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# **Informed Trading by Foreign Institutional Investors as a Constraint on Tunneling: Evidence from China**

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# Informed Trading by Foreign Institutional Investors as a Constraint on Tunneling: Evidence from China

## ABSTRACT

**Manuscript Type:** Empirical

**Research Question/Issue:** This paper investigates how the trading activities of foreign institutional investors (FIIs) affect the tunneling activities of controlling shareholders in an emerging economy (China).

**Research Findings/Insights:** We use an unbalanced panel dataset of 167 FIIs with investments in Chinese real estate firms during the period 2003 to 2011, which gives us 1006 firm-year observations in total. We find strong support for our hypothesis of an inverted U-shaped relationship between FII trading turnover and the extent of tunneling by controlling shareholders.

**Theoretical/Academic Implications:** In many emerging economies, the institutional environments for investor protection are weak. Powerful controlling shareholders may take the opportunity to extract private benefits via tunneling activities to the detriment of minority shareholders, and informed minority investors may also take advantage of less well-informed investors. There are thus multiple principal-principal agency conflicts. FIIs are a particularly important group of informed investors. On the one hand, large-scale aggressive trading by FIIs should drive stock prices to fundamentals, provide market discipline to management, and thus limit tunneling. On the other hand, FIIs may opt to exploit their private knowledge to gain trading profits at the expense of uninformed investors, and implicitly support tunneling. We highlight these potential effects, and demonstrate empirically an inverted U-shaped relationship between FII trading turnover and the extent of tunneling.

**Practitioner/Policy Implications:** Tunneling is a serious issue, particularly in emerging economies where the institutional arrangements for minority investor protection are often weak. FII involvement may enhance market discipline, but may also exacerbate the problem so policy-makers need to guard against potential adverse effects. An ownership cap on FII shareholdings is unlikely to be effective, but policy-makers might strengthen QFII license revocation policies and issue more licenses to promote competition among FIIs.

## Keywords

Corporate Governance, tunneling; emerging economy; foreign institutional investors; informed trading; principal-principal conflicts

# **Informed Trading by Foreign Institutional Investors as a Constraint on Tunneling: Evidence from China**

## **INTRODUCTION**

Tunneling refers to the extraction of value from a firm by its controlling shareholders (Johnson et al, 2000). It involves the controlling shareholders using their dominant position to extract private benefits of control at the expense of the minority shareholders, and thus constitutes a principal-principal agency problem. Tunneling is facilitated by opaque and complex information environments, such as exist in many emerging economies, in which large and/or inside shareholders are often much better informed about the firm's performance and prospects than smaller minority investors (Claessens & Fan, 2002; Makhija & Patton, 2004). These information asymmetries provide fertile grounds for tunneling activities.

Some minority investors, however, are better informed than others. In particular, (domestic and foreign) institutional investors and proxy advisors<sup>1</sup> typically have sophisticated information collection and processing skills, which provide them with an advantage over less-informed investors (Kim & Yi, 2015; 2009; Campbell & Kracaw, 1980) and which mean that their trading activities may be characterised as "informed". This raises the possibility of potential agency conflicts not just between controlling and minority shareholders, but also between informed and uninformed minority investors.

Now there is a sizeable literature highlighting the influence of institutional investors, and especially hedge funds *inter alia* on the performance, dividend payouts, board structure, and executive remuneration in their target firms (e.g. Song & Szewczyk, 2003; Hartzell & Starks, 2003; Brav et al, 2008), on M&A performance (e.g. Gaspar et al, 2005), on capital redeployment and/or investment restrictions (e.g. Brav et al, 2015; Bebchuk et al, 2015), and on the rivals of their target firms (e.g. Aslan & Kumar, 2016). Furthermore, there is also

literature detailing the potential roles and impacts of proxy advisors (Ertimur et al, 2013; Malenko & Shen, 2016). Nevertheless, there are still gaps in our understanding of the motives and influence of institutional investors. Certainly institutional investors face a well-documented compromise between exerting control through equity ownership and maintaining liquidity (Coffee, 1991; Black, 1992), with empirical evidence suggesting a preference for liquidity (Gillan & Starks, 2007; McCahery et al, 2016). But they also face a less-researched compromise between using their trading activities to leverage their “informed” status and exert discipline on the management of their target firms, or alternatively to extract trading rents for private gain.

Recent years have witnessed significantly increased capital flows by foreign institutional investors (FIIs) to emerging economies (Frenkel & Menkhoff, 2004; Liu et al, 2014). In this paper, we build upon the literature on institutional investor activism and focus on the trading activities of these FIIs. Research has shown that the behavior of FIIs in emerging economies may differ from the behavior of FIIs in developed economies, and may also differ from the behavior of domestic institutional investors in emerging economies (Liu et al, 2014). FIIs are typically independent from the management of their target firms with the only links provided by their portfolio investments (Huang & Zhu, 2015; Kang et al, 2016; Bae et al, 2012; Massa et al, 2015; Ferreira & Matos, 2008; Edmans et al, 2013; Edmans & Manso, 2011) and, in comparison to domestic counterparts in emerging economies, are more experienced and sophisticated (Ng & Wu, 2007), less subject to political pressures (Kim & Yi, 2015), and better informed (Kim & Yi, 2015) and thus more capable of incorporating firm-specific information into their trading activities. FIIs typically only take small shareholdings in their target firms in emerging economies (Fang et al, 2015; Liu, et al, 2014; Hattari & Rajan, 2011; Ferreira & Matos, 2008, Ferreira et al, 2011; Tesar & Werner, 1995). This is largely because the FIIs are making portfolio investments and wish to maintain liquidity and/or because of host countries’

regulations on concentrated ownership (Hattari & Rajan, 2011). As their shareholdings are small, the FIIs' direct influence on tunneling activities is unlikely to be significant.

But the FIIs potentially exert a much greater indirect influence on corporate governance through their trading activities (Admati & Pfleiderer, 2009; Edmans, 2009; Edmans & Manso, 2011; Ferreira & Matos, 2008; Gallagher et al, 2013; Zhang et al, 2015). On the one hand, large-scale aggressive trading by FIIs will promote competition among informed investors, which should drive stock prices to fundamentals, dependent on corporate managerial actions, and thus provide market discipline to management and controlling shareholders – and thus limit tunneling. On the other hand, many critics have questioned whether FII activism benefits shareholders or whether they destroy value through their preference for liquidity and the “hot money” nature of much of their trading (Froot et al, 2001; Hattari & Rajan, 2011). FIIs may thus engage in discreet small-scale trading activities when they perceive significant profit opportunities. Such trading behavior not only facilitates controlling shareholders' tunneling by adding noise to the market and adversely affecting price efficiency (Bushman et al, 2004; Ferreira et al., 2011; Grossman & Stiglitz, 1980), but also encourages managerial opportunistic behavior as the feedback reaction to such inefficient stock markets (Chen et al, 2007; Edmans et al, 2012; Edmans et al, 2015; Hart, 1983). We would thus expect to see increasing levels of tunneling at low levels of FII trading turnover, but reduced levels of tunneling as FII trading turnover becomes more large-scale.

This paper contributes to the extant literature in several ways. First, we add to the very limited literature exploring the motives and influence of institutional investors, and particularly FIIs, in emerging economies. Second, we hypothesize that institutional investors are not only faced with the well-known trade-off between control through ownership and liquidity (Coffee, 1991; Black, 1992), but also with a less-researched trade-off between using their trading activities to leverage their “informed” status to extract trading rents for private gain, or

alternatively to exert discipline on the management of their target firms. Furthermore, we suggest that these conflicting motives are particularly strong for FIIs operating in emerging economies where the institutional arrangements for investor protection are weak. We thus conclude that potential conflicts of interest between informed and uninformed minority investors constitutes an additional principal-principal agency problem in many emerging economies in addition to that between the controlling shareholders and the minority shareholders. Third, we demonstrate empirically that FII trading activities have an impact upon the tunnelling activities of controlling shareholders. Moreover, we recognize that tunneling may be effected in various ways, which may usefully be categorized as cash-flow tunneling, asset tunneling, and equity tunneling (Atanasov et al, 2014). We demonstrate that these different types of tunneling activities may happen independently, but that FII trading has similar effects in each case.”

The paper is structured as follows. We first discuss how market forces may mitigate agency conflicts, before highlighting the conflicting pressures upon well-informed FIIs to extract trading rents for private gain or to use trading activities to exert discipline on the management of their target firms. Drawing on these theoretical insights, we develop an hypothesis relating FII trading to the extent of tunneling by controlling shareholders. We then explain the operationalization of the dependent and explanatory variables, present and discuss some descriptive statistics, and outline the estimation methodology for the main regression analysis and the robustness tests. The empirical results are then presented and discussed, and we conclude with some comments about the importance and applicability of our analysis and make some suggestions about future work.

## **THEORY AND HYPOTHESIS DEVELOPMENT**

In many emerging economies, the institutional environments for investor protection are

weak (La Porta et al, 1998; Aslan & Kumar, 2014; Kumar & Zattoni, 2015). Share markets are typically more volatile and less efficient (Beny, 2007; Morck et al, 2000) as a result of serious information asymmetries, weaker property-right regimes, and more insider trading. Share ownership is often concentrated, and large shareholders have the power and incentive to mitigate the classic principal-agent conflicts (Claessens & Fan, 2002). As their shareholdings are small, the FIIs' direct influence on tunneling activities is unlikely to be significant. However, powerful shareholders in weak institutional environments may also have strong incentives to extract private benefits via tunneling activities at the costs of uninformed minority investors, stimulating principal-principal conflicts (Berkman et al, 2009; Dyck & Zingales 2004). For example, wealth may be transferred by large state-controlled firms to rescue other state-controlled firms in financial distress situations to the detriment of minority investors (Gao & Kling, 2008; Huyghebaert & Wang, 2012; Jiang & Wang, 2010; Lo et al, 2010), or by family-controlled firms to maximize family benefits at the costs of non-family investors (Zhang et al, 2013; Zhang et al, 2015). In short, minority shareholders may suffer from the presence of large controlling shareholders (Coff, 1999).

But even the controlling shareholders (and their nominated managers) of listed companies are not completely immune to market forces. The aggregating mechanism of an efficient stock market - by incorporating all available public or private information to reveal the fundamental investment value for all shareholders - can represent an effective market discipline over opportunistic managers (Grossman & Stiglitz 1980). Central to this market discipline are informed trades which drive stock prices to fundamentals, dependent on corporate managerial actions. With the stock price more sensitive to these actions, governance through trading credibly rewards (penalizes) the stock-incentivized manager, who *ex ante* has greater incentive to put in effort by means of costly hidden actions (Holmstrom & Tirole, 1993; Garvey & Swan, 2002). Ultimately stock-incentivized managers exert more effort on behalf of



shareholders, thereby improving performance (Gallagher et al, 2013; Edmans et al, 2013, 2015; Zhang et al, 2015; Massa et al, 2015). Thus trading by well-informed investors can potentially provide an alternative governance mechanism to minimise both principal-agent and principal-principal conflicts (Admati & Pfleiderer, 2009; Edmans 2009, Edmans & Manso 2011; Edmans et al, 2013; Ferreira et al, 2008, 2011; Gallagher et al, 2013; Zhang et al, 2015; Massa et al, 2015).

FIIIs are an influential group of informed investors in emerging economies, as noted above. Previous research has considered the direct effects of FII equity ownership on firm performance and other outcomes (Chen et al, 2006; He et al, 2013; Luo et al, 2014), but the empirical evidence has been far from conclusive<sup>2</sup> perhaps because FII equity ownership is typically small as it is constrained by local regulations. But the FIIIs potentially exert a much greater indirect influence on the governance of their target firms through their trading activities although, as with all informed investors, they are faced with conflicting pressures (Kyle, 1985; Carlton et al, 1998; Charkavarty & Sarkar, 2002; Hartzell & Starks, 2003; Song & Stewczyk, 2003; Gillan & Starks, 2007; Denes et al, 2016).

On the one hand, they can use their private knowledge to gain trading profits at the expense of uninformed investors (Anderson et al, 2012; Beny, 2007; Cohn & Rajan, 2013; Edmans & Manso, 2011; Gorton et al, 2016; Massoud et al, 2011; Zhang et al, 2015). In order to generate trading profits, FIIIs may trade discreetly, breaking their trades into small volumes, spreading their trading orders over time, and delaying orders or even abstaining on occasions (Back & Baruck, 2004; Easley & O'Hara, 1992; Dufour & Engle, 2000). FIIIs which trade in this informed but discreet manner are exploiting their informed positions and maximizing their trading profits, but at the expense of uninformed minority investors. Furthermore, their discreet trading not only stimulates conflicts between informed and uninformed minority investors, but also compromises the effective external discipline of the market by adding noise to the market

to adversely affect price efficiency in discovering tunneling activities (Gorton et al, 2016; Bushman et al, 2004; Ferreira et al, 2011; Grossman & Stiglitz, 1980). The “invisible” hand of an efficient market to discipline management becomes ineffective (Hart, 1983; Massa et al, 2015; Gorton et al, 2016) and, moreover, tunneling activities can be stimulated as firms often shape their behaviour reacting to inefficient stock markets (Chen et al, 2007; Edmans et al, 2012, 2015; Hart, 1983). In short, the interests of FIIs engaged in discreet trading coincide with those of the controlling shareholders: the latter will extract their tunneling rents and the former their trading rents, both at the expense of the uninformed minority shareholders. As such discreet trading, by definition, involves relatively small-scale and infrequent trades, we would thus expect to see tunneling activities increasing with the levels of FII trading turnover at low levels of trading.

On the other hand, however, FIIs may engage in more aggressive trading, taking advantage of their superior knowledge and independence. Gantchev & Jotikasthira (2016) demonstrate that institutional sales raise the probability of a target firm becoming a target for activist hedge funds, hence FIIs have an incentive to trade loudly in order to signal a problematic target and protect their own investment and ultimately enhance market efficiency. Such aggressive trading improves price informativeness (Easley & O’Hara, 1987), and quickly reduces the information advantages that informed investors may have over uninformed investors. Furthermore, such aggressive trading disciplines management, strengthens market efficiency (Garvey & Swan, 2002; Holmstrom & Tirole, 1993; Ting et al, 2008; Gallagher et al, 2013; Zhang et al., 2015), and should increase investors’ returns through improved long-term firm performance. Such aggressive trading typically involves larger and more frequent transactions (DeJong et al, 1996; Holthausen et al, 1990; Keim & Madhavan, 1996), leading to higher levels of reported trading turnover. As market discipline is increased, the tunneling activities of the controlling shareholders will be circumscribed, the interests of the FIIs will be

more aligned with those of the uninformed minority investors, and the multiple levels of principal-principal conflicts will be mitigated. We would thus expect to see tunneling activities decreasing as levels of FII trading turnover increase at high levels of trading. We thus hypothesize that:

*Hypothesis 1: There is an inverted U-shaped relationship between FII trading turnover and the extent of tunneling by the controlling shareholders.*

## **DATA AND METHODOLOGY**

We focus our empirical analysis on listed real estate companies in China for three main reasons. First, China is of course not only an emerging economy, whose institutional environment is characterized by many of the weaknesses discussed above, but a very large and dynamic economy and thus an attractive proposition for FIIs in search of high returns. In 2002, China introduced its Qualified Foreign Institutional Investor (QFII) scheme under which approved FIIs were permitted to invest in listed Chinese companies. The scheme was based on similar programmes launched in Korea, Taiwan and Vietnam (Gillan & Starks, 2003; Yeo, 2003), and was one of the first efforts to internationalize the Renminbi (RMB). Once licensed, FIIs are permitted to buy limited numbers of RMB-denominated "A shares" in China's mainland Shanghai and Shenzhen stock exchanges. Second, all FIIs are expected (CSRC, 2005: Article 1) '...to improve the corporate governance standard.' However, there are significant concerns that China's booming real estate market attracts numerous investors, including FIIs, with speculative incentives. The more dynamic value changes in land and/or property assets, concentrated ownership structures, and weaker investor protection in China compared with advanced economies such as the US and UK can lead to more serious agency problems associated with information asymmetries between management and investors (Bauer et al, 2010; Devos et al, 2013). It is not clear yet to what extent such a high level of private

information asymmetries in real estate companies can be scrutinized by investors and market intermediaries such as FIIs. The focus on the Chinese real estate sector thus provides a good setting to investigate the offsetting effects of FIIs speculative trading and beneficial governance on tunneling activities. Third, the complex nature and high information asymmetries in real estate firms often lead to monitoring failures (Ebrahim & Mathur, 2007; Litan, 1992), despite real estate firms being subject to strict regulations and special monitoring by banks<sup>3</sup>.

### **The Dataset**

The sampling period is from 2003 to 2011, the period right after 2002 when China introduced the QFII scheme. We identified all FIIs which had invested in the Chinese real estate firms listed on the Shanghai or Shenzhen Stock Exchanges. All of the FIIs in our sample held less than 5% of the overall shares issued by their target firms, thus their shareholdings are small and they not classified as block-holders using the minimum levels used in the previous literature (Gallagher et al, 2013; Zhang et al, 2015; Edmans et al, 2013; Ferreira et al, 2008, 2011). Furthermore, all the FIIs were independent investors, whose business links with their target firms were limited to the portfolio investments. Financial data were collated from the China Stock Market & Accounting Research database (CSMAR) and the OSIRIS database. After removing observations with missing data, we get an unbalanced panel dataset with 167 FIIs with investments in 45 or (34%) out of 133 Chinese real estate listed firms during 2003 to 2011, which gives us 1006 firm-year observations in total.

We measure the trading turnover of the FIIs by calculating an annualized churn rate (see below for details) using the quarterly churn rate calculated based on their quarterly portfolio data from Bloomberg. Previous research (e.g. Aggarwal et al, 2011) focused on changes in FIIs' shareholdings using annual data, but such an approach does not take account of the considerable buying and selling that take place within years. The use of quarterly data

partly mitigates this problem though, clearly, using data with even higher frequencies would be better.

### **The Dependent Variable**

The dependent variable in the empirical analyses is the amount of funds that have been tunneled in a given year (TUN). Tunneling may be effected in a number of ways, which may be usefully categorized as cash-flow tunneling, asset tunneling, and equity tunneling (Atanasov et al, 2014). Cash-flow tunneling refers to the diversion of ongoing cash flows; asset tunneling involves the sale of assets by the firm to the controlling shareholders at below-market prices, or from the controlling shareholders to the firm at above-market prices; and equity tunneling relates to the extraction of value via financial transactions that affect ownership claims rather than the firm's operations.

We consider two proxy measures for tunneling. The first measure focuses on cash-flow tunneling, as there is some evidence that this is the most frequent form of tunneling (Cheung et al, 2006; Jian & Wong, 2010; Jiang et al 2010). However, cash-flow tunneling is more complex and less visible than the various asset and equity mechanisms (Baek et al, 2006; Bates et al, 2006), and hard evidence of cash-flow tunneling beyond anecdotal testimony remains scarce (Bertrand et al, 2002). Some recent papers (Cheung et al, 2006; Jian & Wong, 2010; Jiang et al, 2010) have reported that cash-flow tunneling activities are often associated with related party transactions (RPTs). RPTs are especially prevalent in China, where the majority of listed companies have emerged from State Owned Enterprises (SOEs) and often continue to share capital, assets and personal functions with their parent companies (Liu & Lu, 2007). Following previous research (Cheung et al, 2006; Jiang et al, 2010; Jian & Wong, 2010; Liu & Lu, 2007), we measure RPTs using the accounting item "other receivables" in the firms' balance sheets<sup>4</sup>. The "other receivables" item may also include some legitimate transactions,

but Li (2010) reports that such legitimate transactions represent only an insignificant portion of the total (for example, 9.48% on average from 2002 to 2007). Furthermore, we expect these legitimate transactions to be a small proportion of “other receivables” across the sample irrespective of the types of firms and the extent of FII investment. Therefore, we use the amount of funds tunneled via related party transactions as our measure of cash flow-tunneling (TUN-CF).

But some controlling shareholders may supplement or substitute cash-flow tunneling with asset tunneling and/or equity tunneling. Leuz et al (2003) argue that controlling shareholders and managers, in trying to protect their private control benefits, “manage” reported earnings so as not to reveal actual firm performance to outsiders. Our second proxy measure of “general” tunneling (TUN-GE) is, following Liu & Lu (2007), based on the abnormal accruals (AAC)<sup>5</sup> estimated from the modified Jones (1991) model:

$$Accruals_{f,t} / TA_{f,t} = \alpha_1 / TA_{f,t} + \alpha_2 \Delta Rev_{f,t} / TA_{f,t} + \alpha_3 PPE_{f,t} / TA_{f,t} + \varepsilon_{f,t} \quad (1)$$

where  $TA_{f,t}$  is total assets in year  $t$  for firm  $f$ ,  $\Delta Rev_{f,t}$  is the change in sales revenues in year  $t$  for firm  $f$ , and  $PPE_{f,t}$  is gross property, plant, and equipment in year  $t$  for firm  $f$ . We denote the residual estimated from the above model as abnormal accruals (AAC).

Cash-flow tunneling (as measured by TUN-CF) may be used by controlling shareholders in concert with asset tunneling and/or equity tunneling, but may also be used independently. Indeed, as the descriptive statistics below will show, there is almost no correlation between the two measures of tunneling in our sample of firms. This suggests that TUN-CF may only capture a small portion of general tunneling activities, hence the need to consider both proxy measures as dependent variables.

### **The Explanatory Variables**

We have hypothesized that the amount of tunneling is related to the trading turnover

undertaken by the FIIs (TRAD). Following Gaspar et al (2005) and Attig et al (2013), we operationalize TRAD by measuring, on average, how frequently all FIIs rotate their investment in a given invested Chinese real estate company  $f$  in a given year  $t$ . This average churn rate is influenced by each single FII  $i$ , its own churn rate in each Chinese real estate company  $f$  in year  $t$  ( $CR_{i,f,t}$ ). We calculate  $CR_{i,f,t}$  based on a given individual FII  $i$ 's available quarterly churn rates ( $QCR_{i,f,k,t}$ ) in a given year  $t$ , which captures its inter-year trading activities and how it rotates its investment in the firm  $f$  in year  $t$ . More specifically, the denominator of this churn rate  $QCR_{i,f,k,t}$  is the average share value held by a given FII  $i$  at quarter  $k$  of year  $t$  (measured by  $\frac{N_{i,f,k,t}P_{f,k,t} + N_{i,f,k-1,t}P_{f,k-1,t}}{2}$ , where  $P_{f,k,t}$  and  $N_{i,f,k,t}$  represent the price paid by and the number of shares of company  $f$  held by the given FII  $i$  at quarter  $k$  of year  $t$ ). The numerator of this churn rate is the absolute share value change invested in the firm  $f$  which is caused by trading activities of the given FII  $i$  during that quarter  $k$  of year  $t$ . Such absolute value change reflects FII's buy as well as sell trading activities. We calculate such absolute value change due to FII's trading activities using the share value change invested the firm  $f$  by the given FII  $i$  during that quarter  $k$  of year  $t$  minus the share value change due to the pure price movement rather than this given FII  $i$ 's trading activities during that quarter  $k$  of year  $t$  ( $|N_{i,f,k,t}P_{f,k,t} - N_{i,f,k-1,t}P_{f,k-1,t} - N_{i,f,k-1,t}\Delta P_{f,k,t}|$ ).

Therefore:

$$TRAD_{f,t} = \frac{1}{I} \sum_{i=1}^I CR_{i,f,t} = \frac{1}{I} \sum_{i=1}^I \left( \frac{1}{K} \sum_{k=1}^K \frac{|N_{i,f,k,t}P_{f,k,t} - N_{i,f,k-1,t}P_{f,k-1,t} - N_{i,f,k-1,t}\Delta P_{f,k,t}|}{\frac{N_{i,f,k,t}P_{f,k,t} + N_{i,f,k-1,t}P_{f,k-1,t}}{2}} \right) \quad (2)$$

where  $I$  is the number of FIIs invested in firm  $f$  in year  $t$ , and  $K$  is the number of quarters that FII  $i$  invested in firm  $f$  in year  $t$ .

Our regression model also includes a range of control variables suggested by the literature (Gao & Kling, 2008; Jiang et al, 2010; Peng et al, 2011). First, we control for any potential direct influence of FIIs through ownership by including the aggregate shareholding

of FIIs in the sampled real estate firms (OWN). We further control for firm size (SIZE), growth opportunities (GROW), firm leverage (LEV), profitability (PROF), liquidity (LIQ), and a dummy variable (STAT) for whether the controlling shareholder is the State.

We expect FIIs with larger shareholdings to play more a positive governance role (Ferreira & Matos, 2008) in their target real estate firms, and thus predict a negative relationship between FII shareholdings (OWN) and all types of tunneling. Larger firms are more likely to design and maintain sophisticated and effective internal control systems, and thus circumscribe the ability of controlling shareholders to manipulate reported earnings to cover their tunneling activities (Xie et al, 2003). We would thus expect a negative relationship between firm size (SIZE) and TUN-GE. However, large firms are also likely to have more complicated bureaucratic structures, which facilitate related party transactions with affiliated firms in their business groups (Chen et al, 2006; Lo et al, 2010). We would thus expect a positive relationship between firm size and TUN-CF. All forms of tunneling are more costly in firms with higher growth rates (Peng et al, 2011; Shen & Chih, 2007), so we expect the coefficients of GROW to be negative in both regression analyses. Leverage (LEV) is expected to have a positive relationship to all forms of tunneling (Gao & Kling, 2008; Jiang et al, 2010; Peng et al, 2011), as higher levels of debt provide higher levels of funds that may be potentially expropriated and stronger incentives for controlling shareholders to engage in activities to cover their tunneling and avoid debt covenant violations (Defond & Jiambalvo, 1994). Low levels of profitability (PROF) are associated with poor governance and thus with high levels of tunneling (Jiang et al, 2010). We assume that FII churn rates depend upon the FIIs' objectives, and reflect their (discreet or aggressive) trading activities. But the churn rates may also be constrained by the FIIs' available liquidity. We measure available liquidity (LIQ) by the total number of shares traded during a year divided by the firm's overall outstanding shares, and expect that greater liquidity should be associated with better price discovery (Edmans et



al, 2013) and less tunneling. Tunneling is also more likely in State-controlled firms (STAT), as it is well-documented that such firms transfer assets frequently to rescue other State-owned firms which are in financial difficulties (Huyghebaert & Wang, 2012; Gao & Kling, 2008; Jiang et al, 2010; Lo et al, 2010).

In addition, the locations of real estate markets are important (Jones Lang LaSalle, 2009; 2010) so we include a time-invariant dummy (TIER1) equal to one if the real estate firm is located in a Tier 1 city (i.e. Beijing, Shanghai, Guangzhou & Shenzhen), and zero otherwise. The real estate markets in the Tier 1 cities (TIER1) are more visible and attractive to investors than those in Tier 2 and 3 cities (Jones Lang LaSalle, 2010; Merton, 1987), and thus they are subjected to more scrutiny by sophisticated investors, which mitigates tunneling. Finally year dummies are included to control for policy changes that impact FIIs' investment decisions. Detailed definitions of the explanatory variables, and of their expected impacts, are provided in Table 1.

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The regression model to be estimated is thus:

$$TUN_{f,t} = \beta_0 + \beta_1 TRAD_{f,t} + \beta_2 TRAD_{f,t}^2 + \beta_3 OWN_{f,t} + \beta_4 SIZE_{f,t} + \beta_5 GROW_{f,t} + \beta_6 LEV_{f,t} + \beta_7 PROF_{f,t} + \beta_8 LIQ_{f,t} + \beta_9 STAT_{f,t} + \beta_{10} TIER1_{f,t} + YEAR_{f,t} + \varepsilon_{f,t} \quad (3)$$

where  $f$  refers to firm  $f$  and  $t$  refers to year  $t$ .

## Descriptive Statistics

Table 2 provides descriptive statistics for all variables. Forty five percent of the real estate firms are located in Tier 1 cities, and 49% are State-controlled. There are 167 non-zero values in the sample of 1006 firm-year observations, suggesting that FIIs carefully choose

selected Chinese real estate firms, rather than passively diversify their portfolios across all companies. The mean amount of cash-flow tunneling (TUN-CF) over the sample period is RMB204.87m, similar to the level reported in Li (2010), though there is considerable variation between the real estate firms. The mean abnormal accrual rate (TUN-GE) is -2.99 %, with a large variation of 10.96%. This is similar to the level reported in Liu & Lu (2007). The mean annual churn rate (TRAD) across the full sample is 1.35%, but rises to 9.35% for the non-zero observations. The mean share ownership held by the FIIs is only 0.04% across the whole sample, though this figure rises to 0.32% for the non-zero observations. Clearly, however, the FIIs can have little direct influence on the activities of their target companies.

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Insert Table 2 about here  
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Table 2 also provides the correlation matrix for all variables. The correlation between the two measures of tunneling (TUN-CF and TUN-GE) is small and negative ( $r = -0.05$ ) suggesting that controlling shareholders' dispositions to engage in, on the one hand, cash-flow tunneling and, on the other hand, equity and/or asset tunneling may be unrelated. All the explanatory variables (with the exception of PROF) manifest similarly-signed and similarly-sized correlation coefficients with both dependent variables. The correlation matrix shows that none of the correlation coefficients between the explanatory variables exceed 0.70, suggesting that multicollinearity will not be a severe problem according to accepted "rules of thumb" (Farrar & Glauber, 1967). Indeed, only one correlation (firm size with trading turnover) is greater than 0.4, and most are less than 0.1. We also conducted VIF tests, again without detecting multicollinearity problems.

## **Methodology**

Two sets of results are generated for each measure of tunneling using (1) fixed-effects or random-effects regression, depending on the results of the Hausman test (Baltagi, 2008), and (2) dynamic GMM panel regression. To address reverse causality concerns and possible endogeneity, we also estimated the model using the two-stage instrumental variable GMM approach (Aslan & Kumar, 2012)<sup>6</sup>.

Following Haans, Pieters and He (2016), we used the Sasabuchi test (Sasabuchi, 1980) and all three steps of Lind & Mehlum (2010) to test the validity of the U-shaped relationship between trading turnover and tunneling. As Lind & Mehlum (2010) point out, a spurious U-shaped relationship may be detected when the true relationship is convex but monotone over relevant data values thus a quadratic specification may then erroneously yield an extreme point. The Sasabuchi test checks whether or not a significant squared term is indeed the result of an actual quadratic relationship. According to Sasabuchi (1980), given equation (3), the requirement for an inverted U-shape is that the slope of the curve is positive at the start and negative at the end of a reasonably chosen interval of TRAD-values [ $TRAD_l, TRAD_h$ ], where  $TRAD_l$  is the lower bound of TRAD value, and  $TRAD_h$  is the higher bound of TRAD value. The natural choice of interval is in many contexts the observed data range [ $\min(TRAD), \max(TRAD)$ ]. Thus we need to test

(1) the slope at the lower bound of TRAD value ( $TRAD_l$ ), which can be calculated as  $(\beta_1 + 2\beta_2 TRAD_l)$ , is significantly larger than 0

(2) the slope at the higher bound of the TRAD value ( $TRAD_h$ ), which can be calculated as  $(\beta_1 + 2\beta_2 TRAD_h)$ , is significantly smaller than 0.

(3) the co-existence of both (1) and (2) satisfies the Sasabuchi (1980) test.

The turning point needs to be located well within the data range to account for finite sample bias and to correct for biases caused by departure from normality (Haans, Pieters & He, 2016; Fieller, 1954). Taking the first derivative of Equation (3) and setting it to zero yields the turning

point at  $-\beta_1/2\beta_2$ . Following Haans, Pieters & He, (2016) and Fieller (1954), we also check whether the Fieller confidence interval  $[\hat{\theta}_l, \hat{\theta}_h]$  for such turning point is inside the data range. If the confidence interval is within the data range, one can be reasonably sure that there exists a U-shaped curve.

## EMPIRICAL RESULTS

The regression results are summarized in Tables 3 (cash-flow tunneling) and 4 (general tunneling). The Hausman test supported the use of fixed effects regression, and these results are shown as the first three models in Table 3<sup>7</sup>. Model (1) only includes the control variables (apart from the time-invariant TIER1 dummy). The adjusted coefficient of determination is 0.25. Cash flow tunneling is higher in larger firms since larger firms are normally part of business groups, which are more likely to conduct cash-flow tunneling (Chen et al, 2006; Lo et al, 2010). Also, firms with higher leverage exhibit more cash-flow tunneling by controlling shareholders, consistent with the findings from Gao & Kling (2008), Jiang et al, (2010) and Peng et al (2011). In contrast, firms with high growth opportunities and profitability experience less cash-flow tunneling, results that are consistent with those reported by Peng et al (2011) and Jiang et al (2010). Presumably controlling shareholders are content to take their due rewards in profitable growing firms, but resort more to cash-flow tunneling in poorly-performing firms. FII's ownership is found to have a positive influence to cash flow tunneling, which indicates that direct FII share ownership does not constrain the tunneling activities of largest shareholder in China.

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Insert Table 3 about here

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Model (2) includes FII trading turnover (TRAD) in addition to the control variables. It

shows that FII trading turnover is significantly and positively related to cash-flow tunneling, suggesting that FII trading may be dominated by speculative motives to extract trading rent. However, in Model (3), we also add in the trading turnover variable in its quadratic form. The value of the adjusted coefficient of determination rises to 0.28, and the signs and statistical significance of all the control variables are broadly unaffected. The coefficient of the linear TRAD term is positive ( $\beta_1 = 18.10$ ,  $p < 0.001$ ) and highly significant, whilst the coefficient of the squared term ( $\text{TRAD}^2$ ) is negative ( $\beta_2 = -0.22$ ,  $p < 0.001$ ) and also highly significant. The hypothesised inverted U-shaped relationship between FII trading turnover and the extent of cash-flow tunneling is confirmed the Sasabuchi test (test statistic = 3.14,  $p < 0.001$ ) as (1) the slope of the curve is significantly positive (18.10,  $p < 0.001$ ) at the lower end of the interval, (2) significantly negative (-20.43,  $p < 0.001$ ) at the higher end of the interval, and (3) the co-existence of both (1) and (2). The curve reaches its estimated maximum point when trading turnover is 40.50 %, within the data range – see Figure 1. A 90% confidence interval using the Fieller (1954) method is evaluated as [32.10, 48.82], again within the data range. Hypothesis 1 is thus strongly supported by the results of the fixed effects regressions.

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Insert Figure 1 about here  
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In order to correct for possible endogeneity, we next estimate the model using two variants of the GMM method: the two-stage instrumental variable GMM approach (Aslan & Kumar, 2012) and the instrumental variable approach of Arellano & Bond (1991). In Model (4), we report the results of the Aslan & Kumar two stage instrument GMM regression (GMM-AK): we use LIQ and TIER1 as instrumental variables for the FII trading activities (TRAD) and its squared term ( $\text{TRAD}^2$ ). Liquidity is mostly supplied by uninformed investors, especially in China (Anderson et al, 2012; Zhang et al, 2015). This liquidity directly facilitates FIIs'

informed trading (Edmans et al, 2013; Edmans, 2009), which in turn affects cash-flow tunneling. This makes LIQ an ideal instrument as it meets both the exclusion restriction (i.e. there is no reason that general liquidity should be related to tunneling activities through any other channel than facilitating informed trading) and the inclusion restriction (i.e. liquidity facilitates informed trading). Similarly, Tier 1 cities (TIER1) may only affect tunneling through an enhanced visibility to sophisticated informed investors (Jones Lang LaSalle, 2010; Merton, 1987). The choice of these two instrumental variables is thus theoretically sound, and also empirically justified: both are significantly related to FII trading<sup>8</sup>, but were insignificantly related to cash-flow tunneling (TUN-CF) and general tunneling (TUN-GE) in our unreported regression analyses. In Model (5), we report the results of the Arellano & Bond GMM regression (GMM-AB): we use the lagged values of the TRAD and TRAD<sup>2</sup> as instrumental variables. This procedure eliminates the persistent components of the latent or unobservable variables and the error terms, and helps to address the reverse causality issue. In both models, the estimated coefficients of TRAD are positive and statistically significant, whilst the estimated coefficients of TRAD<sup>2</sup> are negative and statistically significant. Hypothesis 1 is thus supported. FIIs undertaking small amounts of discreet trading do so to gain trading profits at the expense of the uninformed investors, and tolerate cash-flow tunneling by the controlling shareholders. FIIs undertaking larger amounts of more aggressive trading promote price informativeness, and curtail any cash-flow tunneling tendencies by the controlling shareholders.

Table 4 presents the results of modelling the determinants of general tunneling (TUN-GE). The Hausman test suggested that the appropriate methodology was random effects regression, and these results are shown as the first three models in Table 4. Model (6) only includes the control variables. The adjusted coefficient of determination is 0.33. General tunneling is lower in larger firms since larger firms are more likely to maintain effective internal control systems, and thus reduce the ability of controlling shareholders to manipulate

reported earnings to cover especially asset and/or equity tunneling activities (Xie et al, 2003). Firms with higher leverage exhibit significantly more tunneling by controlling shareholders, whilst firms with high profitability experience less tunneling as the controlling shareholders are presumably content to take their due rewards in profitable firms but resort more to tunneling in poorly-performing firms. And FII share ownership is found to have a significant positive influence to general tunneling, suggesting that FIIs may well be more interested in capitalizing on their superior knowledge.

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Insert Table 4 about here

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Model (7) further includes FII's trading turnover (TRAD) in addition to the control variables. It shows that FII trading turnover is significantly and positively related to general tunneling, suggesting that FII trading may be dominated by speculative motives to extract trading rent. In Model (8), we also add in the trading turnover variable in its quadratic form. The value of the adjusted coefficient of determination rises to 0.36, and the signs and statistical significance of all the control variables are broadly unaffected. The coefficient of the linear TRAD term is positive ( $\beta_1 = 0.15$ ,  $p < 0.001$ ) and highly significant, whilst the coefficient of the squared term (TRAD<sup>2</sup>) is negative ( $\beta_2 = -0.002$ ,  $p < 0.001$ ) and also highly significant. The hypothesized inverted U-shaped relationship between FII trading turnover and the extent of tunneling is confirmed as we find that (1) the slope of the curve is significantly positive (0.15,  $p < 0.001$ ) at the lower end of the interval, (2) significantly negative (-0.19,  $p < 0.001$ ) at the higher end of the interval, and (3) the co-existence of both (1) and (2) is supported by the Sasabuchi test (test statistic = 3.25,  $p < 0.001$ ). Again Hypothesis 1 is strongly supported. As Figure 2 shows, the curve reaches its estimated maximum point when trading turnover is 38.22 %, within the data range.

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Insert Figure 2 about here  
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The remaining models show the estimated results using the two variants of the GMM method. In Model (9), we report the results of the GMM-AK regression using LIQ and TIER1 as instrumental variables for the FIIs' trading activities (TRAD) and its squared term (TRAD<sup>2</sup>) respectively. In Model (10), we report the results of the GMM-AB regression using the lagged values as instrumental variables. Once again both regressions show significant positive coefficients for TRAD, and significant negative coefficients for TRAD<sup>2</sup>. Hypothesis 1 is supported: there is an inverted U-shaped relationship between FII trading activities and the extent of general tunneling.

## **DISCUSSION AND CONCLUSIONS**

Substantial amounts of wealth may be tunneled by controlling shareholders, especially in many emerging economies where corporate governance is characterized by substantial information asymmetries and weak protection of minority investors. Previous research has focused on how FIIs, as a particularly important group of informed investors, exert influence directly on corporate governance through their shareholdings. In this paper, we hypothesize that FIIs may also exert an indirect influence through their trading activities and that this mechanism raises the possibility of principal-principal conflicts at multiple levels. We suggest that FIIs may engage small-scale in discreet trading activities to take advantage of their informational advantages and extract trading rents and, in so doing, that they facilitate tunneling by the controlling shareholders. In these circumstances, the interests of the FIIs and the controlling shareholders coincide at the expense of the uninformed minority shareholders. But if FIIs engage in large amounts of aggressive trading, then this will impose market



discipline and constrain the tunneling activities of the controlling shareholders.

Our research has important implications for policy-makers and those charged with the administration of QFII regulations in emerging economies. First, the authorities need to recognize that FIIs may influence the governance of their target firms not just through their shareholdings but also through their share trading activities. Thus a simple cap on FII shareholdings will only partially constrain FII influence on corporate governance. Second, FIIs may bring capital and promote better corporate governance, but they also have an incentive to take advantage of their informed positions to extract trading rents. Increased tunneling by controlling shareholders may result. The authorities need to guard against these potential adverse effects by strengthening QFII license revocation policies so as to prevent FIIs abusing their trading positions. Furthermore, more licenses might be issued to qualified FIIs, so that competition among the FIIs can mitigate any rent-extracting trading opportunities and promote price informativeness. Third, the real estate sector in China is heavily regulated and monitored, yet these efforts are largely ineffective. There is a need to promote market discipline to complement the existing regulations and monitoring activities.

Our research may be extended in several ways. First, our empirical analysis has focused on the real estate sector in China. The sector was chosen because, notwithstanding strict regulations and delegated bank monitoring, tunneling activities persist because of the complex nature of the sector and the substantial information asymmetries therein (Ebrahim & Mathur, 2007; Litan, 1992). Further research might focus on other financial and/or non-financial sectors within China, in order to ascertain whether FII informed trading has similar effects in sectors with fewer regulations and/or less bank monitoring. Second, the analysis could also be replicated in the context of other emerging (and advanced) economies to establish whether or not our findings are more generally applicable. As various authors (e.g. Chen et al, 2007; Aslan & Kumar, 2014) have pointed out, the impacts of different types of institutional investors are

likely to vary across different institutional environments. Third, both proxy measures for tunneling are far from perfect, and more research would be welcome to elicit better measures of each of the three types of tunneling. This would, in turn, allow a better empirical appraisal of the impact of FII trading on each type of tunneling. Furthermore, the analysis could be extended to other forms of trading (e.g. short selling).

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<sup>1</sup> Also short sellers (Massa et al, 2015) and blockholders (Edmans & Manso, 2011; Edmans et al, 2013), though foreign institutional investors remain small and their short-selling is restricted in many emerging economies (Huang & Zhu, 2015; Fang et al, 2015; Liu, et al., 2014; Ferreira & Matos, 2008; Hattari & Rajan, 2011; Ferreira et al, 2011; Tesar & Werner, 1995).

<sup>2</sup> For example, Aggarwal et al (2011) and Ferreira & Matos (2008) both reported that FII investments had positive effects on firm performance, whilst Sun & Tong (2003) find insignificant effects. Foreign ownership is associated with higher corporate transparency and lower information asymmetries (see, for example, Kang & Stulz, 1997; Jiang & Kim, 2004; Kang & Stulz, 1997; Gul, Kim & Qiu, 2010; Bae, Ozoguz, Tan, & Wirjanto, 2012; Kang, Kwon, & Park, 2016; Kim & Yi, 2015, 2009). In contrast, various authors (e.g. Choe et al, 1999; Froot et al, 2001; Gabriele et al., 2000) have suggested that the negative short-term market reaction may reflect concerns that FIIs may have speculative and destabilizing effects when they invest in emerging economies.

<sup>3</sup> It is under debate whether specific governance rules should be considered for the real estate sector (Fan et al, 2013; Devos et al, 2013; Bauer et al, 2010; Eichholtz & Kok, 2008; Ghosh & Sirmans, 2003, 2005).

<sup>4</sup> ‘Other receivables’ is defined by China’s Generally Accepted Accounting Principles (GAAP) as receivables coming from transactions other than sales and purchase of goods and services, such as securities deposit at other organizations, payments made by corporations on behalf of their employees, and compensation receivables.

<sup>5</sup> Most of the studies using US data define accruals as the difference between earnings before extraordinary items and operating cash flows. Chinese data, using the Chinese GAAPs, do not report separately so-called “one-time” items such as extraordinary items and discontinued operations. Instead, we use net income rather than earnings before extraordinary items, following Liu & Lu (2007).

<sup>6</sup> Two other sets of results were also generated but are not reported here due to space constraints, but are available from the authors. Fixed-effects models do not permit the inclusion of time-invariant variables, with the result that endogeneity issues due to omitted time-invariant factors affecting both dependent and independent variables are unaddressed. A set of Hausman-Taylor (Hausman & Taylor, 1981) regressions was thus estimated in which the endogenous time-invariant variable was instrumented using time-varying control variables. The Hausman-Taylor model is more efficient than either the fixed- or the random- effects models in reducing the endogeneity issues due to such omitted variables. One important characteristic of our sample is that there are many observations where the trading turnover is zero, due to the FIIs’ highly selective investments in the Chinese real estate sector. This generates potentially serious self-selection bias, which we address in a further set of regressions by estimating random-effects regressions using propensity score matching samples (Caliendo & Kopeinig, 2008) to retest our

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hypothesis. We match firms with FIIs to firms without FIIs, based on propensity scores estimated from their firm size, leverage, growth, profitability, state control, liquidity and the tier 1 dummy. This propensity score model uses nearest neighbors one-to-one matching. The order of observations is randomly ranked to avoid the matching bias caused by the order of observations.

<sup>7</sup> We obtained robust results when we used random effects regression.

<sup>8</sup> The p values are smaller than 0.01, and the first-stage F values are larger than 10 - indicating that LIQ and TIER1 are strong instrumental variables.

## REFERENCES

- Admati, A.R. & Pfleiderer, P. 2009. The “Wall Street walk” and shareholder activism: exit as a form of voice. *Review of Financial Studies*, 22(7): 2645-2685.
- Aggarwal, R., Erel, I., Ferreira, M. & Matos, P. 2011. Does governance travel around the world? Evidence from institutional investors. *Journal of Financial Economics*, 100(1): 154-181.
- Anderson, R.C., Reeb, D.M. & Zhao, W. 2012. Family-controlled firms and informed trading: evidence from short sales. *Journal of Finance*, 67(1): 351-385.
- Arellano, M., & Bond, S. 1991. Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations. *The Review of Economic Studies*, 58(2): 277-297.
- Aslan, H. & Kumar, P. 2016. The product market effects of hedge fund activism. *Journal of Financial Economics*. 119: 226-248.
- Aslan, H. & Kumar, P. 2014. National governance bundles and corporate agency costs: a cross-country analysis. *Corporate Governance: An International Review*, 22: 230-251.
- Aslan, H. & Kumar, P. 2012. Strategic ownership structure and the cost of debt. *Review of Financial Studies*, 25(7): 2257-2299.
- Atanasov, V., Black, B. & Ciccotello, C.S. 2014. Unbundling and measuring tunneling. *University of Illinois Law Review*, 1697 - 1738.
- Attig, N., Cleary, S., El Ghouli, S. & Guedhami, O. 2013. Institutional investment horizons and the cost of equity capital. *Financial Management*, 42(2): 441-477.
- Back, K. & Baruch, S. 2004. Information in securities market: Kyle meets Glosten and Milgrom, *Econometrica*, 72(2): 433-467.
- Bae, K-H., Ozoguz, A., Tan, H., & Wirjanto, T.S. 2012. Do foreigners facilitate information transmission in emerging markets? *Journal of Financial Economics*, 105(1): 209–227.
- Baek, J-S., Kang, J-K. & Lee, I. 2006. Business groups and tunnelling: Evidence from private securities offerings by Korean chaebols. *Journal of Finance*, 61(5): 2415-2449.
- Baltagi, B. 2008. *Econometric analysis of panel data* (Vol. 1): John Wiley & Sons.
- Bebchuk, L.A., Brav, A. & Jiang, W. 2015. The long-term effects of hedge fund activism. *Columbia Law Review*, 115(5): 1085-1156.
- Black, B. 1992 Agents watching agents: the promise of institutional investor voice, *UCLA Law Review*, 39: 811-893.
- Brav, A., Jiang, W. & Kim, H. 2015. The real effects of hedge fund activism: productivity, asset allocation, and labor outcomes. *Review of Financial Studies*, 28(10): 2723-2769.
- Brav, A., Jiang, W., Partnoy, F. & Thomas, R. 2008. Hedge fund activism, corporate governance, and firm performance. *Journal of Finance*, 63: 1729-1775
- Bates, T.W., Lemmon, M.L. & Linck, J.S. 2006. Shareholder wealth effects and bid negotiation

- in freeze-out deals: are minority shareholders left out in the cold? *Journal of Financial Economics*, 81(3): 681-708.
- Bauer, R., Eichholtz, P.A. & Kok, N. 2010. Corporate governance and performance: the REIT effect. *Real Estate Economics*, 38(1): 1-29.
- Beny, L. 2007. Insider trading laws and stock markets around the world: an empirical contribution to the theoretical law and economics debate. *Journal of Corporate Law*, 32: 237-300.
- Berkman, H., Cole, R.A. & Fu, L.J. 2009. Expropriation through loan guarantees to related parties: evidence from China. *Journal of Banking & Finance*, 33(1): 141-156.
- Bertrand, M., Mehta, P. & Mullainathan, S. 2002. Ferreting out tunneling: an application to Indian business groups. *Quarterly Journal of Economics*, 117: 121-148.
- Bushman, R.M., Piotroski, J.D. & Smith, A.J. 2004. What determines corporate transparency? *Journal of Accounting Research*, 42(2): 207-252.
- Carleton, W. T., Nelson, J. & Weisbach, M. 1998. The influence of institutions on corporate governance through private negotiations: Evidence from TIAA- CREF. *Journal of Finance*, 53: 1335- 1362.
- Caliendo, M. & Kopeinig, S. 2008. Some practical guidance for the implementation of propensity score matching. *Journal of Economic Surveys*, 22(1): 31-72.
- Campbell, T.S. & Kracaw, W.A. 1980. Information production, market signalling, and the theory of financial intermediation. *The Journal of Finance*, 35(4): 863-882.
- Charkavarty, S. & Sarkar, A. 2002. A model of broker's trading, with applications to order flow internalization. *Review of Financial Economics*, 11: 19-36.
- Chen, G., Firth, M., Gao, D.N. & Rui, O.M. 2006. Ownership structure, corporate governance, and fraud: evidence from China. *Journal of Corporate Finance*, 12(3): 424-448.
- Chen, Q., Goldstein, I., & Jiang, W. 2007. Price informativeness and investment sensitivity to stock prices. *Review of Financial Studies*, 20: 619-650.
- Cheung, Y-L., Rau, P.R. & Stouraitis, A. 2006. Tunneling, propping, and expropriation: evidence from connected party transactions in Hong Kong. *Journal of Financial Economics*, 82(2): 343-386.
- Choe, H., Kho, B.-C. & Stulz, R.M. 1999. Do foreign investors destabilize stock markets? The Korean experience in 1997. *Journal of Financial Economics*, 54(2): 227-264.
- Claessens, S. & Fan, J. 2002. Corporate governance in Asia: a survey. *International Review of Finance*, 3(2): 71-103.
- Coff, R.W. 1999. When competitive advantage doesn't lead to performance: the resource-based view and stakeholder bargaining power. *Organization Science*, 10(2): 119-133.
- Coffee, J. 1991. Liquidity versus control: the institutional investor as corporate monitor. *Columbia Law Review*, 91: 1277-1368.
- Cohn, J. & Rajan, U. 2013. Optimal corporate governance in the presence of an activist

- investor. *The Review of Financial Studies*, 26(4): 985-1020.
- CSRC 2005. Article 1. *Administrative measures on the strategic investment in listed companies by foreign investors, PRC*: China Securities Regulatory Commission.
- Dahlquist, M. & Robertsson, G. 2001. Direct foreign ownership, institutional investors, and firm characteristics. *Journal of Financial Economics*, 59(3): 413–440.
- Defond, M.L. & Jiambalvo, J. 1994 Debt covenant violation and manipulation of accruals. *Journal of Accounting and Economics*, 17(1-2): 145-176.
- De Jong, F., Nijman, T. & Roëll, A. (1996). Price effects of trading and components of the bid-ask spread on the Paris Bourse. *Journal of Empirical Finance*, 3(2): 193-213.
- Denes, M.R., Karpoff, J.M. & McWilliams, V.B. 2016. Thirty years of shareholder activism: A survey of empirical research. *Journal of Corporate Finance*, <http://dx.doi.org/10.1016/j.jcorpfin.2016.03.005>
- Devos, E., Ong, S-E., Spieler, A. & Tsang, D. 2013. REIT institutional ownership dynamics and the financial crisis. *The Journal of Real Estate Finance and Economics*, 47(2): 266-288.
- Dufour, A. & Engle, R.F., 2000. Time and the Price Impact of a Trade, *Journal of Finance*, 55(6): 2467-2498.
- Dyck, A. & Zingales, L. 2004. Private benefits of control: an international comparison. *Journal of Finance*, 59(2): 537-600.
- Easley, D. & O'Hara, M. 1987. Price, trade size, and information in securities markets. *Journal of Financial Economics*, 19(1): 69-90.
- Easley, D. & O'Hara, M. 1992. Time and the process of security price adjustment, *Journal of Finance*, 47(2): 557-605.
- Ebrahim, M.S. & Mathur, I. 2007. Pricing home mortgages and bank collateral: A rational expectations approach. *Journal of Economic Dynamics and Control*, 31(4): 1217-1244.
- Edmans, A. 2009. Blockholder trading, market efficiency, and managerial myopia. *Journal of Finance*, 64(6): 2481-2513.
- Edmans, A., Fang, V.W. & Zur, E. 2013. The effect of liquidity on governance. *Review of Financial Studies*, 26: 1443-1482.
- Edmans, A., Goldstein, I. & Jiang, W. 2015. Feedback effects, asymmetric trading, and the limits to arbitrage. *American Economic Review*, 105(12): 3766-3797.
- Edmans, A., Goldstein, I. & Jiang, W. 2012. The real effects of financial markets: the impact of prices on takeovers. *Journal of Finance*. 67(3): 933-971.
- Edmans, A. & Manso, G. 2011. Governance through trading and intervention: a theory of multiple blockholders. *Review of Financial Studies*, 24(7): 2395-2428.
- Eichholtz, P.M.A & Kok, N. 2008. How does the market for corporate control function for property companies? *Journal of Real Estate Finance and Economics*, 36: 141-163.
- Ertimur, Y., Ferri, F. & Oesch, D. 2013, Shareholder votes and proxy advisors: evidence from

- say-on-pay. *Journal of Accounting Research*, 51: 951-996.
- Falkenstein, E.G. 1996. Preferences for stock characteristics as revealed by mutual fund portfolio holdings. *Journal of Finance*, 51(1): 111–135.
- Fan, G. Z., Huszár, Z.R. & Zhang, W. 2013. The relationships between real estate price and expected financial asset risk and return: Theory and empirical evidence. *Journal of Real Estate Finance and Economics*, 46(4): 568-595.
- Fang, V.W., Matett, M. & Zhang, B. 2015. Foreign institutional ownership and the global convergence of financial reporting practices. *Journal of Accounting Research*, 53: 593-631.
- Farrar, D. & Glauber, R.R. 1967. Multicollinearity in regression analysis: the problem revisited. *Review of Economics and Statistics*, 49(1): 92-107.
- Ferreira, D., Ferreira, M.A. & Raposo, C.C. 2011. Board structure and price informativeness. *Journal of Financial Economics*, 99(3): 523-545.
- Ferreira, M.A. & Matos, P. 2008. The colors of investors' money: the role of institutional investors around the world. *Journal of Financial Economics*, 88(3): 499-533.
- Fieller, E.C. 1954. Some problems in interval estimation. *Journal of the Royal Statistical Society, Series B*, 16: 175–185.
- Frenkel, M. & Menkhoff, L. 2004. Are foreign institutional investors good for emerging markets? *The World Economy*, 27(8): 1275-1293.
- Froot, K.A., O'Connell, P.G.J. & Seasholes, M.S. 2001. The portfolio flows of international investors. *Journal of Financial Economics*, 59(2): 151-193.
- Gabriele, A., Boratav, K., & Parikh, A. 2000. Instability and volatility of capital flows to developing countries. *The World Economy*, 23(8): 1031–1056.
- Gallagher, D.R., Gardner, P.A. & Swan, P.L. 2013. Governance through trading: institutional swing trades and subsequent firm performance. *Journal of Financial and Quantitative Analysis*, 48(2): 427-458.
- Gantchev, N. & Jotikasthira C. 2016. Institutional trading and hedge fund activism. *Management Science*. forthcoming.
- Gao, L. & Kling, G. 2008. Corporate governance and tunneling: empirical evidence from China. *Pacific-Basin Finance Journal*, 16(5): 591-605.
- Garvey, G. & Swan, P. 2002. *What can market microstructure contribute to explaining executive incentives pay? Liquidity and the use of stock-based compensation*. Unpublished manuscript. University of New South Wales.
- Gaspar, J.-M., Massa, M. & Matos, P. 2005. Shareholder investment horizons and the market for corporate control. *Journal of Financial Economics*, 76(1): 135-165.
- Ghosh, C. & Sirmans, C.F. 2003. Board independence, ownership structure and performance: evidence from real estate investment trusts. *Journal of Real Estate Finance and Economics*, 26: 287-318.

- Ghosh, C. & Sirmans, C. F. 2005. On REIT CEO compensation: does board structure matter? *Journal of Real Estate Finance and Economics*, 30(4): 397-428.
- Gillan, S.L. & Starks, L.T. 2003. Corporate governance, corporate ownership, and the role of institutional investors: a global perspective. *Journal of Applied Finance*, 13(2): 4-22.
- Gillan, S. & Starks, L. 2007. The evolution of shareholder activism in the United States. *Journal of Applied Corporate Finance*, 19: 55-73.
- Gorton, G.B., Huang, L. & Kang, Q. 2016. The limitations of stock market efficiency: price informativeness and CEO turnover. *Review of Finance*, doi: 10.1093/rof/rfw008
- Grossman, S.J. & Stiglitz, J.E. 1980. On the impossibility of informationally efficient markets. *The American Economic Review*, 70(3): 393-408.
- Gul, F. A., Kim, J.-B. & Qiu, A.A. 2010. Ownership concentration, foreign shareholding, audit quality, and stock price synchronicity: evidence from China. *Journal of Financial Economics*, 95(3): 425-442.
- Haans, R.F.J., Pieters, C., & He, Z.L. 2016. Thinking about U: theorizing and testing U- and inverted U- shaped relationships in strategy research. *Strategic Management Journal*, 37: 1177-1195.
- Hart, O.D. 1983. The market mechanism as an incentive scheme, *Bell Journal of Economics*, 14: 366-382.
- Hattari, R., & Rajan, R.S. 2011. How different are FDI and FPI flows? Distance and capital market integration. *Journal of Economic Integration*, 26(3): 499-525.
- Hartzell, J. & Starks, L. 2003. Institutional investors and executive compensation. *Journal of Finance*, 58, 2351-2374.
- Hausman, J., & Taylor, W.E. 1981. Panel data and unobservable individual effects. *Econometrica*, 49(6): 1377-1398.
- He, W., Li, D., Shen, J. & Zhang, B. 2013. Large foreign ownership and stock price informativeness around the world. *Journal of International Money and Finance*, 36: 211-230.
- Holmström, B. & Tirole, J. 1993. Market liquidity and performance monitoring. *Journal of Political Economy*, 101(4): 678-709.
- Holthausen, R.W., Leftwich, R.W. & Mayers, D. 1990. Large block transactions, speed of response, and temporary and permanent stock price effects, *Journal of Financial Economics*, 26: 71-95.
- Huang, W. & Zhu, T. 2015. Foreign institutional investors and corporate governance in emerging markets: evidence of a split-share structure reform in China. *Journal of Corporate Finance*, 32: 312-326.
- Huyghebaert, N. & Wang, L. 2012. Expropriation of minority investors in Chinese listed firms: the role of internal and external corporate governance mechanisms. *Corporate Governance: an International Review*, 20(3): 308-332.



- Jian, M. & Wong, T.J. 2010. Propping through related party transactions. *Review of Accounting Studies*, 15: 70-105.
- Jiang, G., Lee, C.M.C. & Yue, H. 2010. Tunneling through intercorporate 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.
- Jones, J. 1991. Earnings management during import relief investigations. *Journal of Accounting Research*, 29: 193–228.
- Jones Lang LaSalle. 2009. *China 40: the rising urban stars*. Available at: <http://www.joneslanglasalle.com.hk/ResearchLevel2/research-advance-china-2009-china40.pdf>
- Jones Lang LaSalle. 2010. *Ebb and flow: the changing dynamics of China's real estate investment market*. <Http://www.joneslanglasalle.com.cn/ResearchLevel1/Research-advance-RealEstateInvestmentMarket-2011-eng.pdf>.
- Kang, J., Kwon, K.Y. & Park, H. 2016. Foreign investors and the delay of information dissemination in the Korean stock market. *Pacific-Basin Finance Journal*, 38: 1–16.
- Kang, J.-K. & Stulz, R.M. 1997. Why is there a home bias? An analysis of foreign portfolio equity ownership in Japan. *Journal of Financial Economics*, 46(1): 3-28.
- Keim, D.B. & Madhavan, A. 1996. The upstairs market for large-block transactions: analysis and measurement of price effects. *Review of Financial Studies*, 9(1): 1-36.
- Kim, J-B., & Yi, C.H. 2015. Foreign versus domestic institutional investors in emerging markets: who contributes more to firm-specific information flow? *China Journal of Accounting Research*, 8(1), 1-23.
- Kim, J.-B. & Yi, C.H. 2009. Does auditor designation by the regulatory authority improve audit quality? Evidence from Korea. *Journal of Accounting and Public Policy*, 28(3): 207-230.
- Kumar, P. & Zattoni, A. 2015. Market vs. internal factors in corporate governance. *Corporate Governance: an International Review*, 23: 399-401.
- Kyle, A. 1985. Continuous auctions and insider trading. *Econometrica*, 53:1315-1336.
- La Porta, R., Lopez-de-Silanes, F., Shleifer, A. & Vishny, R.W. 1998. Law and finance. *Journal of Political Economy*, 106(6): 1113.
- Leuz, C., Nanda, D. & Wysocki, P.D. 2003. Earnings management and investor protection: an international comparison. *Journal of Financial Economics*, 69(3): 505-527.
- Li, G. 2010. The pervasiveness and severity of tunneling by controlling shareholders in China. *China Economic Review*, 21(2): 310-323.
- Lind, J.T. & Mehlum, H. 2010. With or without U? The appropriate test for a U-shaped relationship. *Oxford Bulletin of Economics and Statistics*, 72(1): 109-118.
- Litan, R.E. 1992. Banks and real estate: regulating the unholy alliance. In L.E. Browne & E. Rosengren (eds.), *Real Estate and the Credit Crunch*. Boston: Federal Reserve Bank of

Boston.

- Liu, N., Bredin, D., Wang, L. & Yi, Z. 2014. Domestic and foreign institutional investors' behaviour in China. *European Journal of Finance*, 20(7-9): 728-751.
- Liu, Q. & Lu, Z. 2007. Corporate governance and earnings management in the Chinese listed companies: a tunneling perspective. *Journal of Corporate Finance*, 13(5): 881-906.
- Lo, A.W.Y., Wong, R.M.K. & Firth, M. 2010. Can corporate governance deter management from manipulating earnings? Evidence from related-party sales transactions in China. *Journal of Corporate Finance*, 16(2): 225-235.
- Luo, M., Chen, T. & Yan, I. 2014. Price informativeness and institutional ownership: evidence from Japan. *Review of Quantitative Finance and Accounting*, 42(4): 627-651.
- Malenko, N. & Shen, Y. 2016. The role of proxy advisory firms: evidence from a regression-discontinuity design. *Review of Financial Studies*, 29 (12): 3394-3427.
- Makhija, A.K. & Patton, J.M. 2004. The impact of firm ownership structure on voluntary disclosure: empirical evidence from Czech annual reports. *The Journal of Business*, 77(3): 457-491.
- Massa, M., Zhang, B. & Zhang, H. 2015. The invisible hand of short selling: does short selling discipline earnings management? *Review of Financial Studies*. 26: 1701-1736.
- McCahery, J., Sautner, Z. & Starks, L.T. 2016. Behind the scenes: the corporate governance preferences of institutional investors. *Journal of Finance*, 71(6): 2905-2932.
- Merton, R. 1987. A simple model of capital market equilibrium with incomplete information. *Journal of Finance*, 42: 483-510.
- Morck, R., Yeung, B. & Yu, W. 2000. The information content of stock markets: why do emerging markets have synchronous stock price movements? *Journal of Financial Economics*, 58(1-2): 215-260.
- Ng, L. & Wu, F. 2007. The trading behavior of institutions and individuals in Chinese equity markets. *Journal of Banking and Finance*, 31(9): 2695-2710.
- Peng, W.Q., Wei, K.C.J. & Yang, Z. 2011. Tunneling or propping: evidence from connected transactions in China. *Journal of Corporate Finance*, 17(2): 306-325.
- Sasabuchi, S. 1980. A test of a multivariate normal mean with composite hypotheses determined by linear inequalities. *Biometrika*, 67(2): 429-439.
- Shen, C.H. & Chih, H.L. 2007. Earnings management and corporate governance in Asia's emerging markets. *Corporate Governance: An International Review*, 15: 999-1021.
- Song, W. & Szewczyk, S. 2003. Does coordinated institutional investor activism reverse the fortunes of underperforming firms? *Journal of Financial and Quantitative Analysis*, 38: 317-336.
- Sun, Q. & Tong, W.H.S. 2003. China share issue privatization: the extent of its success. *Journal of Financial Economics*, 70(2): 183-222.
- Tesar, L.L. & Werner, I.M. 1995. Home bias and high turnover. *Journal of International*

*Money and Finance*, 14(4): 467-492.

Ting, W., Yen, S. & Chiu, C. 2008. Risk and audit opinions: evidence from the Chinese stock market. *Corporate Governance: an International Review*, 16(5): 400–15.

Xie, B., Davidson III, W.N. & DaDalt, P.J. 2003. Earnings management and corporate governance: the role of the board and the audit committee. *Journal of Corporate Finance*, 9(3): 295-316.

Yeo, S. 2003. The PRC qualified foreign institutional investors market. *China Economic Review*, 14(4): 443-450.

Zhang, X., Piesse, J. & Filatotchev, I. 2015. Family control, multiple institutional blockholders, and informed trading. *European Journal of Finance*, 21(10-11): 826-847.

Zhang, X., Wei, J-T. & Wu, H-H. 2013. Forced financial information restatements and management turnover: market discipline and large family shareholders' intervention in an emerging economy. *Asia Pacific Journal of Management*, 30(4): 1005-1029.

**TABLE 1: Definitions of the Variables**

<b>Variable</b>	<b>Definition</b>	<b>Expected impacts on cash-flow tunneling</b>	<b>Expected impacts on general tunneling</b>
<b>TUN-CF</b>	Cash-flow tunneling = the value of “other receivables” in the balance sheet at the end of the year		
<b>TUN-GE</b>	General tunneling = the value of the abnormal accruals ratio (see text for details)		
<b>TRAD</b>	Annualised churn rate (see text for details)	+	+
<b>TRAD<sup>2</sup></b>	Squared value of TRAD	-	-
<b>OWN</b>	Combined shareholdings of FIIs at the end of the year as a % of total shares (%)	-	-
<b>SIZE</b>	ln (total assets at the end of the year). Assets are measured in RMB million	+	-
<b>GROW</b>	Percentage growth in assets from the start to the end of the year (%)	-	-
<b>LEV</b>	ln (Ratio of total debts to total assets at the end of the year)	+	+
<b>PROF</b>	The Return on Assets (ROA) in the previous year	-	-
<b>STAT</b>	Dummy variable = 1 if the largest shareholder is a State-controlled company; = 0 otherwise	+	+
<b>LIQ</b>	Liquidity of the firm measured by ln (the year-end trading volume of stock over the total share outstanding )	+	+
<b>TIER1</b>	Dummy variable = 1 if the firm is located in a Tier 1 city (i.e. Beijing, Shanghai, Guangzhou, or Shenzhen); = 0 otherwise	-	-

**TABLE 2: Descriptive Statistics and Correlation Matrix**

	1	2	3	4	5	6	7	8	9	10	11
<b>1.Cash Flow Tunneling</b>	1.00										
<b>2.General Tunneling</b>	-0.05†	1.00									
<b>3.FII Trading</b>	0.34***	0.33***	1.00								
<b>4. FII Ownership</b>	0.26***	0.26***	0.33***	1.00							
<b>5. Firm Size</b>	0.66***	0.41***	0.42***	0.37***	1.00						
<b>6. Growth Opportunity</b>	-0.04	-0.04	0.01	-0.01	-0.01	1.00					
<b>7. Leverage</b>	0.02*	0.03	-0.02	-0.02	-0.01	0.24***	1.00				
<b>8.Profitability</b>	-0.04	0.01	0.06*	0.03	0.07*	0.05 †	-0.12***	1.00			
<b>9.State Controller</b>	0.13***	0.13***	0.06*	0.06*	0.14***	-0.02	-0.06*	-0.03	1.00		
<b>10.Liquidity</b>	-0.02	-0.01	0.15***	0.14***	0.1***	0.03	-0.12***	0.15***	-0.09***	1.00	
<b>11.Tier 1 Cities</b>	0.12***	0.12***	0.08***	0.06**	0.16***	-0.02	0.01	0.07*	0.17***	0.02	1.00
<b>MEAN</b>	204.87	-2.99	1.35	0.04	7.70	20.00	0.51	1.90	0.49	1.18	0.45
<b>SD</b>	403.70	10.96	6.39	0.23	1.47	131.16	0.36	5.94	--	0.74	--

Notes: (1) Variable definitions are provided in Table 1.

(2) Number of observations = 1006

(3) Significance at the 10%, 5%, 1% and 0.1% level is indicated by †, \*, \*\* and \*\*\* respectively

**TABLE 3: The Determinants of Cash-flow Tunneling (TUN-CF)**

Variables	Fixed Effects Regressions			GMM Regressions	
	Model (1)	Model (2)	Model (3)	GMM-AK Model (4)	GMM-AB Model (5)
<b>FII Trading (<math>\beta_1</math>)</b>	--	6.03†	18.10**	37.52*	15.50*
		[1.94]	[3.13]	[2.93]	[2.02]
<b>FII Trading<sup>2</sup> (<math>\beta_2</math>)</b>	--	--	-0.22***	-0.50*	-0.19*
			[-3.34]	[-1.97]	[-2.01]
<b>FII Ownership (<math>\beta_3</math>)</b>	224.26*	194.98†	162.36†	-65.86	103.69
	[2.13]	[1.93]	[1.69]	[-1.13]	[1.45]
<b>Firm Size (<math>\beta_4</math>)</b>	145.36***	137.43***	131.04***	89.82***	49.67†
	[5.41]	[5.37]	[5.23]	[3.89]	[1.94]
<b>Grow Opportunity (<math>\beta_5</math>)</b>	-0.11†	-0.11†	-0.11†	-0.31**	-0.25*
	[-1.82]	[-1.89]	[-1.88]	[3.10]	[2.24]
<b>Leverage (<math>\beta_6</math>)</b>	164.7***	151.25***	140.31***	162.33***	-37.97
	[4.03]	[3.76]	[3.5]	[5.86]	[-0.68]
<b>Profitability (<math>\beta_7</math>)</b>	-5.71**	-5.52**	-5.36**	-8.41***	-0.68
	[-2.92]	[-2.87]	[-2.87]	[-3.62]	[-0.29]
<b>State Controller (<math>\beta_8</math>)</b>	34.14	34.98	37.7	-7.03	16.27
	[0.51]	[0.52]	[0.57]	[-0.37]	[0.37]
<b>Liquidity (<math>\beta_9</math>)</b>	23.71	17.33	22.95	--	--
	[0.99]	[0.71]	[0.8]	--	--
<b>Numbers of observations/firms</b>	1006/133	1006/133	1006/133	1006/133	1006/133
<b>F-Value</b>	4.19***	4.18***	4.29***	135.35***	24.28***
<b>R<sup>2</sup></b>	0.25	0.28	0.30	--	--
<b>Hausman statistics</b>	25.27 ***	39.65 ***	37.40***	--	--
<b>Slope at TRAD low level (<math>\beta_1+2\beta_2TRAD_l</math>)</b>	--	--	18.70***	38.88**	16.02*
<b>Slope at TRAD high level (<math>\beta_1+2\beta_2TRAD_h</math>)</b>	--	--	-20.43***	-49.48**	-17.62*
<b>Sasabuchi test statistic</b>	--	--	3.14***	1.76*	1.91*
<b>90 confidence Fieller interval (TRAD<sub>l</sub>, TRAD<sub>h</sub>)</b>	--	--	[32.1, 48.82]	[20.83,66.69]	[28.36,57.95]
<b>Extreme point /Within the data range</b>	--	--	40.5/Yes	37.52/Yes	40.36/Yes

Notes: (1) Variable definitions are provided in Table 1.

(2) Significance at the 10%, 5%, 1% and 0.1% level is indicated by †, \*, \*\*, \*\*\*, respectively.

(3) The heterosedasticity bias is corrected by using the Huber-White process.

**TABLE 4: The Determinants of General Tunneling (TUN-GE)**

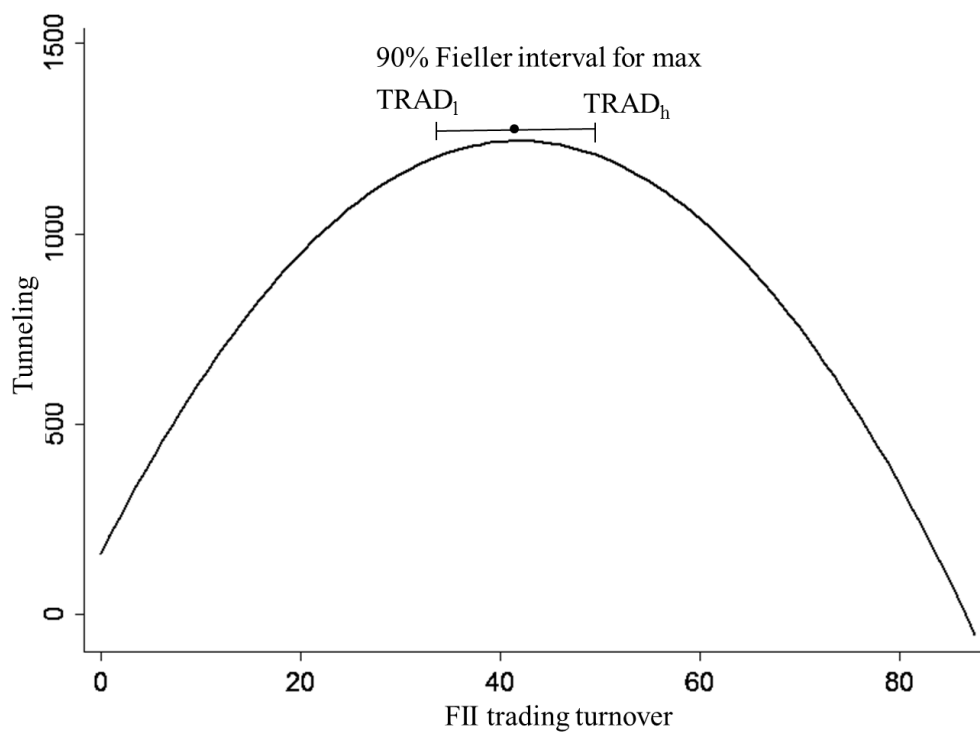
Variables	Random Effects Regressions			GMM Regressions	
	Model (6)	Model (7)	Model (8)	Model (9)	Model (10)
<b>FII Trading (<math>\beta_1</math>)</b>	--	0.05*	0.15***	1.30*	0.16*
		[2.13]	[3.24]	[2.18]	[2.01]
<b>FII Trading<sup>2</sup> (<math>\beta_2</math>)</b>	--	--	-0.002***	-0.02*	-0.002*
			[-3.48]	[-2.34]	[-1.98]
<b>FII Ownership (<math>\beta_3</math>)</b>	1.17**	0.93**	0.63**	-14.76†	0.04
	[2.95]	[3.00]	[2.85]	[-1.79]	[0.07]
<b>Firm Size (<math>\beta_4</math>)</b>	-2.43***	-2.49***	-2.54***	-4.61**	-0.80
	[-3.85]	[-3.87]	[-3.92]	[-2.96]	[-0.52]
<b>Grow Opportunity (<math>\beta_5</math>)</b>	0.01	0.01	0.01	0.01	-0.01**
	[0.59]	[0.58]	[0.59]	[0.72]	[-2.71]
<b>Leverage (<math>\beta_6</math>)</b>	7.59**	7.51**	7.45**	7.55	2.08
	[2.89]	[2.88]	[2.84]	[1.77]	[0.53]
<b>Profitability (<math>\beta_7</math>)</b>	-0.28*	-0.28*	-0.28*	-0.28*	-1.06**
	[-2.15]	[-2.14]	[-2.14]	[-2.01]	[-2.99]
<b>State Controller (<math>\beta_8</math>)</b>	0.58	0.58	0.58	0.27	-0.34
	[0.77]	[0.77]	[0.78]	[0.73]	[-0.34]
<b>Liquidity (<math>\beta_9</math>)</b>	-0.84	-0.89	-0.97	--	--
	[-1.64]	[-1.61]	[-1.60]		
<b>Tier 1 Cities (<math>\beta_{10}</math>)</b>	0.89	0.87	0.83	--	--
	[1.41]	[1.38]	[1.33]		
<b>Numbers of observations/firms</b>	975/133	975/133	975/133	975/133	975/133
<b>F-Value</b>	208.61***	207.86***	208.77***	265.67***	137.66***
<b>R<sup>2</sup></b>	0.33	0.34	0.36	--	--
<b>Hausman statistics</b>	6.29	6.95	8.60	--	--
<b>Slope at TRAD low level (<math>\beta_1+2\beta_2\text{TRAD}_l</math>)</b>	--	--	0.15***	1.30*	0.16*
<b>Slope at TRAD high level (<math>\beta_1+2\beta_2\text{TRAD}_h</math>)</b>	--	--	-0.19***	-2.18*	-0.19*
<b>Sasabuchi test statistic</b>	--	--	3.25***	1.73*	1.66*
<b>90 confidence Fieller interval (TRAD<sub>l</sub>, TRAD<sub>h</sub>)</b>	--	--	[32.67, 42.74]	[17.57, 49.25]	[35.06, 85.69]
<b>Extreme point /Within the data range</b>	--	--	38.22/Yes	32.50/Yes	42.54/Yes

Notes: (1) Variable definitions are provided in Table 1.

(2) Significance at the 10%, 5%, 1% and 0.1% level is indicated by †, \*, \*\*, \*\*\*, respectively.

(3) The heterosedasticity bias is corrected by using the Huber-White process.

**FIGURE 1: The Relationship between FII Trading Turnover and Cash-flow Tunneling by Controlling Shareholders (TUN-CF)**





**FIGURE 2: The Relationship between FII Trading Turnover and General Tunneling by Controlling Shareholders (TUN-GE)**

