Corporate governance and earnings management in the Chinese listed companies: A tunneling perspective

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Abstract

This paper examines the relation between earnings management and corporate governance in China by introducing a tunneling perspective. We document systematic differences in earnings management across the universe of China’s listed companies during 1999–2005, and empirically demonstrate that firms with higher corporate governance levels have lower levels of earnings management. We study two China-specific situations, in which the listed firms have strong incentives to manage earnings in order to meet certain return on equity (ROE) thresholds, and earnings management has been shown to be the most conspicuous. We identify tunneling evidence for each. Our empirical findings, although not being able to completely exclude other explanations, strongly suggest that agency conflicts between controlling shareholders and minority investors account for a significant portion of earnings management in China’s listed firms.

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1. Introduction

The emerging market crisis of 1997–1998 has spawned a vast body of research on corporate governance issues. In contrast with traditional literature such as Berle and Means (1932) and Jensen and Meckling (1976), recent finance theory (e.g., La Porta et al., 1999, 2000) has presented a powerful argument that the central agency problem in large corporations around the world is that of restricting expropriation of minority shareholders by controlling shareholders. Johnson et al. (2000) use the term ‘tunneling’ to describe the transfer of resources away from firms for the benefits of their controlling shareholders. The tunneling of firm value by controlling shareholders, including activities ranging from outright theft and loan guarantees to selling assets or products below market prices, has thus become a centerpiece of recent corporate finance and drawn widespread attention. It is believed that tunneling is particularly serious in emerging markets, where fewer effective corporate governance mechanisms (e.g., dispersed ownership structures, independent boards, active external takeover markets, and high-quality disclosure) are in place to protect minority shareholders.

If controlling shareholders intend to tunnel the firm value, they have incentives to mask true firm performance and conceal their private control benefits from outside investors. This insight suggests that earnings management is inherently associated with tunneling in the context of poor corporate governance practice, where private control benefits are higher and the likelihood of these benefits being detected is lower. Prior research has provided some support for this argument. For example, Leuz et al. (2003) conduct a cross-country analysis and show that the level of earnings management decreases with investor protection.

The inherent links between earnings management and tunneling arguably are more pronounced in China’s emerging stock market for several reasons. First, most listed firms in China are carve-outs or spin-offs from large state-owned enterprises (SOEs), in which the original SOEs still own a large percentage of total shares. In most cases, managers of listed firms are appointed by their parent firms. The controlling shareholders are rarely challenged by other shareholders because they on average own more than 44% of listed firms’ shares, and publicly tradeable shares only account for slightly more than one-third of total outstanding shares. Second, the China Securities Regulatory Commission (CSRC) and other related regulatory authorities have adopted an administrative governance approach to regulate China’s stock market (Pistor and Xu, 2005). They rely on accounting numbers (e.g., return on equity) to assess the readiness of IPO candidates, to decide whether to de-list a public firm, and to approve a firm’s rights issue application. Such practice unintentionally provides the listed firms with strong incentives to manage earnings above certain thresholds.

Despite numerous anecdotes linking earnings management to tunneling, there is still a paucity of academic research. Much of the past research focuses on one particular aspect of earnings management or tunneling. For example, Jian and Wong (2005) document that a group-controlled firm in China is more likely to use related transactions to manipulate earnings and tunnel firm value; Chen and Yuan (2004) find that listed firms manage earnings for rights issues; Jiang et al. (2003) all provide empirical evidence of tunneling by controlling shareholders in emerging markets. Since July 2005, the Chinese government started to implement the experiment of floating all shares. But this policy initiative has limited impact on our sample (1999–2005).
provide evidence that controlling shareholders in China extract funds from listed companies through corporate loans. Chen et al. (2006) examine corporate financial frauds and find that various aspects of corporate governance are associated with the incidence of fraud.

In this paper, we aim to offer a more comprehensive study of the linkage between earnings management and tunneling in China. We conduct a two-stage analysis to demonstrate that earnings management in China is largely due to tunneling. We first document systematic differences in earnings management across the universe of China’s listed companies for the period from 1999 to 2005. We empirically demonstrate that the degree of earnings management is significantly correlated with measures for various aspects of corporate governance. The evidence suggests that good corporate governance mitigate the agency problems, especially the agency conflicts between controlling shareholders and minority shareholders, and consequently reduces the managerial incentives to manage earnings. Our analysis thus complements Leuz et al. (2003), in which evidence from China is void. Unlike previous studies which only use a sub-sample of the Chinese listed companies, this paper examines the universe of China’s listed companies from 1999 to 2005.

The finding that good corporate governance is associated with earnings management only provides an indirect support for our main hypothesis. To present direct evidence, we study two China-specific situations, where earnings management has been identified to be the most conspicuous. They are: (i) a listed company manages earnings to avoid being de-listed; and (ii) a listed company manages earnings to exceed certain return on equity (ROE) thresholds so as to earn the rights to issue additional shares to existing shareholders (rights issue). For each, we demonstrate the potential wealth or resource diverting from minority shareholders to controlling shareholders and map out the role played by earnings management. In the first case, we quantify the private benefits a controlling shareholder may lose if the firm is de-listed. We also show that this magnitude is positively related to the level of earnings management. In the second case, we demonstrate that firms mis-allocate the capital raised through rights issues, and firms issuing new shares lend more money to their controlling shareholders. Earnings management facilitates those activities.

Although our empirical evidence from different aspects offers support for the causal relation between earnings management and tunneling, the paper could not completely exclude other potential explanations, and is subject to several caveats. First, it is difficult to measure earnings management in China. As prior literature suggests (e.g., Chen et al., 2006; Jian and Wong, 2005), Chinese listed companies mainly use some discretionary items such as accruals to manage earnings. Although we use three accrual-based variables to measure earnings management (the total accruals, industry-adjusted accruals, and discretionary accruals based on the Jones’ (1991) model), we have to admit that our measures may not fully appreciate the dynamic nature of earnings management (see e.g., Healy and Wahlen, 1999; Dechow and Skinner, 2000). Accruals may reverse over time and they may also be positively correlated with cash flow and earnings levels. Therefore, they may reflect things other than earnings management. Second, it is possible that in China, incentives other than tunneling exist. Firms may manage earnings to pursue other objectives — benefitting the managers, pleasing the superiors for quick promotion, or pursuing political agenda. However, given the fact that there is tunneling evidence in the two situations, where earnings management has been the most conspicuous, and that corporate governance variables are able to explain a significant portion of cross-sectional variations in earnings management, our main hypothesis is supported.

management, we believe tunneling – if it is not the sole driver – is probably the most important one behind the Chinese listed firms’ earnings management decisions.

The rest of the paper proceeds as follows. In Section 2, we discuss China’s institutional background, and the possible links between earnings management and tunneling. Section 3 develops the main hypotheses. Data and variables are discussed in Section 4. Section 5 presents cross-sectional evidence showing that in China, the pervasiveness of earnings management is largely determined by the level of corporate governance. Section 6 examines the two situations, in which earnings management is the most conspicuous in China. We present evidence of tunneling for each and illuminate the role of earnings management. Section 7 concludes.

2. Institutional setting and literature review

2.1. Institutional setting

The Chinese stock market was organized by the government as a vehicle for SOEs to raise capital and improve operating performance (Green, 2003). Since its birth, the regulations have been unfolding to address problems typically found in emerging markets. In particular, the China Securities Regulatory Commission (CSRC) has been managing the tradeoff between growth and control. Since the primary objective of developing equity markets is to help SOEs relax external financing constraints, regulations introduced have been asymmetrically in favor of SOEs or the companies with close ties to the government.

A fundamental dilemma of the above administrative approach stems from the state policy of maintaining a full or controlling ownership in firms. The state wants the firms it owns to be run efficiently, but not solely for the purpose of wealth maximization. Other more immediate purposes include the maintenance of urban employment, direct control of important industries such as banking, energy and telecommunication, and politically motivated job placement. The state involvement creates conflicts of interest between the state as controlling shareholder and other shareholders. Even worse, the state is playing two roles at the same time — the controlling shareholder and the regulator (see Clarke, 2003; Firth et al., 2006 for a discussion of the state agency being the majority shareholder in China).

Such a dilemma sheds lights on many phenomena observed in the Chinese stock markets. For example, simply because the state wants to keep enough equity interest to control the listed firms, the ownership of Chinese listed companies is heavily concentrated in the hands of the state — state-owned shares and legal-person shares (indirectly owned by the government) on average account for over 70% of total shares in China’s listed companies. Furthermore, since the state or state-affiliated legal persons are in most cases the largest shareholders, the state representatives dominate corporate boards, which greatly compromises the independence of corporate boardrooms (Liu, 2006).

China’s administrative governance has been built around the quota system due to the underdevelopment of the legal infrastructure and loose law enforcement (Pistor and Xu, 2005). Under the quota system, the CSRC assigns a listing quota to the planning commission at province, then to IPO candidates. In most cases, the corporatization (or corporate restructuring) is organized based on the actual quota an IPO firm obtains. Aharony et al. (2000) document that the SOEs attempt to manage earnings to boost their chances of being selected for IPOs simply because earnings performance is a government stated criterion for listing.

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6 The regional decentralization is believed to promote competition among different regions (Pistor and Xu, 2005).
The administrative governance approach has a structure weakness — the adoption of quota provides the local bureaucrats with “rent-seeking” opportunities. The local bureaucrats have incentives to select the firms (IPO candidates), through which they can grab the largest amounts of rents. They also choose the ownership structure to maximize their benefits. As a result of the quota system, the corporatization of SOEs in China is not complete. A firm obtains a certain amount of quota and will corporatize itself according to the amount of shares it can issue to the public. Suboptimal ownership is selected to maximize the state’s control and the local bureaucrats’ utilities, which leads to a state-dominant and concentrated ownership structure at firm level.

2.2. Tunneling in the Chinese listed companies

The Chinese institutional set-up in the stock market results in pervasive tunneling activities among the listed firms. Several reasons explain why private benefits accruing to controlling shareholders in China are large and cannot be easily competed away. In China, most listed companies are carve-outs or spin-offs from large SOEs, and they still share personnel functions, capital, and assets with their parents. Local governments, in most cases, appoint the management of listed firms. As a result, the management often take action to benefit the largest shareholders (the local government in most cases). It is noted that such practice may add social values in other ways that offset the social costs it imposes through tunneling — e.g., it may help reduce external financing constraints and transaction costs. However, outside investors almost always lose when the controlling shareholders tunnel (Cheung et al., 2005).

Given that only around 30% of listed companies’ shares are publicly tradable, and that controlling shareholders normally control more than 40% of shares, controlling shareholders are rarely challenged by other shareholders on important issues. Minority shareholders cannot take listed companies to court, due to limitations in the civil law, and a lack of punishment spectrum in the current securities laws. Listed companies, therefore, are the nexus of a series of related-party transactions carried out for the benefit of controlling shareholders.

Tunneling activities in China mainly take the form of granting loans to majority shareholders, and related-party transactions. A number of studies have examined the tunneling activities in the Chinese stock markets. Cheung et al. (2005) study a sample of related-party transactions between Chinese listed firms and their controlling shareholders. They provide evidence that related-party transactions are not typically beneficial for minority shareholders. Jiang et al. (2005) document the widespread use of corporate loans by controlling shareholders to extract funds from the listed firms in China.

2.3. Earnings management in the Chinese listed companies

Earnings management has been rampant in China’s listed companies too. Due to the administrative governance approach adopted in China, the regulators often rely on accounting numbers to govern the listed companies. CSRC requires listed companies to meet certain return

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7 For example, current Chinese securities laws do not allow proportionate legal enforcement. Regulators can only take extreme actions (prison sentences or warnings); they cannot impose moderate penalties.

8 In 2001 the largest shareholder of Meierya – a then profitable company – colluded with other insiders to embezzle US $44.6 million, 41% of the company’s total equity. In the same year, the largest shareholder of Sanjiu Pharma, one of the blue chips in China, extracted US$309.1 million, 96% of the listed company’s total equity. According to a survey conducted by the Shanghai-based Shenying and Wangguo Securities Co., Ltd., the controlling shareholders of the 130 firms surveyed on average owe the listed companies US$ 40 million in the form of accounting receivables or parent borrowing (Caijing Magazine, June 5, 2002).
on equity (ROE) criteria before they can apply for permission to issue additional shares to existing shareholders (rights issues); and the most important criterion for de-listing a listed company is a reported net loss for three consecutive years.

To be eligible for rights issue, a listed company has to meet several requirements — it has to maintain at minimum, a reported ROE of 6% for three consecutive years; and the average ROE over these three years must be no less than 10%. This is not an easy task for most Chinese listed companies as the average ROE for all listed companies in China was only 7.1% in 2005. Given that the CSRC relies on ROEs to review a listed company’s application for rights issue, listed firms have strong incentives to manage earnings above those necessary thresholds.

Earnings management tends to be pervasive in China also because private benefits of control are large but the level of corporate governance is poor and the protection of minority investors is weak. As mentioned earlier, the control over listed companies carries a special value for controlling shareholders. To enjoy these private control benefits, controlling shareholders have strong incentives to manage earnings to avoid de-listing, especially when de-listing decision is fixated on certain accounting numbers. In an attempt to protect minority shareholders and to encourage better corporate governance, the CSRC introduced a special de-listing mechanism in 1998. Under the guidelines set forth by the CSRC, China’s two stock exchanges — the Shanghai and Shenzhen Stock Exchanges, started to de-list Chinese listed firms. The stock exchanges will first label a firm in financial trouble as a special treatment (ST) firm, then designate it a particular transfer (PT) firm if it fails to turn profitable within one year. In general, a firm will be designated a PT firm if it has negative net profits for three consecutive years. To controlling shareholders and other insiders, becoming a PT firm and being de-listed afterwards implies the loss of private control benefits and future rent-seeking opportunities. Therefore, doing whatever it takes to avoid net loss for three consecutive years provides the Chinese listed companies with another incentive to manage earnings: to report a profit.

Fig. 1 presents a histogram of ROEs for China’s listed companies from 1999 to 2005. Apparently a disproportionately high number of companies reported ROEs just slightly over 0%, 6% and 10%. The 0%, 6% and 10% spikes demonstrate the two most important incentives to manage earnings in China: to gain rights to issue new equity; and to avoid de-listing.

A growing literature has examined corporate earnings management behavior in China’s infant stock market. Aharony et al. (2000) identify evidence of earnings manipulation among the Chinese listed firms prior to their IPOS. Chen and Yuan (2004) find that the Chinese listed firms manage earnings to satisfy the ROE requirements for rights issues, and argue that such earnings management behavior associates with mis-allocation of capital resources. Jian and Wong (2005) present evidence that the listed manufacturing firms in China use related-party transactions to manage earnings. Chen et al. (2006) find that various aspects of corporate governance (e.g., boardroom characteristics and ownership) are associated with the incidence of corporate financial fraud.

3. Hypothesis development

The institutional setting in China explains Chinese listed firms’ strong incentives to manage earnings and to tunnel. Much of the literature has yielded empirical findings that relate earnings...
management to controlling shareholders’ tunneling activities. However, those studies tend to focus on one particular aspect of earnings management and/or tunneling. For example, Chen and Yuan (2004) present evidence that listed firms in China manage earnings for rights issues. Jiang et al. (2005) demonstrate that corporate loan to controlling shareholders is one important form of tunneling activity practiced by listed firms in China. Jian and Wong (2005) study how controlling shareholders use related-party transactions to manage earnings and to tunnel. There is a lack of systematic empirical evidence linking earnings management to tunneling. A prime focus of our study is to comprehensively examine how corporate governance impacts on the Chinese listed firms’ earnings management behavior. After we establish the correlation between earnings management and corporate governance, we present concrete empirical evidence from various perspectives to demonstrate that earnings management is largely due to tunneling made possible because of the low levels of corporate governance in China’s listed firms.

We conduct a two-stage analysis to illustrate the roles of tunneling incentives. In the first stage, we establish the relation between the level of earnings management and proxies measuring a firm’s main aspects of corporate governance. Good corporate governance effectively mitigates agency problems — especially the agency conflicts between the controlling shareholder and other minority shareholders (see e.g., Shleifer and Vishny, 1997; Gillan, 2006). Such a conclusion is especially true in emerging markets like China, where the rent-seeking opportunities abound and the protection of minority shareholders is poor.

If earnings management in China is indeed largely driven by controlling shareholders’ tunneling incentives, we expect its pervasiveness to be negatively correlated with a firm’s level of corporate governance. Our first general hypothesis is:

**H1.** Listed firms with higher levels of corporate governance are associated with lower levels of earnings management.

We note that an empirical support for H1 at best only provides indirect evidence that earnings management in China is largely due to tunneling. The hypothesis could work equally well for self-serving managers.\(^\text{10}\) That is, good corporate governance also mitigates earnings management driven by managerial appropriation. The managerial appropriation however is less likely to be the

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\(^{10}\) We thank an anonymous referee for drawing our attention to this potential alternative explanation, and pushing us to think hard on how to distinguish the tunneling explanation from the managerial appropriation explanation.
main explanation in the Chinese context for two reasons. First, the central agency problem in emerging markets is how to contain controlling shareholders’ incentives to tunnel resources out of the listed firms. Managerial agency problems are relatively less important. Second, the majority of the Chinese listed firms result from spin-offs or carve-outs from their parent firms. Managers of the listed firms are in most cases appointed by their controlling shareholders. Although a managerial labor market in China is emerging and evolving (see, e.g., Groves et al., 1995), it is not efficient enough to have a real impact on the listed firms. Servicing the interests of the controlling shareholders plausibly is listed firm managers’ primary objective.

Despite the above arguments, the conjecture that earnings management in China is largely due to tunneling can get a major boost if we provide direct evidence associating tunneling with corporate earnings management. We design our empirical tests towards this direction. As shown in Fig. 1 and also in previous literature, a significant amount of earnings management has been related to two incentives in China—to avoid de-listing; and to gain the rights to issue new equity. We thus present the evidence of resources diverting to controlling shareholders for each. In the first case, we immediately have:

H2a. Listed firms with imminent de-listing risk are associated with higher levels of earnings management.

For poorly governed firms, private control benefits are embodied in various types of tunneling activities. To conclude that earnings management for firms with imminent de-listing risk is mainly induced by tunneling, we need to demonstrate the amount of private control benefits that would be forfeited if a listed firm were de-listed. Our next hypothesis thus is:

H2b. De-listing a listed firm is associated with loss of private control benefits for its controlling shareholder.

In the second case, where the listed firms need to earn the rights to issue new shares to existing shareholders, the hypothesis can be similarly stated as:

H3a. Firms with the requirements for rights issues met are associated with higher levels of earnings management.

It is inherently difficult to offer corroborating evidence of tunneling because a controlling shareholder is able to use corporate resources to his or her benefit only if it is difficult or impossible to prove these actions in court. However, as we hypothesize the main purpose of rights issues is to use the raised capital for the benefits of controlling shareholders, we can test the existence of tunneling by checking whether the investment of firms issuing new shares (SEO firms) is more responsive to their investment opportunities (measured by average sales growth rate or Tobin’s Q).11

If not, we speculate that the raised capital has been mis-allocated and very likely has been diverted away from the listed companies. In addition, as pointed out in Jiang et al. (2005), the majority of “other receivables” for the Chinese listed firms are corporate loans to related companies. To divert resources to their controlling shareholders, we expect the listed firms to use “other receivables” as well. Our general hypothesis states:

H3b. Rights issues are associated with higher levels of “other receivables”; the investment—investment opportunity sensitivity is smaller for firms issuing shares to existing shareholders.

11 Bertrand et al. (2002) use a similar empirical design to test the existence of tunneling among Indian group companies.
4. Data and empirical design

4.1. Earnings management measures

Drawing on the existing earnings management literature (see Healy and Wahlen, 1999; Dechow and Skinner, 2000) and taking into account the China-specific institutional features, we use three variables – the total accruals (ACC), industry-median-adjusted accruals (IAACC), and discretionary accruals (DACC) – to measure earnings management. ACC is defined as the difference between net income (NI) and cash flows from operating activities (CFO) divided by total assets (TA):

\[ \text{ACC}_{i,t} = \frac{\text{NI}_{i,t} - \text{CFO}_{i,t}}{\text{TA}_{i,t}}. \]  

(1)

We adjust total accruals by the industry median to control for common determinants of accruals among firms within the same industry. Our industry-median-adjusted accruals is defined as the difference between a firm’s ACC and the industry-median ACC:

\[ \text{IAACC}_{i,t} = \text{ACC}_{i,t} - \text{Industry median ACC}. \]  

(2)

Most earnings management literature uses abnormal accruals estimated from a specific model to measure earnings management. We use the modified Jones’ (1991) model to decompose firm-level (total) accruals into normal accruals and discretionary accruals:

\[ \frac{\text{Accruals}_{i,t}}{\text{TA}_{i,t}} = a_1/\text{TA}_{i,t} + a_2\Delta\text{Rev}_{i,t}/\text{TA}_{i,t} + a_3\text{PPE}_{i,t}/\text{TA}_{i,t} + e_{i,t}, \]  

(3)

where \(\Delta\text{Rev}_{i,t}\) is the change in sales revenues in year \(t\) for firm \(i\), and \(\text{PPE}_{i,t}\) is gross property, plant, and equipment in year \(t\) for firm \(i\). We use the ordinary least-square method (OLS) to estimate Eq. (3) in cross-section for each industry and year combination.\(^{13}\) We denote the predicted values of the Jones model as normal accruals and the residuals as discretionary accruals (DACC).

4.2. Corporate governance variables

Corporate governance has been characterized as a set of mechanisms protecting investors from opportunistic behavior (Shleifer and Vishny, 1997; Dennis and McConnell, 2003; Gillan, 2006, among many others). These mechanisms may be internal or external. Internal mechanisms include dispersed ownership structures, independent boards of directors, formal board process, timely and accurate disclosure of relevant information. External mechanisms include the existence of active external takeover markets, a shareholder-friendly legal infrastructure, and

\(^{12}\) Most studies using the US data define total accruals as the difference between earnings before extraordinary items and operating cash flows. Under the Chinese GAAP, so-called “one-time” items, such as extraordinary items and discontinued operations, are not reported separately. On China’s standardized income statement, profit from operations is sales revenue less cost of goods sold and operating expenses, plus profits (losses) from non-major operations; total profit includes profit from operations, gains (losses) from disposal of assets and investments, and other revenues and expenses; net income is total profit less income taxes. Therefore, both “above the line” and “below the line” items in an American income statement are included in China’s operating income. The main results reported in the paper are based on accruals calculated from net income. We also conduct relevant empirical tests using accruals calculated from profit from operations and total profit. All results are qualitatively similar.

\(^{13}\) We specify twenty five industries based on the first two digit of the industry codes designated by the CSRC.
well-established capital markets. Both internal and external mechanisms help to resolve two types of agency problems: the one between corporate owners and managers; and the one between controlling shareholders and minority shareholders.

Following the literature, especially Bai et al. (2004b), we construct a series of variables to capture the main aspects of Chinese listed firms’ corporate governance. We define TOPSHARE as the percentage of shares held by the largest shareholder. It measures the largest shareholder’s interest in a company and likely the largest shareholder’s power in the board. Most corporate governance frameworks place positive values on a dispersed ownership structure. It has been argued that concentrated ownership (e.g., the existence of one ultimate firm owner) is the ultimate determinant of Asian companies’ poor governance practice (see e.g., Claessens et al., 2000; Fan and Wong, 2001). The ability of controlling shareholders to expropriate minority shareholders is directly related to the degree to which they control the company. Thus, a higher TOPSHARE corresponds to a lower governance level and a higher incentive to tunnel. We expect a positive correlation between TOPSHARE and earnings management measures, ACC, IAACC, and DACC.

We define TOPEXECSHARE as the percentage of shares held by the top executives including the CEO, the executive vice presidents, the chairperson and the vice chairpersons of the board of directors. TOPEXECSHARE measures the top executives’ interest in a company. The executive compensation literature uses TOPEXECSHARE to measure the alignment of the managerial interest with that of the shareholders (Murphy, 1999). Hence, a higher TOPEXECSHARE indicates that the management’s interest is more likely to be in line with that of shareholders. We expect a negative relation between earnings management and TOPEXECSHARE.

Klein (2002) finds that boards of directors are more effective in monitoring managers’ financial reporting behavior, if they are more independent of the CEO. Chen et al. (2006) also identify evidence that the board characteristics (e.g., independence, number of board meetings, and the tenure of board chairman) are associated with the incidence of fraud. In our research setting, board structure is not only a mechanism of monitoring a company’s financial reporting process, but also an instrument to curb controlling shareholders’ tunneling behavior. We construct two variables to capture the independence (or the lack thereof) of boards. The first variable is CEO_DIR, which is a binary dummy variable that takes the value of 1 if the company’s CEO is also the chairperson of the board and 0 otherwise. When the CEO is also the board chair, it is more difficult for minority shareholders to have a say on important issues and the controlling shareholders have larger discretionary power in their financial reporting. We therefore expect a positive correlation between earnings management and CEO_DIR. The second variable is OUTSIDEDIR, which is defined as the ratio of the number of directors not receiving any compensation from the company to the total number of directors. We expect earnings management and OUTSIDEDIR to be negatively correlated.

Controlling shareholders tend to expropriate minority shareholders when they are less likely to be challenged by other shareholders. An active takeover market does not exist in China.

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14 Several recently released reports, such as the McKinsey Corporate Governance report, S&P company level corporate governance rating, and CLSA emerging market governance rating all take dispersed ownership structure as a requirement for good governance.

15 It is possible that some unpaid directors could have been appointed by the controlling shareholders to represent the unlisted parent company on the board. We therefore carefully check the affiliations of these unpaid directors. If they are affiliated with the parent company or other subsidiaries of the parent company, we do not treat them as outsiders.

16 Mergers and acquisitions (M&A) markets have been relatively quiet. The total M&A transaction volume in 1997 was only 1% of China’s GDP. It has increased to 2–3% in recent years. Still, it lags behind developed markets and most Asian peers (Source: Thomson Financial).
However, other shareholders can still form coalitions and seriously challenge opportunistic controlling shareholders. Zingales (1995) uses the Shapley value of small shareholders’ votes to measure the intensity of competition for corporate control. Following the same spirit, we define a variable SHARE2_10, which measures the likelihood that other large shareholders will challenge the largest shareholders. SHARE2_10 is defined as:

$$\text{SHARE2}_{10} = \sum_{n=2}^{10} \left( \frac{S_n}{S} \right)^2,$$

where $S_n$ is the number of shares held by the $n$th largest shareholder, and $S$ is the number of total outstanding shares. SHARE2_10 is a Herfindahl-type of index that measures the concentration of shares held by the top 10 shareholders excluding the controlling one. We expect a negative correlation between SHARE2_10 and earnings management.

A dummy variable – HBSHARE – is constructed to capture the effect of legal environment in enforcing corporate governance. It takes the value of 1 if a firm has H-shares listed in Hong Kong or B-shares issued to foreign investors. These firms must adopt international accounting standards, and have their financial statements audited by internationally recognized accounting firms. The managers of these firms are therefore subject to stricter scrutiny from more sophisticated investors. We therefore expect a negative correlation between HBSHARE and earnings management.

We also construct two variables to measure the impact of Chinese institutional background on a firm’s corporate governance practice. PARENT is a dummy variable which measures whether a listed firm is controlled by a group. If a listed company is group affiliated, the scope for tunneling may be wider and its manager’s incentives to manage earnings are also stronger. We expect a positive sign between PARENT and earnings management. We define SOE as a dummy variable that capture whether the controlling shareholder is the government or not. The controlling government may use the listed company as a vehicle to meet policy goals conflicting with shareholders’ interests. We believe earnings management could be more conspicuous for SOEs and a positive correlation between SOE and earnings management is expected.

### 4.3. Sample

Our empirical analysis requires both financial and corporate governance data. The corporate governance data used in our tests are manually collected from annual reports. Not until 1999 did a critical mass of Chinese listed companies start to disclose information on major aspects of corporate governance in their annual reports — ownership structure, executives’ shareholding, and board structure. There was also a major change in regulations governing rights issues in March 1999. Our analysis therefore focuses on the period from 1999 to 2005.

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17 Nenova (2003) suggests that the more concentrated the ownership is, the lower is the probability of a successful change of corporate control. In China, however, the competition for corporate control is normally driven by the government, and potential contestants are more likely to be the firm’s other large shareholders. Our measure SHARE2_10 therefore serves as a proxy for the degree of balance check by other larger shareholders.

18 The Taiwan Economic Journal (TEJ) database, a popular database for research on the Chinese listed companies, has information about top ten shareholders’ equity interest, board compositions and management shareholdings from as early as 1995. However, it does not specify the identities of large shareholders, the affiliations of the board directors, and executives’ shareholding information. Also, there is quite a lot of missing management information. The level of the information provided by the database cannot match up against the level of detail required for our empirical analysis.
Listed firms’ financial data are collected from the CSMAR Financial Databases developed by the Shenzhen GTA Information Technology Co. We study the universe of Chinese listed companies for these seven years. We drop the firm-year observations with missing values in either financial variables or governance variables. We delete from our sample the observations with extreme variable values (0.5% at both tails). We obtain a sample with 5977 firm-year observations for 1999–2005, which represent 1009 unique listed firms.

As a robustness check, we also apply the empirical analysis to a balanced panel, which includes firms that went public before 1999 and have all the information required for our analysis for the 1999–2005 period. The panel contains 633 firms in each year. Our empirical results based on the panel are largely consistent with those based on the unbalanced panel. We choose to focus on the larger unbalanced panel throughout our empirical analysis.

Table 1 provides descriptive statistics of the variables used in our study. The mean (median) total accrual as a percentage of total assets is $-2.75\% (-2\%)$. There is a large variation in ACC, the standard deviation is 9.27\%. The mean (median) industry-median-adjusted accrual as a percentage of total assets is $-0.76\% (0\%)$. The mean (median) of discretionary accrual as a percentage of total assets (DACC) is 1.04\% (1.13\%).

Recall that our measure of the shareholding by the second to the tenth largest shareholders is a Herfindal-type index. The summary statistics for this variable do not intuitively describe the shareholding by the second to the tenth largest shareholders in a company. Therefore, we also

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean</th>
<th>Median</th>
<th>Standard deviation</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACC</td>
<td>-0.0275</td>
<td>-0.0199</td>
<td>0.0927</td>
<td>-0.8124</td>
<td>0.2442</td>
</tr>
<tr>
<td>IAACC</td>
<td>-0.0076</td>
<td>0</td>
<td>0.0896</td>
<td>-0.7733</td>
<td>0.2551</td>
</tr>
<tr>
<td>DACC</td>
<td>0.0104</td>
<td>0.0113</td>
<td>0.1179</td>
<td>-0.7416</td>
<td>0.6521</td>
</tr>
<tr>
<td>TOPSHARE</td>
<td>0.4411</td>
<td>0.4333</td>
<td>0.1711</td>
<td>0.1004</td>
<td>0.8375</td>
</tr>
<tr>
<td>SHARE2_10</td>
<td>0.0187</td>
<td>0.0062</td>
<td>0.0253</td>
<td>0.0000</td>
<td>0.1325</td>
</tr>
<tr>
<td>RAWSHARE2_10</td>
<td>0.1788</td>
<td>0.1507</td>
<td>0.1376</td>
<td>0.0043</td>
<td>0.5515</td>
</tr>
<tr>
<td>OUTSIDEDIR</td>
<td>0.3593</td>
<td>0.3529</td>
<td>0.2560</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>TOPEXESHARE</td>
<td>0.0002</td>
<td>0</td>
<td>0.0088</td>
<td>0</td>
<td>0.6429</td>
</tr>
<tr>
<td>CEO_DIR</td>
<td>0.1243</td>
<td>0</td>
<td>0.3300</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>PARENT</td>
<td>0.7020</td>
<td>1</td>
<td>0.4574</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>SOE</td>
<td>0.7077</td>
<td>1</td>
<td>0.4549</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>HBSHARE</td>
<td>0.0818</td>
<td>0</td>
<td>0.2741</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>ASSETS (in million)</td>
<td>2117.86</td>
<td>1296.88</td>
<td>2610.06</td>
<td>142.63</td>
<td>30,690.98</td>
</tr>
<tr>
<td>REVENUE (in million)</td>
<td>1385.00</td>
<td>586.10</td>
<td>1311.790</td>
<td>-30.0644</td>
<td>66,596.95</td>
</tr>
</tbody>
</table>

The table reports descriptive statistics of variables for our sample of 5977 firm-year observations from 1999 to 2005. Our sample includes firms that are listed in China’s stock market for at least one year and have necessary financial and corporate governance information. It contains 1009 unique listed firms in China. ACC is defined as the difference between net income and cash flow from operating activities divided by total assets; IAACC is the difference between ACC and the industry-median ACC; DACC is defined as the discretionary accruals based on the modified Jones’ (1991) model; TOPSHARE is the percentage of shares held by the largest shareholder; SHARE2_10 is the sum of squares of the percentage of shares held by the second to the tenth largest shareholders; OUTSIDEDIR is the ratio of outside directors to all directors; PARENT is a dummy variable that takes the value of 1 if a company has a parent company and 0 otherwise; SOE is a dummy variable that takes the value of 1 if a company is controlled by the state and 0 otherwise; TOPEXESHARE is defined as the percentage of shares held by the top executives; CEO_DIR is a dummy variable that takes the value of 1 if the company’s CEO is also the chairperson of the board and 0 otherwise; HBSHARE is a dummy variable with value of 1 if a listed company has H- or B-shares traded; ASSET is the total asset at the end of the year (in million RMB); and Revenue is the total revenue at the end of the year. We delete the firm-year observations with extreme variable values (0.5% at both tails).
The table reports the Pearson correlation coefficients among the three earnings manage measures, the corporate governance variables and other firm specific variables. The variables definition can be found in Table 1. There are in total 5977 firm-year observations.

* , **, *** represent the statistical significance at the 0.1, 0.05, and 0.01 levels respectively (two-sided).

<table>
<thead>
<tr>
<th></th>
<th>ACC</th>
<th>IAACC</th>
<th>ln(SHARE2-10)</th>
<th>OUTSIDEDIR</th>
<th>TOPSHARE</th>
<th>(TOPSHARE)</th>
<th>TOPEXESHARE</th>
<th>CEO_DIR</th>
<th>PARENT</th>
<th>SOE</th>
<th>SIZE</th>
<th>HBSHARE</th>
</tr>
</thead>
<tbody>
<tr>
<td>DACC</td>
<td>0.713***</td>
<td>0.683***</td>
<td>0.019</td>
<td>-0.026*</td>
<td>0.041***</td>
<td>0.019***</td>
<td>-0.005</td>
<td>0.002</td>
<td>0.036***</td>
<td>-0.004</td>
<td>-0.218***</td>
<td>-0.872***</td>
</tr>
<tr>
<td>ACC</td>
<td>0.967***</td>
<td>0.907***</td>
<td>-0.016</td>
<td>-0.027*</td>
<td>0.045***</td>
<td>0.040***</td>
<td>0.001</td>
<td>0.008</td>
<td>0.046***</td>
<td>-0.005</td>
<td>0.023*</td>
<td>-0.046***</td>
</tr>
<tr>
<td>IAACC</td>
<td>-0.008</td>
<td>0.031**</td>
<td>-0.029**</td>
<td>-0.043***</td>
<td>0.037***</td>
<td>0.031**</td>
<td>0.015</td>
<td>0.011</td>
<td>0.018</td>
<td>0.124**</td>
<td>-0.098***</td>
<td></td>
</tr>
<tr>
<td>ln(SHARE2-10)</td>
<td>0.073**</td>
<td>-0.092**</td>
<td>-0.712***</td>
<td>0.015</td>
<td>0.040***</td>
<td>-0.435***</td>
<td>-0.026*</td>
<td>-0.160</td>
<td>0.038***</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OUTSIDEDIR</td>
<td>0.006</td>
<td>0</td>
<td>-0.007</td>
<td>-0.076***</td>
<td>0.010</td>
<td>-0.001</td>
<td>-0.048***</td>
<td>0.007</td>
<td>0.007</td>
<td>-0.006</td>
<td>-0.001</td>
<td></td>
</tr>
<tr>
<td>TOPSHARE</td>
<td>0.984***</td>
<td>-0.013</td>
<td>-0.068***</td>
<td>0.764***</td>
<td>0.048***</td>
<td>0.211***</td>
<td>-0.085***</td>
<td>0.223**</td>
<td>-0.080***</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(TOPSHARE)^2</td>
<td>-0.004</td>
<td>-0.064**</td>
<td>0.681***</td>
<td>0.010**</td>
<td>0.223***</td>
<td>-0.080***</td>
<td>-0.006</td>
<td>0.223**</td>
<td>-0.080***</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOPEXSHARE</td>
<td>0.060**</td>
<td>-0.019</td>
<td>-0.004</td>
<td>-0.004</td>
<td>0.012</td>
<td>-0.004</td>
<td>-0.004</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SHARE</td>
<td>-0.056***</td>
<td>-0.055***</td>
<td>-0.057***</td>
<td>-0.057***</td>
<td>-0.057***</td>
<td>-0.057***</td>
<td>-0.057***</td>
<td>-0.057***</td>
<td>-0.057***</td>
<td>-0.057***</td>
<td>-0.057***</td>
<td></td>
</tr>
<tr>
<td>CEO_DIR</td>
<td>0.157***</td>
<td>-0.051***</td>
<td>-0.057***</td>
<td>-0.057***</td>
<td>-0.057***</td>
<td>-0.057***</td>
<td>-0.057***</td>
<td>-0.057***</td>
<td>-0.057***</td>
<td>-0.057***</td>
<td>-0.057***</td>
<td></td>
</tr>
<tr>
<td>PARENT</td>
<td>0.086**</td>
<td>0.137***</td>
<td>-0.051***</td>
<td>-0.051***</td>
<td>-0.051***</td>
<td>-0.051***</td>
<td>-0.051***</td>
<td>-0.051***</td>
<td>-0.051***</td>
<td>-0.051***</td>
<td>-0.051***</td>
<td></td>
</tr>
<tr>
<td>SOE</td>
<td>0.067***</td>
<td>0.012</td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<td></td>
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</tr>
<tr>
<td>SIZE</td>
<td>-0.214***</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 2
Pearson correlations
present the raw shareholding data, which is labeled RAWSHARE2_10 and represents the sum of the percentages of shareholding held by the second to the tenth largest shareholders. Its mean (median) is 17.88% (15.07%). In our sample, the mean percentage of outside board members – OUTSIDEDIR – is around 36%. TOPSHARE describes the percentage of shares held by the largest shareholder. Most Chinese listed companies are directly controlled by the state either through a state asset management authority or indirectly through a holding company and the largest shareholder in a company usually holds a very high percentage of the company. The summary statistics of TOPSHARE confirm this. The mean (median) percentage of shares held by the largest shareholders in our sample firms is 44.11% (43.33%).

Top executives are found on average to hold only a little over 0.02 of one percent of their company’s shares. Meanwhile, the summary statistics also suggest that about 12.43% of the CEOs in our sample firms were the chairperson of the board. We find, in addition, that around 8.18% of the companies in our sample have either H- or B-shares. Our summary statistics also show around 70% of listed companies in China are group affiliated. Also, around 70% of Chinese listed companies are controlled by the government. On average, the total assets (revenue) of our sample firms is RMB 2178 (RMB 1385) million, which is about US$ 264 (US$173) million dollars. Compared to their western counterparts, China’s listed companies are fairly small.

5. Corporate governance and earnings management

5.1. Regression results

In this section, we test Hypothesis 1 — firms with good governance are associated with lower levels of earnings management. Table 2 presents the Pearson correlation coefficients (in the upper diagonal) between our three earnings management measures (ACC, IAACC, and DACC) and the set of governance variables defined in Section 4.2 and SIZE. The first set of corporate governance variables – SHARE2_10, HBSHARE, TOPEXECSHARE, and OUTSIDEDIR – measure the restraining mechanisms (internal or external) on the tunneling activities by controlling shareholders. We expect earnings management measures to be negatively correlated with them. The second set of corporate governance variables – TOPSHARE, PARENT, SOE and CEO_DIR – measure the level of incentive for controlling shareholders to manage earnings and tunnel. We expect earnings management measures to be positively correlated with them.

As shown in Table 2, among all governance variables, all except SOE have signs consistent with predictions. However, only TOPSHARE, OUTSIDEDIR, HBSHARE are significantly correlated with the various earnings management measures.

We use the multivariate regression approach to test H1. The baseline model is as follows:

\[
EM_{i,t} = \alpha + \beta_1 \ln(SHARE2_{10i,t}) + \beta_2 OUTSIDEDIR_{i,t} + \beta_3 TOPSHARE_{i,t} \\
+ \beta_4 (TOPSHARE_{i,t})^2 + \beta_5 TOPEXESHARE_{i,t} + \beta_6 CEO\_DIR_{i,t} \\
+ \beta_7 HBSHARE_{i,t} + \beta_8 PARENT_{i,t} + \beta_9 SOE_{i,t} + \beta_{10} SIZE_{i,t} + \text{years} + \epsilon_{i,t},
\]

where EM is one of the three earnings management measures. The relationship between TOPSHARE and the dependent variables requires further explanation. We expect the relation between EM and to exhibit an inverse U-shape. As the largest shareholder’s interest in the company increases, his opportunistic behavior increases. However, when the largest shareholder’s interest in the company reaches a certain level, his incentive to further expropriate the firm’s wealth may decrease, since the net gain of tunneling is no longer very significant. Therefore, we include the
square of TOPSHARE in the regression. We expect a negative coefficient on this variable. \(^{19}\) We use the natural log of SHARE2_10, instead of SHARE2_10 itself, to bring the coefficient on that variable to a scale compatible with the coefficients on other variables. We also include SIZE, defined as the natural log of total assets, in the regression to control for undetermined size effects.

Table 3 presents the regression results. In Columns (1)–(3), we report the OLS results when ACC, IAACC, and DACC are respectively used as the dependent variables. We report \(p\)-values based on the robust standard errors, which control for autocorrelation and heteroscedasticity. Columns (4)–(6) report the results of random-effect estimations. We choose to use the random-effect estimation rather than fixed effect estimation because some of our governance variables (e.g., HBSHARE, SOE, PARENT) are time-invariant. The random-effect models allow us to estimate the influence of unobserved firm-level heterogeneity.

As shown in Table 3, the coefficients of the governance variables that appear in both OLS and the random-effect models are qualitatively similar. In general, the results support our hypothesis. We find that all of our earnings management measures (ACC, IAACC, and DACC) are significantly and positively correlated with TOPSHARE, suggesting that the level of earnings management increases with the largest shareholder’s interest in the company. ACC, IAACC, and DACC are significantly and negatively correlated with the square of TOPSHARE, suggesting that as the largest shareholder’s interest in the company reaches a threshold, his opportunistic behavior decreases. We thus identify an inverse U-shaped relation between earnings management and the largest shareholder’s interest in the firm.

We find that HBSHARE is significantly negative in all regressions. Listing a firm on the Hong Kong Stock Exchange or trading B-shares effectively reduces the level of earnings management, suggesting that improving corporate governance reduce earnings management. Another interesting finding is that OUTSIDEDIR is significantly negative in all regressions. The results suggest that an independent board could more effectively discipline the listed firms and help contain their earnings management incentives.

The relations between earnings management measures and ln(SHARE2_10), PARENT, SOE, TOPEXESHARE, and CEO_DIR are not significant. We are not extremely concerned with the insignificance of TOPEXESHARE since the shares held by top managers are relatively small in the Chinese listed companies, as shown in Table 1. Also, most of the listed firms in China are SOEs (more than 70%) and have parent firms (again more than 70%). Only about 12% of firms have CEO and board chairman being the same person. The lack of cross-sectional variations may explain the insignificance of SOE, PARENT, and CEO_DIR in our regressions. We do not have good explanations for the insignificance of ln(SHARE2_10).

5.2. Discussions

Our analysis so far has caveats. First, since we include various governance variables, multicollinearity may be a problem. However, the pair-wise correlation coefficients of the main regressors are low (see Table 2). Also, if multicollinearity is a concern, it tends to bias downward the significance of our key regressors. Second, a potential endogeneity problem exists; the random-effect models mitigate but do not solve fully this issue.\(^{20}\)

\(^{19}\) By the same logic, Bai et al. (2004a) propose and find an inverse U-shape between the shares owned by the largest shareholder and firm’s market value measured by Tobin’s \(Q\) in China.

\(^{20}\) We also apply fixed effect estimations, in which the coefficients of HBSHARE, SOE and PARENT are not valid. We find similar results for other regressors. Results available upon request.
Our empirical results so far show that in China firm-level differences in earnings management could be largely accounted for by corporate governance variables. Good corporate governance practices help resolve agency problems, which in turn reduces firms’ incentive to manage earnings. While our analysis so far suggests that listed firms in China might manage earnings to tunnel, we are not able to completely exclude one prominent alternative explanation. That is, the managers may manage earnings for their own interests (i.e., managerial appropriation) rather than to transfer the wealth from the listed firms to the controlling shareholders. We address this concern in two ways. We first put forward an argument that given China’s institutional context, managerial appropriation, although it affects earnings management decisions to a certain extent, is unlikely a major determinant of earnings management. Secondly, we offer more direct tunneling evidence in Section 6 to relates earnings management to tunneling activities.

Table 3
Earnings management and corporate governance

<table>
<thead>
<tr>
<th></th>
<th>OLS</th>
<th>Random-effect models</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1) ACC</td>
<td>(2) IAACC</td>
</tr>
<tr>
<td><strong>Constant</strong></td>
<td>−0.063***</td>
<td>−0.067***</td>
</tr>
<tr>
<td></td>
<td>(0.000)</td>
<td>(0.000)</td>
</tr>
<tr>
<td>ln(SHARE2_10)</td>
<td>0.001</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td>(0.110)</td>
<td>(0.036)</td>
</tr>
<tr>
<td><strong>OUTSIDEDIR</strong></td>
<td>−0.013**</td>
<td>−0.014***</td>
</tr>
<tr>
<td></td>
<td>(0.011)</td>
<td>(0.005)</td>
</tr>
<tr>
<td><strong>TOPSHARE</strong></td>
<td>0.121**</td>
<td>0.115*</td>
</tr>
<tr>
<td></td>
<td>(0.034)</td>
<td>(0.065)</td>
</tr>
<tr>
<td>(TOPSHARE)²</td>
<td>−0.112**</td>
<td>−0.103*</td>
</tr>
<tr>
<td></td>
<td>(0.045)</td>
<td>(0.088)</td>
</tr>
<tr>
<td><strong>TOPEXESHARE</strong></td>
<td>0.005</td>
<td>−0.022</td>
</tr>
<tr>
<td></td>
<td>(0.973)</td>
<td>(0.359)</td>
</tr>
<tr>
<td><strong>CEO_DIR</strong></td>
<td>0.004</td>
<td>−0.006</td>
</tr>
<tr>
<td></td>
<td>(0.176)</td>
<td>(0.163)</td>
</tr>
<tr>
<td><strong>HBSHARE</strong></td>
<td>−0.022***</td>
<td>−0.022***</td>
</tr>
<tr>
<td></td>
<td>(0.000)</td>
<td>(0.000)</td>
</tr>
<tr>
<td><strong>PARENT</strong></td>
<td>0.002</td>
<td>−0.000</td>
</tr>
<tr>
<td></td>
<td>(0.687)</td>
<td>(0.989)</td>
</tr>
<tr>
<td><strong>SOE</strong></td>
<td>−0.001</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td>(0.576)</td>
<td>(0.830)</td>
</tr>
<tr>
<td><strong>SIZE</strong></td>
<td>0.007***</td>
<td>0.008***</td>
</tr>
<tr>
<td></td>
<td>(0.000)</td>
<td>(0.000)</td>
</tr>
<tr>
<td><strong>YEAR DUMMIES</strong></td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td># of observations</td>
<td>5977</td>
<td>5977</td>
</tr>
<tr>
<td>(# of unique firms)</td>
<td>(1009)</td>
<td>(1009)</td>
</tr>
<tr>
<td>Overall R²</td>
<td>3.71%</td>
<td>2.77%</td>
</tr>
<tr>
<td>Within R²</td>
<td>4.15%</td>
<td>3.04%</td>
</tr>
<tr>
<td>Between R²</td>
<td>2.48%</td>
<td>2.16%</td>
</tr>
<tr>
<td>Adjusted R²</td>
<td>3.46%</td>
<td>1.32%</td>
</tr>
</tbody>
</table>

We report the regression results in this table. The earnings management measures are used as the dependent variable and corporate governance variables and other firm-specific variables are used as the explanatory variables. The definition of variables can be found in Table 1. Columns (1)–(3) report the OLS results, where total accruals (ACC), industry-adjusted accruals (IAACC), and discretionary accruals (DACC) are dependent variables respectively. We report the p-values based on the robust standard errors in parentheses. Columns (4)–(6) report the results of the random-effect estimations. *, **, and *** represent the statistical significance at the 0.1, 0.05, and 0.01 levels respectively.

Our empirical results so far show that in China firm-level differences in earnings management could be largely accounted for by corporate governance variables. Good corporate governance practices help resolve agency problems, which in turn reduces firms’ incentive to manage earnings. While our analysis so far suggests that listed firms in China might manage earnings to tunnel, we are not able to completely exclude one prominent alternative explanation. That is, the managers may manage earnings for their own interests (i.e., managerial appropriation) rather than to transfer the wealth from the listed firms to the controlling shareholders. We address this concern in two ways. We first put forward an argument that given China’s institutional context, managerial appropriation, although it affects earnings management decisions to a certain extent, is unlikely a major determinant of earnings management. Secondly, we offer more direct tunneling evidence in Section 6 to relates earnings management to tunneling activities.
As we discussed in Section 2.1, the majority of Chinese listed firms are carve-outs or spin-offs from large SOEs, and they still share personnel functions, capital, and assets with their parent firms. In most cases, CEOs of the listed firms are appointed by the parent firms and they still hold joint positions in their parent firms. They are likely to be appointed or promoted by their contributions to the parent firms rather than maximizing the listed firms’ market values. Also, most controlling shareholders in China are local governments. Under the administrative governance framework (Pistor and Xu, 2005), they often exert pressure on the listed firms. Serving the interests of the controlling shareholders thus might be the primary goal the listed firms’ managers pursue. Last but not least, even though a managerial labor market in China is emerging and evolving, it is inefficient, especially in the listed firms sector. As shown in Table 1, the top managers on average only hold less than 0.02% of firm ownership, their interests thus are likely to be aligned with those of controlling shareholders rather than those of the minority shareholders.

Our argument above only provides a partial support for the claim that earnings management in China is largely due to tunneling. Below we offer more direct tunneling evidence in two pronounced cases, in which earnings management is believed to be more pervasive.

6. Earnings management to tunnel

In this section, we attempt to provide direct evidence that relates tunneling activities to the two cases in which earnings management has been identified to be the most conspicuous in China. We study earnings management in each and illuminate how controlling shareholders use earnings management to tunnel.

6.1. Earnings management to avoid de-listing

Studying the corporate behaviors of firms facing serious de-listing risks provides us with one unique opportunity to understand the connections between earnings management and tunneling. According to the guideline introduced by CSRC in 1999, a listed company will be designated an “ST” firm if it reports a net loss for two consecutive years and a “PT” firm if it suffers a net loss for three consecutive years. “PT” itself entails virtual suspension of trading. Further, if a PT firm cannot become profitable in one year, it will be completely de-listed. Overall, a firm will only have two years to work itself out of troubles once it is labeled ST. If tunneling is pervasive and the private control benefits accrued to controlling shareholders are significant, controlling shareholders will have strong incentives to manage earnings to avoid being de-listed.

To test H2a, we divide our sample into three sub-samples. The first one includes firms that have successfully managed themselves out of troubles – reporting net loss in the first two years but net income in the third year (Sub. 1); the second includes the firms failing to do so – reporting net loss in three consecutive years (Sub. 2); and the third contains the rest of observations in our sample (Sub. 3). There are 90 observations in Sub. 1, 35 observations in Sub. 2; and 5852 observations in Sub. 3. Table 4 reports the means and medians of ACC, IAACC, and DACC for the three sub-samples. Because the number of observations in Sub. 3 is far bigger than that in Sub. 1 and Sub. 2., the means and medians for Sub. 3 are very similar to those for the whole sample.

As shown in Table 4, for all our three earnings management measures, both the mean and median of the first sub-sample (Sub. 1) are higher than those of the second sub-sample (Sub. 2). However, the means and medians of ACC and IAACC are higher for Sub.3. The fact that the means and medians of earnings management measures for Sub. 3 are not smaller than those for the first two sub-samples (firms with troubles) by no means disputes H2a. Firms do not feel...
imminent de-listing risk until they have suffered two consecutive losses. Although showing that the levels of earnings management are smallest for Sub. 3 could potentially make a stronger argument, a more appropriate comparison should be conducted between Sub. 1 and Sub. 2. In addition, the size of the third sub-sample is far larger than that of the first two. We wonder whether the mean and median tests can still generate meaningful economic implications.

To test H2b, we need to provide evidence that the controlling shareholders can extract a large amount of private benefits from the listed firms. Given its very nature, the extent of tunneling is difficult to measure. However, the “ST” practice in China provides us with a unique opportunity to gauge the extent of wealth extracted by the controlling shareholders. As argued in Bai et al. (2004a), the system of ST designation triggers a contest over corporate control. An ST firm is pressured to restore profitability within two years in order to avoid being de-listed. Given the strong incentive to have the ST label removed, the paternalistic instinct of the local government
toward the incumbent controlling shareholder gives way to their common desire to find a convincing restructuring plan. If the incumbent controlling shareholder does not offer a good one, others with a superior restructuring plan will take over the firm. The contestants for control rights are often the other large shareholders of the firm, working with the encouragement of the government.21 Facing the risk of losing control to other contestants, the incumbent controlling shareholders have to do whatever it takes to "prop" up the listed companies.22 In most cases, such "propping" (negative tunneling) takes the form of cash or quality assets injection. If the competition for corporate control is fierce enough, we expect that the amount of wealth the controlling shareholders use to prop up the listed companies would be equal to the amount of wealth they expect to tunnel from the listed companies. In other words, the value of "propping" is a lower bound of the value of "tunneling".

21 There is an interesting fact about Chinese ST firms: while fewer than 10% of non-ST firms changed their controlling shareholders, more than 55% of ST firms had their controlling shareholders changed one or two years after their ST designation during 1998–2000.

22 Firedman et al. (2003) study a firm’s “propping” activity in the context of emerging markets. Based on their description, “propping” is equivalent to negative tunneling. That is, controlling shareholders transfer resources into the listed companies to boost their performance. However, they do not specify why such propping would happen. We believe preventing a listed firm from being de-listed presents itself as a good example of propping in China.
Searching the WISE Information System provided by the Shanghai Wind Co., Ltd., we identify 66 ST designations during the period from 1998 to 2000. For each ST designation, we calculate the listed firm’s market adjusted stock price performance from the third month prior to the ST announcement (month $-3$) to the twenty-fourth month after the announcement (month $+24$) as follows:

$$\text{PER}_j = \sum_{t=-3}^{t=24} (r_{jt} - m_t),$$

where $\text{PER}_j$ measures firm $j$’s abnormal stock market performance, $r_{jt}$ is the monthly return for firm $j$ and $m_t$ is the monthly market return. We believe PER is a good proxy for the amount of wealth injected into an ST firm by the incumbent controlling shareholder or the winning controlling shareholder so as to save it from de-listing.

Panel A of Table 5 shows that the average PER is as high as 31.81% with a standard deviation of 47.79%. The minimum of PER is $-57.15\%$ and the maximum is 248.99%. The average PER is significantly different from 0 ($p$-value is 0.000). Obviously, on average, an ST firm’s stock price outperforms the market by as much as 31.81 percentage points. The extraordinary stock performance reflects the amount of wealth the controlling shareholders transfer into the listed company to prop up its performance. It explains why the controlling shareholders show such strong a propensity to manage earnings when facing a de-listing risk.

To better understand how PER is associated with the costs due to tunneling, we examine the following regression:

$$\text{PER} = \gamma_0 + \gamma_1 \text{TOPSHARE} + \gamma_2 \text{DACC} + \gamma_3 \text{TOPSHARE} \times \text{DACC} + \text{years} + \epsilon,$$

where TOPSHARE is the percentage of shares held by the controlling shareholder; and DACC is the discretionary accruals in year $t+1$ (the firm was labeled ST in year $t$).

Since DACC in the above equation is an endogenous variable, we use the two-stage least-square regressions (2SLS) to control for the endogeneity in DACC. In our 2SLS equations, we first regress DACC against a set of explanatory variables according to Eq. (5). The fitted value of DACC is then plugged into the second-stage regression according to Eq. (7). For brevity, we report only the second-stage regression results in Panel B of Table 5.

As shown in Table 5 Panel B, $\gamma_1$, $\gamma_2$, and $\gamma_3$ are all significantly positive at the conventional levels. The positive sign of $\gamma_1$ implies that the controlling shareholders have incentives to prop more into the ST firms when they have larger interest in the firms they control. We also identify a positive relation between PER and DACC in year $t+1$, suggesting that an ST firm tend to manage earnings more aggressively if PER (the potential wealth the largest shareholder can tunnel) is higher. The interaction of TOPSHARE and DACC is also significantly positive, suggesting that the controlling shareholder demonstrate stronger incentives to manage earnings when he controls more shares of the listed firm. Overall, the results in Panel B offer supporting evidence that firms tend to manage earnings more in order for the controlling shareholders to recoup their capital injection in the case of “ST” designations.

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23 The starting month has little effect on the magnitude of the abnormal market performance. But month $+24$ here is critical given that Chinese regulations stipulate that an ST firm only have two years to turn around its performance. Therefore, the assets or cash injection, if any, will have to happen within the two-year time window.

24 We also try to use DACC in year $t+2$ and find qualitatively similar results. Using other earnings management measures such as ACC and IAACC yields similar results as well.
6.2. Tunneling through rights issues

Since 1999, to obtain the rights to issue new equity, a listed company must maintain, at minimum, an ROE of 6% for three consecutive years; meanwhile, the average ROE over these three years must be no less than 10%. If rights issues provide the controlling shareholders with tunneling opportunities, listed companies’ incentive to manage earnings above the required thresholds is strong. To test H3a, we bisect our sample. The first group consists of firms reaching the decision threshold based on their ROEs. The second group consists of firms failing to reach the threshold. We then test H3a by examining whether the levels of earnings management are higher for firms in the first sub-sample. We report the t-test (both the t-statistics and p-values) and Wilcoxon test results (p-values) in the last two columns.

Table 6
The t-test and Wilcoxon test of firms passing (failing to pass) the right issue threshold

<table>
<thead>
<tr>
<th></th>
<th>Firms passing the threshold (N=1214)</th>
<th>Firms failing to pass threshold (N=2645)</th>
<th>t-test t-statistics (p-value)</th>
<th>Wilcoxon rank sum test p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total accruals (ACC)</td>
<td>Mean -0.034</td>
<td>-0.043</td>
<td>2.111 (0.137)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Median -0.029</td>
<td>-0.038</td>
<td>2.977 (0.081)</td>
<td></td>
</tr>
<tr>
<td>Industry-adjusted accruals (IAACC)</td>
<td>Mean -0.003</td>
<td>-0.015</td>
<td>3.547 (0.029)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Median -0.001</td>
<td>-0.011</td>
<td>(0.005)</td>
<td></td>
</tr>
<tr>
<td>Discretionary accruals (DACC)</td>
<td>Mean -0.006</td>
<td>-0.027</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Median 0.001</td>
<td>-0.019</td>
<td>(0.000)</td>
<td></td>
</tr>
</tbody>
</table>

We test H3a: Firms with the requirements for rights issues met are associated with higher levels of earnings management. We measure earnings management by using total accruals (ACC), industry-adjusted accruals (IAACC), and discretionary accruals (DACC). We bisect the sample. The first sub-sample includes firms satisfying the rights issue requirement — that is, the firm has an ROE of 6% for three consecutive years; meanwhile its average ROE over these three years is no less than 10%. The second sub-sample includes firms failing this requirement. We then test H3a by examining whether the levels of earnings management are higher for firms in the first sub-sample. We report the t-test (both the t-statistics and p-values) and Wilcoxon test results (p-values) in the last two columns.

Table 6 presents the results of both the t-test and the Wilcoxon test. Since the tests require three consecutive annual ROEs, companies that do not have three consecutive ROEs during 1999–2005 are dropped from the sample, which leaves us with 3859 firm-year observations. 1214 companies reached the decision threshold based on their reported ROEs, and 2645 firms failed. The t-test indicates that the average ACC, IAACC, and DACC of companies exceeding the threshold are all significantly larger than that of companies failing to achieve the threshold (p-values are 0.000, 0.000, 0.001 for ACC, IAACC, and DACC respectively). The Wilcoxon test reports the same results, except for ACC.

The alternative is the “core” ROE, which is defined as profit from operations divided by book value of equity. Profit from operations is defined as sales revenue less cost of goods sold and operating expenses; whereas total profit includes profit from operating activities, gains (losses) from disposal of assets and investments, and other revenues and expenses. Therefore, profit from operations measures the profitability of a company’s “core” business activities; total profit measures the profitability of both the “core” and “non-core” business activities. We believe that it is easier for managers and controlling shareholders to manipulate reported profit through “non-core” activities, since they can exercise a larger degree of discretion over these “non-core” business activities. We therefore focus on the ROE based on the total profit.
Results in Table 6 suggest that the Chinese listed companies have strong incentives to manage earnings above the policy thresholds so as to earn the rights to issue new equity. The real challenge however is that we need to show that the controlling shareholders indeed tunnel through right issues. Anecdotal evidence lends immediate support. We search the CSMAR Financial Databases and identify 779 rights issues during our sample period. One interesting finding is that in almost all cases, the controlling shareholders choose to give up their rights to purchase additional shares. In the very few cases where large shareholders made subscriptions to the new shares, they paid with land or other non-cash assets (for example, the rights issue of Zhangjiang Gaoke (600898) in 2001). Typically, only minority shareholders make subscriptions to the new shares. Obviously, what controlling shareholders need here is cash. Since the controlling shareholders typically control more than 40% of the shares, their control over the firm is still secure even after they give up subscriptions to the new shares.

We calculate the capital raised by the listed companies through rights issues, CAPRAISED, based on the assumption that only minority shareholders subscribe to new shares. Here CAPRAISED is defined as the total amount of cash raised through rights issues minus the amount paid out as dividends in the same year. Panel A of Table 7 presents the descriptive statistics of CAPRAISED, CAPRAISED deflated by market cap in prior year, and CAPRAISED deflated by total assets in prior year. On average, the firms issuing new shares (SEO firms) are able to raise new capital amounting to 3.8% of the firm market value or 14.1% of the firm total assets through rights issues.

The raised capital may be used in two ways: (1) it might be mis-allocated by the controlling shareholders for their own benefits; (2) it may be used for profitable investment projects. To examine which of the two ways is more likely to the main use of raised capital. We employ two methods below. We first examine the distribution of “Other Receivables” across the SEOs and non-SEO firms. We then study the investment-growth opportunity sensitivity across the SEO firms and non-SEO firms.

Jiang et al. (2005) document robust evidence that “Other Receivables” largely represent corporate loans extended to other firms (mainly the controlling shareholders) by the listed firms. They further argue that “Other Receivables” is a good measure of tunneling. We create a variable, ORTA, which is defined as the ratio of “Other Receivables” to total assets (TA). We report the summary statistics of ORTA in Panel A of Table 7 as well. Consistent with the finding in Jiang et al. (2005), we find that the Chinese listed companies report surprisingly high level of other receivables. “Other Receivables” on average amount to 6.3% of total assets. We then calculate ORTA for SEO firms and the non-SEO firms respectively. We report their summary statistics in Panel A. We find that SEO firms on average have a higher level of ORTA (8.1%) than non-SEO firms do (5.9%). Both t-test and Wilcoxon test yield results showing that SEO firms’ mean (median) ORTA is much larger than that of the non-SEO firms. The evidence thus implies that the controlling shareholders of SEO firms are more likely to extract funds from the listed firms through corporate lending in the form of “Other Receivables”.

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26 In the course of conducting the research, we interviewed numerous members of Chinese business community with many of them representing the SEO firms. Almost all of them agreed that only minority shareholders purchased the new shares and large shareholders usually gave up the rights.

27 Another possibility is that the SEO firms might be financially constrained, and they may use the raised capital to cover immediate credit obligations. However, this is unlikely to be a major use of raised capital because under the current regulation, only firms with strong past performance are eligible for right issues. The SEO firms are unlikely to be financially constrained.
To examine the investment–investment opportunity sensitivity across SEO firms and non-SEO firms, we examine the results from the following regression:

$$\frac{I}{K} = \alpha_0 + \alpha_1 SG + \alpha_2 CFO + \alpha_3 SEO \ast SG + \alpha_4 SEO \ast CFO + \epsilon,$$

where $I$ is defined as capital expenditures in year $t$, $K$ is defined as the total assets in year $t$, SEO is a dummy variable that takes the value of 1 if a firm issues new equity in that year and 0 otherwise; CFO is the cash flow from the operations deflated by total assets; and SG is the average sales growth rate over the previous three years, which is a proxy for investment opportunity. If the capital raised is used for profitable projects, we expect the investment to be more responsive to SG (a proxy for investment opportunity) for SEO firms.

Table 7
Tunneling through rights issues in China
Panel A: Summary statistics of CAPRAISED and ORTA, and corresponding tests ($N=779$)

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Median</th>
<th>Standard deviation</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAPRAISED (in million)</td>
<td>211</td>
<td>193</td>
<td>199</td>
<td>22.5</td>
<td>1724</td>
</tr>
<tr>
<td>CAPRAISED/MARKET CAP</td>
<td>0.038</td>
<td>0.035</td>
<td>0.029</td>
<td>0.0066</td>
<td>0.162</td>
</tr>
<tr>
<td>CAPRAISED/TOTAL ASSETS</td>
<td>0.141</td>
<td>0.132</td>
<td>0.074</td>
<td>0.013</td>
<td>0.487</td>
</tr>
<tr>
<td>ORTA</td>
<td>0.063</td>
<td>0.061</td>
<td>0.082</td>
<td>0.000</td>
<td>0.552</td>
</tr>
<tr>
<td>ORTA for SEO firms</td>
<td>0.081</td>
<td>0.079</td>
<td>0.091</td>
<td>0.009</td>
<td>0.552</td>
</tr>
<tr>
<td>ORTA for Non-SEO firms</td>
<td>0.059</td>
<td>0.057</td>
<td>0.078</td>
<td>0.000</td>
<td>0.412</td>
</tr>
</tbody>
</table>

$H_0$: ORTA is the same across SEO and Non-SEO firms

$p$-value of $t$-test = 0.039
$p$-value of Wilcoxon test = 0.021

Panel B: The regression of corporate investment (dependent variable = $I/K$)

<table>
<thead>
<tr>
<th></th>
<th>Model 1 (full sample, $N=5977$)</th>
<th>Model 2 (SEO firms only, $N=779$)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Coefficient $t$-statistics</td>
<td>Coefficient $t$-statistics</td>
</tr>
<tr>
<td>SG</td>
<td>0.0071*** 3.721</td>
<td>0.0041 1.452</td>
</tr>
<tr>
<td>CFO</td>
<td>0.0051*  1.717</td>
<td>0.1761** 2.178</td>
</tr>
<tr>
<td>SEO $\ast$ SG</td>
<td>-0.0271  0.987</td>
<td></td>
</tr>
<tr>
<td>SEO $\ast$ CFO</td>
<td>0.117*  1.815</td>
<td></td>
</tr>
<tr>
<td>TOPSHARE</td>
<td></td>
<td>0.2711 1.399</td>
</tr>
<tr>
<td>TOPSHARE $\ast$ SG</td>
<td>-0.098*  1.823</td>
<td></td>
</tr>
<tr>
<td>TOPSHARE $\ast$ CFO</td>
<td>0.3161  1.119</td>
<td></td>
</tr>
<tr>
<td>Adjusted $R^2$</td>
<td>2.71%  1.09%</td>
<td></td>
</tr>
</tbody>
</table>

We analyze the SEO firms to show that controlling shareholders tunnel through right issues. Panel A reports descriptive statistics of the amount of capital raised by SEO firms (CAPRAISED), and ORTA, which is defined as the total amount of other receivables divided by total assets. According to Jiang et al. (2005), “other receivables” largely represent corporate loans extended to other firms—mainly the controlling shareholders—ORTA thus measure the extent of fund extracted by the controlling shareholders. Panel A presents both the $t$-test and Wilcoxon test results that ORTA is much higher for SEO firms than non-SEO firms. Panel B reports the regression results of corporate investment against SG (average sales growth rate in previous three years), CFO (cash flows divided by total assets), SEO (a dummy variable taking the value of 1 in the case of SEO firm and 0 otherwise), and TOPSHARE (the percentage of shares held by the largest shareholders). * , **, and *** represent the statistical significance at the 0.1, 0.05, and 0.01 levels respectively.

To examine the investment–investment opportunity sensitivity across SEO firms and non-SEO firms, we examine the results from the following regression:

$$\frac{I}{K} = \alpha_0 + \alpha_1 SG + \alpha_2 CFO + \alpha_3 SEO \ast SG + \alpha_4 SEO \ast CFO + \epsilon,$$
regression (it even carries a negative sign). The results suggest that SEO firms’ investment is not responsive to investment opportunities measured by SG.

We then narrow our analysis down to the SEO firms. Specifically, we want to know how the presence of controlling shareholders affect the investment efficiency of the SEO firms. We run the following regression on the SEO firms:

\[
\frac{I}{K} = \alpha_0 + \alpha_1 SG + \alpha_2 CFO + \alpha_3 TOPSHARE \times SG + \alpha_4 TOPSHARE \times CFO + \epsilon, \tag{9}
\]

where TOPSHARE specifies the percentage of shares held by the controlling shareholder.

We report the regression results in Model 2 of Panel B. Interestingly, we find that the coefficient of TOPSHARE\*SG, \(\alpha_3\), is significantly negative at the 10% level, suggesting that firms with a larger number of shares held by controlling shareholders demonstrate even weaker investment–investment opportunity sensitivity.

Overall, our results in Panel B of Table 7 point to the possibility of tunneling — that is, the raised capital may have been diverted to controlling shareholders. Chen and Yuan (2004) show that SEO firms subsequently performed worse than those which did not employ such practice. They attribute the value loss to possible mis-allocation of capital resources, which is consistent with our evidence.

7. Conclusion

This paper examines the relation between earnings management and corporate governance in the Chinese listed firms by introducing a tunneling perspective. We document systematic differences in earnings management across the universe of China’s listed companies from 1999 to 2005. We empirically show that Chinese listed companies’ earnings management is significantly related to the main aspects of their corporate governance. Good corporate governance mitigates agency problems, especially agency conflicts between the largest shareholders and the minority shareholders, which often takes the form of tunneling in the Chinese context.

We then study two China-specific situations, in which earnings management has been identified to be the most conspicuous. For each of them, we document listed firms’ incentives to manage earnings and relate these incentives to controlling shareholders’ tunneling activities. Specifically, we manage to estimate the size of private control benefits that controlling shareholders are able to extract, and find that they are related to listed firms’ earnings management. Such findings explain why listed firms in China have strong incentives to manage earnings when facing a de-listing risk. We also document the mis-allocation of raised capital by controlling shareholders in cases of rights issues.

Although our results suggest that earnings management in the Chinese listed companies is largely due to tunneling, they should be interpreted cautiously. Our analysis cannot totally exclude other incentives to manage earnings. However, introducing a tunneling perspective does improving our understanding of the incentives behind the Chinese firms’ earnings management behavior.

\[^{29}\text{We thank an anonymous referee for suggesting this line of thinking.}\]
References


