce large shareholders' benefits occupancy. The results indicate that independent directors reduce tunneling but that the number of board committees does not impact tunneling. As expected, the largest shareholder's proportion is positively correlated with their benefits occupancy. Likewise, the greater the separation of controlling rights and cash-flow rights of the ultimate controller (*LEV*), the greater the capital occupancy. Inversely, the second-tenth-largest block shareholders act as checks and balances to blockholders' tunneling. Consistent with previous research (Gao and Kling, 2008), enterprise groups (Group) aggravate the divestiture of assets of listed companies.

Different types of companies react differently to the various ways that block shareholders engage in benefits occupancy. If the ultimate controllers are SOEs, then embezzlement-related-party transactions are significantly higher than in NSOEs. In addition, the company's financial leverage is significantly positively correlated to other receivables indicating that large shareholder misappropriation through other receivables increases with leverage. Although the frequency of blockholder misappropriation increases with company size, the proportion of assets misappropriated decreases with company size. Blockholder encroachment increases with the number of years that a company has been listed.

Table 3 Institution Shareholding and the Capital Occupation of Blockholders

	(1) Rt ERPT	(2) Nb ERPT	(3) Rt OAR	(4) Nb OAR
INSH	-0.035* (-1.73)	-2.782*** (-3.29)	-0.012* (-1.85)	-0.683*** (-3.06)
FIRST	0.114*** (6.97)	6.402*** (5.72)	0.041 (1.62)	0.159 (1.56)
Z <sub>2-10</sub>	-0.016* (-1.89)	-2.625** (-2.36)	-0.124 (-1.21)	-0.377 (-1.32)
DIV	0.098*** (3.79)	17.402*** (10.59)	0.003 (0.98)	1.763*** (4.20)
State	0.040*** (7.07)	5.543*** (13.89)	0.033* (1.84)	0.756*** (7.60)
LEV	0.025*** (2.76)	0.596 (1.13)	0.005*** (5.16)	0.704*** (5.14)
Size	-0.013*** (-6.05)	2.122*** (15.21)	-0.002*** (-7.87)	0.362*** (10.30)
Growth	0.006*** (4.97)	-0.014 (-0.22)	-0.001 (-0.18)	-0.015 (-0.87)
Indr	-0.046* (-1.64)	-4.831** (-2.24)	-0.007* (1.70)	-0.414 (-0.74)
SSize	0.013 (1.51)	0.990* (1.79)	0.003** (2.45)	0.278** (1.99)
DUAL	-0.009** (-2.09)	-0.335* (-1.70)	-0.004 (-0.86)	-0.014 (-0.21)
COMT	-0.001 (-1.18)	0.040 (0.19)	-0.002** (-2.33)	0.013 (0.24)
BH	-0.024** (-2.32)	-1.459* (-1.79)	0.002 (1.57)	0.219 (1.08)
Group	0.102 (1.58)	0.728*** (3.74)	0.101*** (3.26)	0.335*** (6.54)
Age	0.030*** (9.98)	0.905*** (4.43)	0.002*** (3.74)	0.093* (1.82)
Audit	-0.039*** (-4.03)	-0.150 (-1.28)	-0.007*** (-5.98)	-0.039 (-0.28)
Law	-0.005* (-1.96)	-0.044* (-1.74)	-0.001 (-0.91)	-0.011* (-1.77)
YEAR & Industry	Control	Control	Control	Control
R <sup>2</sup> (Overall)	0.0940	0.1039	0.0711	0.1237
Chi2	895.26 (0.000)	900.71 (0.000)	678.79 (0.000)	1382.10 (0.000)
Obs.	18136	18136	18136	18136

Notes: 1. \*\*\*,\*\*and \*indicate .01, .05 and .10 significance levels, respectively; 2. The figures in parentheses are t values or p values; 3. Institutional ownership and audit opinion variables are lagged value, other variables are current value. The same is true for following tables.

### C. Institutional independence, network centrality and blockholders' tunneling

To test hypothesis H1a, we use equation (1) for the regression analysis with results reported in Table 4. As listed in the first and fourth columns, independent institutional investors reduce block shareholders' tunneling behavior. Their shareholding ratio showed a significant negative relation with the two proxy variables of the block shareholders tunneling and they showed a negative relation with the number of expropriation-related-party transactions at the 1% significance level (the regression coefficient is 3.425 and the t value is -2.98). These are negatively correlated with the number of other receivables at the 1% significance level (the regression coefficient is -1.608 and the t value is -5.36).

As revealed in the second and fifth columns, non-independent institutional investors' shareholding ratio showed no consistent positive or negative relationship with the two proxy variables of the blockholders' occupancy and no significant negative relation with expropriation-related-party transactions (the regression coefficient is -1.894 and the t value is -0.59). They are positively correlated with occupation through other receivables (the regression coefficient is 2.883 and the t value is 3.42). These results indicate that non-independent institutional investors do not effectively supervise the tunneling behavior of block shareholders, proving H1a. These results lead to the following conclusions. First, because non-independent institutional investors have potential business connections with firms and some interests in common with blockholders, they are not motivated to supervise. Second, non-

independent institutional investors may be potentially associated with the controlling shareholders. When non-independent institutional investors are the associated shareholders of blockholders, they cannot supervise and restrain the tunneling behavior of controlling shareholders. The regression results of other control variables are the same as in Table 3, and we do not repeat them here.

We also use equation (1) to test hypothesis H1b with the regression results in Table 4, column (3) and (6). The network centrality of institutional investors has a negative relationship with the number of expropriation-related-party transactions at the 10% significance level (the regression coefficient is -1.157 and the t value is -1.90), and a negative relationship with the number of other receivables at the 1% significance level (the regression coefficient is -0.723 and the t value is -3.82). The results imply that if institutional investors act in concert with each other, they have stronger supervisory ability.

Table 4 Institutional Independence/Network Centrality and Blockholders' Tunneling

	(1) Nb ERPT	(2) Nb ERPT	(3) Nb ERPT	(4) Nb OAR	(5) Nb OAR	(6) Nb OAR
<b>IDINSH</b>	-3.425*** (-2.98)			-1.608*** (-5.36)		
<b>UIDINSH</b>		-1.894 (-0.59)			2.883*** (3.42)	
<b>Degr_centra</b>			-1.157* (-1.90)			-0.723*** (-3.82)
Other Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
YEAR & Industry	Yes	Yes	Yes	Yes	Yes	Yes
R <sup>2</sup> (Overall)	0.1770	0.1784	0.1777	0.1062	0.1066	0.1069
Chi2	1735.6 (0.000)	1725.7 (0.000)	1730.3 (0.000)	1402.4 (0.000)	1384.7 (0.000)	1387.6 (0.000)
Obs.	18136	18136	18136	18136	18136	18136

#### D. Institutional ownership and blockholders' tunneling in SOEs and NSOEs

From the analysis above, we find that independent institutional investors can effectively hinder the tunneling behavior of block shareholders in related-party transactions. To study whether institutional investors have the same supervision ability to blockholders' tunneling behavior of both state-owned and NSOEs, we begin by determining whether there are different ways of tunneling in related-party transactions.

From the descriptive statistics in Table 2, we can see that SOEs accounted for 45% and NSOEs accounted for 55% of the listed firms in China. We divide the companies into SOEs and NSOEs, and divide the SOEs into central SOEs and local SOEs. We then test whether blockholders engage in different types of tunneling behavior in companies with different property rights. The t-test's results are shown in Panel A of Table 5

The full sample results in Table 5 indicate that block shareholders' tunneling varies with the type of the ultimate controllers. SOEs are more likely to damage the interests of small shareholders by commodity trading, asset trading, labor transactions and equity trading (the difference test's T value is significant at the 1% level). The amount of money involved in expropriation at SOEs through related-party transactions accounts for an average of 11.9% of total assets, whereas the percentage for NSOEs is only 4.6%. The amount of money expropriated in SOEs by other receivables in related-party transactions accounts for 0.5% of the total assets on average, whereas in NSOEs, the percentage is 0.3%. This indicates that tunneling behavior of block shareholders in SOEs is more serious than in NSOEs. The results also indicate that there is no significant difference in shares held by institutional investors in state-owned company and non-state-owned company.

Table 5 Panel B shows the RPTs of central state-owned vs local state-owned companies. The results indicate that central SOEs are more likely to tunnel by commodity trading, asset trading, labor



transactions and equity trading. The amount of money expropriated in central SOEs through two types of tunneling accounts for 14.5% of the total assets on average, whereas the percentage in local SOEs is 9.5%. This indicates that the tunneling behavior of block shareholders in central SOEs is more serious than in local SOEs even though institutional investors prefer to hold shares in central SOEs.

Table 5

Panel A: Comparison in state-owned vs Non-state-owned Enterprise				
	ERPT	OAR	INSH	Obs.
State-owned enterprise	0.119	0.005	0.085	8190
Non-state-owned enterprise	0.046	0.003	0.083	9946
The difference of T-test value between state-owned and Non-state -owned enterprises	20.251***	4.299***	0.965	18136
Panel B: Comparison in Central SOEs vs Local SOEs				
	ERPT	OAR	INSH	Obs.
Central state-owned enterprise	0.145	0.005	0.094	3027
Local state-owned enterprise	0.095	0.004	0.080	5163
The difference of T-test value between Central and Local state-owned enterprises	8.438***	0.615	5.238***	8190

This paper aims to explore whether the degree of institutional investors' supervision of controlling shareholders' expropriation is different in firms with different property control. Thus, we conduct statistical analyses for SOEs and NSOEs comprehensively (*State* is a dummy variable) by adding the cross-term *State \* INSH* or *State \* Degr\_Centra* into equation (1). The regression results are shown as Table 6:

Table 6 Institutional Investors and Blockholders' Tunneling in State-owned and Non-state-owned Company

	(1) Nb_ERPT	(2) Nb_ERPT	(3) Nb_OAR	(4) Nb_OAR
<b>INSH</b>	-3.026*** (-3.41)		-0.934*** (-4.01)	
<b>Degr_Centra</b>		-3.204** (-2.29)		-0.991*** (-2.71)
<b>State</b>	4.605*** (11.88)	5.189*** (13.14)	0.581*** (5.99)	0.804*** (8.11)
<b>State*INSH /Degr_Centra</b>	13.912* (1.93)	0.599* (1.66)	7.516*** (3.96)	1.769* (1.95)
Other Control Variable	Yes	Yes	Yes	Yes
YEAR & Industry	Yes	Yes	Yes	Yes
R <sup>2</sup> (Overall)	0.1754	0.1756	0.1096	0.1059
Chi2	1773.06 (0.000)	1711.6 (0.000)	1431.2 (0.000)	1401.7 (0.000)
Obs.	18136	18136	18136	18136

Table 6 presents the results of the effect of share-holding proportion of all institutional investors and the network centrality of top ten institutional investors on blockholders' tunneling in state-owned and NSOEs. The first and third columns show the effect of the share-holding proportion of institutional investors on blockholders' RPTs. The cross terms of *State \* INSH* are significant positively related to blockholders' tunneling (the regression coefficients are, respectively, 13.912 and 7.516 and the t values are, respectively, 1.93 and 3.96). Whereas the second and fourth columns show the network centrality of the top ten institutional investors effect on blockholders' tunneling in state-owned and NSOEs. As seen from the regression results, the cross terms of *State \* INSH* are significant positively related to blockholders' tunneling (the regression coefficients are, respectively, 0.599 and 1.769 and the t values are, respectively, 1.66 and 3.95). These results show that the ultimate controller of a company will influence the governance impact of institutional investors. When the ultimate controller of a company is the state, institutional investors will be impeded in monitoring blockholders' expropriation through related-party transactions. Therefore, compared with in SOEs, institutional investors play a better role of supervision in NSOEs. H2 is proved.

### E. Institutional ownership and blockholders' tunneling in central SOEs and local SOEs

To verify if there is a different supervising effect of institutional investors in central state-owned and local SOEs, we conduct statistical analyses for SOEs. Let *Cent\_State* be a dummy variable and add the cross-term *Cent\_state \* INSH* or *Cent\_state \* Degr\_Centra* into equation (1). Table 7 presents the regression results of the effect of share-holding proportion of all institutional investors and the network centrality of the top ten institutional investors on blockholders' tunneling in central SOEs and local SOEs. The first and third columns show the results of the share-holding proportion of institutional investors on blockholders' RPTs, the cross terms of *Cent\_Sta \* INSH* are negatively related to blockholders' tunneling but not significant (the regression coefficients are, respectively, -2.249 and -0.971 and the t values are, respectively, -0.78 and -1.34). Whereas the second and fourth columns show the effect of the network centrality of the top ten institutional investors. As seen from the regression results, the cross multiplicative term of *Cent\_Sta \* Degr\_Centra* are negatively related to blockholders' tunneling, but not significant (the regression coefficients are, respectively, -2.999 and -1.194 and the t values are, -0.67 and -1.07, respectively). The results indicate that in SOEs, no matter whether the company is a central state-owned or a local state-owned company, the effect of the institutional investors is the same. The results verify H3c.

Table 7 Institutional Investors and Blockholders' Tunneling in Central and Local State Company

	(1) Nb ERPT	(2) Nb ERPT	(3) Nb OAR	(4) Nb OAR
<b>INSH</b>	-4.281** (-2.15)		-0.047* (-1.79)	
<b>Degr_Centra</b>		-2.766* (-1.84)		-1.238* (-1.91)
Cent-state	2.385*** (3.26)	2.584*** (3.60)	0.402** (2.38)	0.359** (2.17)
Cent-state*INSH /Degr_Centra	-2.249 (-0.78)	-2.999 (-0.67)	-0.971 (-1.34)	-1.194 (-1.07)
Other Control Variables	Yes	Yes	Yes	Yes
YEAR & Industry	Yes	Yes	Yes	Yes
R <sup>2</sup> (Overall)	0.1415	0.1416	0.0940	0.0950
Chi2	846.11 (0.000)	836.4 (0.000)	803.37 (0.000)	815.8 (0.000)
Obs.	8190	8190	8190	8190

### F. Robustness tests

To verify the consistency of the previous research results, this paper conducts the following robustness tests: First, change the variables of dependent and independent, for example, use loan guarantee, ratio of ERPT, ratio of other receivables as dependent variables; or use network close centrality of institutional investors as independent variables, then regress it. Secondly, in order to reduce the endogeneity problem, this paper adopts instrumental variable to build a two-step regression model. Although not reported here, the results are consistent with previous results.

## 5. Conclusions

According to property theory, blockholders and medium-small shareholders have consistent interests and they all enjoy a company's residual claims. However, blockholders are endowed with enterprise control rights and they have a strong motivation to expropriate the benefits of minority shareholders. In China's transitional economy, with an inefficient capital market and underdeveloped investor protection system, protecting the rights of minority shareholders deserves attention. Institutional investors provide

an integral part of the corporate governance mechanism.

In the context of China's capital markets, we identify the motivation and methods through which blockholders infringe on the interests of medium-small shareholders via their control rights. We also analyze the likelihood that institutional investors will participate in corporate governance and mitigate blockholder expropriation. We empirically test the relation between institutional investor independence and network centrality with blockholders' private benefits. Our evidence shows that, on the whole, institutional investors have the motivation and ability to monitor blockholder expropriation behavior. However, not all types of institutional investors do so; only independent institutional investors mitigate the expropriation of minority shareholder wealth. Meanwhile, network centrality of institutional investors is negatively related to blockholders' expropriation, which implies that if institutional investors take concerted action, they can effectively deter blockholders' unfair RPTs to protect their own interests.

Our examination finds that SOEs' block shareholders are more likely to expropriate the benefits of small shareholders than that of NSOEs, and they prefer to use the methods of commodity transactions, asset transactions, labor transactions and equity transactions. Furthermore, compared with SOEs, institutional investors can restrain block shareholders' tunneling in NSOEs more effectively, which supports the view that governmental governance and corporate governance can substitute for each other. There is no significant difference in the effectiveness of institutional investors in mitigating blockholder tunneling in local or central SOEs.

We also provide evidence that the corporate internal governance mechanism does not work well, especially as the board of supervisors does not deter block shareholders' tunneling behavior. Likewise, the presence of crucial board committees does not reduce tunneling. Conversely, external mechanisms, such as external audits, have some effect.

Overall, the main contributions of this paper are as follows. First, considering quantity and quality of institutional investors simultaneously, this paper studies the relationship between shareholding proportion and network centrality of institutional investors and blockholders' tunneling. Different from previous research that only studied shareholding proportion of a single institutional investor, this paper expands the research perspective to include the social network of institutional investors, not just the characteristics of a single institutional investor but also the collective characteristics of institutional investors. Second, under the background of China's transforming system, this paper studies the role of institutional monitoring in state-owned enterprises within the system and non-state-owned firms outside the system. Analysis of government and corporate governance under a dual economic structure, the results indicate that institutional investors have greater monitoring ability in NSOEs. Furthermore, dividing the SOEs into central and local SOEs, the paper discusses institutional investors' role in companies controlled by the two levels government. The results indicate that there is no difference in the impact institutional investors have in the two types companies.

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