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The Hong Kong Polytechnic University

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State Ownership and Earnings Management around Initial Public Offerings: Evidence from China

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A thesis submitted in partial fulfillment of the requirements for the degree of Master of Philosophy
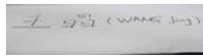

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Abstract

This study investigates the earnings management for firms going public in domestic Chinese equity market. Using a sample of 437 firms, we document that Chinese firms on average inflate earnings upward around the time of initial public offering (IPO). By taking the discretionary accruals as a proxy for earnings management, our regression analysis indicates that the state-owned enterprises (SOEs) manage earnings opportunistically less than non-state-owned enterprises (NSOEs) around IPOs. Furthermore, we identify three characters for SOEs – less CEO shareholding, favorable access to equity market, and favorable access to bank loans – resulting in weaker earnings management incentives for SOEs than NSOEs. Using path analysis, we confirm that the three characters can explain more than 65% of why SOEs manage earnings less than NSOEs in the IPO year.

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Chapter 1 Introduction

Ball and Shivakumar (2008) suggest that British firms do not manage earnings opportunistically around the time of Initial Public Offering (IPO),[1] which is in sharp contrast to the early findings for the U.S. firms by Teoh, Welch and Wong (1998) and Teoh, Wong and Rao (1998a).

Ball and Shivakumar (2008) attribute their findings to the *strong monitoring* offered by internal and external parties (*e.g.* auditors, boards, analysts, rating agencies and the press) who scrutinize and penalize earnings manipulators around IPOs. They also reexamine the Teoh, Welch and Wong's (1998) evidence using the models suggested by Ball and Shivakumar（2008）, and find that the sample in Teoh, Welch and Wong (1998), on average, does not inflate earnings opportunistically for the last year prior to the IPO. They attribute the findings of Teoh, Welch and Wong (1998) – managers opportunistically inflate earnings to influence IPO pricing – to unreliable estimates of discretionary accruals.[2] Given the similar levels of monitoring between British and US firms, Armstrong, Foster and Taylor (2008)[3] recently reexamine the pattern of discretionary accruals around IPOs for US firms and achieve similar findings to those in Ball and Shivakumar's (2008). However, the argument with strong monitoring cannot be extended to emerging markets since the literature widely documents that emerging markets are associated with weak corporate governances, in particular poor monitoring.

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[1] Ball and Shivakumar (2008) further conclude that IPO firms report more conservatively than both the public and private firms in the UK.

[2] As argued by Ball and Shivakumar (2008), the discretionary accruals estimated by Teoh, Welth and Wong (1998) suffer from endogenous effects of the IPO and are not reliable to indicate the existence of earnings management.

[3] Armstrong, Foster and Taylor (2008) use the modified cross-sectional Jones model to estimate the discretionary accruals and find that the discretionary accruals are not statistically different from zero in the year of IPO. Besides their study, Cecchini, Jackson and Liu (2012) find that IPO firms have conservative allowances and larger bad debt expense in the US.

Therefore, we ask the question: whether Chinese IPO firms listed on domestic markets manage earnings or not around IPOs. Given China's role in the global economy and the rapid growth of its IPOs,[4] it is important to investigate the issue of earnings management for Chinese IPO firms.

Aharony, Lee and Wong (2000) offer the most influential study on earnings management for Chinese IPO firms.[5] Using 83 state-owned enterprises (SOEs) listing in foreign markets,[6] they look at the patterns of returns on assets (ROAs) and claim that these firms engaged in earnings management around IPOs. Our study also examines the earnings management for Chinese IPOs but different from their research in the following ways. First, due to data limitation, they use the pattern of return on assets (ROA) around IPOs to document evidence of earnings management; our study use discretionary accruals, a more accurate indicator for earnings management. Second, they considered the Chinese firms listed in foreign markets, whereas we focus on those listed in domestic markets, since Chinese domestic equity markets play more and more important roles in the global economy.[7] Last, Chinese firms are generally classified into two types: SOEs and NSOEs. The early IPOs, in particular during their sample period, were overwhelmingly dominated by state-owned enterprises (SOEs). This restricted them to examining the patterns of earnings management for the non-state-owned enterprises (NSOEs) around IPOs.[8] However, more NSOEs, in our sample period, went public than SOEs. This provides us the chance to examine the earnings management for

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[4] The Chinese economy is the largest among all emerging economies and the second largest in the whole world.

[5] Prior studies also shows that Chinese firms manipulate earnings when facing the possibility of delisting (Liu and Lu, 2007) and before seasonal equity offerings (Chen and Yuan, 2004; Liu and Lu, 2007).

[6] SOE firms are defined as those whose ultimate owners are state asset management bureaus, the central government or a local government. NSOEs are defined as those whose ultimate owners are individuals or private investors.

[7] The Chinese stock market has become the second largest equity market in the world and plays an increasingly important role in the global economy.

[8] NSOEs are defined as those whose ultimate owners are individuals or private investors.

NSOEs surrounding IPOs and compare the patterns of earnings management for these two groups.

Prior literature suggests that the incentives and monitoring of earnings management vary between the two types of firms (Aharony et al., 2000; Liu and Lu, 2007; Yang, Chi and Young, 2011; Fan, Wong and Zhang, 2007; Chen, Chen, Lobo and Wang, 2011). On one hand, the levels of incentives to manage earnings vary between SOEs and NSOEs around IPOs. For SOEs, top managers, owning few shares and no stock options, do not gain directly from high IPO prices. Thus they have no direct incentives to inflate earnings. But they have indirect incentives to do so, since the listing status of SOEs may bring their managers higher prestige and other non-pecuniary benefits, such as political promotion. For NSOEs, top managers are often founders of IPO firms and have direct and substantial monetary gains from high IPO prices. They have direct incentives to manage earnings opportunistically. In addition, SOEs have favorable access to the equity market, which enhances their chances of going public, so that they have less incentive to manipulate earnings around IPOs than NSOEs.

On the other hand, the monitoring of earnings management around IPOs may also vary between SOEs and NSOEs. The existing empirical evidence shows that the monitoring is weak for SOEs: governance characteristics are weaker and less professional (Fan, Wong and Zhang, 2007); they prefer to hire small local auditors (Wang, Wong and Xia, 2008); State-owned banks grant loans imprudently to SOEs (Chen, Chen, Lobo and Wang, 2010). The weak monitoring of SOEs should lead to more earnings management when being compared with NSOEs. The conflict predictions from the above discussions on incentives and monitoring leave the differences in earnings management for SOEs and NSOEs an empirical question.

This paper offers three major findings, by using a sample of 437 Chinese IPO firms obtained from the China Stock Market and Accounting Research Database (2003 –

2009)[9]. First, we document that discretionary accounting accruals, respectively derived from the across-sectional Modified Jones model, performance-matched discretionary accruals model and the discretionary accruals model used by Ball and Shivakumar (2008), are significantly positive on average, showing that the Chinese IPO firms inflate earnings opportunistically. Second, we run a few regression analyses to demonstrate that SOE firms manage earnings *less than* NSOEs around IPOs, even after controlling firm characteristics. Last, we conduct path analysis to confirm that three characters for SOEs – less CEO shareholding, favorable access to equity market, and favorable access to bank loans – can explain more than 65% of why SOEs manage earnings less than NSOEs in the IPO years.

Our study contributes to the literature in three folds. First, this is a comprehensive study of earnings management around IPOs in Chinese domestic market. We document that Chinese firms manage earnings around IPOs, which is in sharp contrast to the recent findings in US and UK IPO firms. Second, we find that SOEs and NSOEs, as a unique characteristic of Chinese equity market, differ in earnings management around IPOs. In particular, the levels of earnings management for SOEs are lower than those for NSOEs. This seems to suggest that the weaker incentives for SOEs impose a stronger effect on earnings management than the weaker monitoring. This finding should have policy implications to China's Security Regulatory Commission (CSRC). Last, we explore three factors for SOEs – less CEO shareholding, favorable access to equity market, and favorable access to bank loans – resulting in weaker earnings management incentives for SOEs than NSOEs. Using path analysis, we confirm that the three factors lead to less earnings management for SOEs than NSOEs at IPOs. To our knowledge, this is the first paper to identify the accessibility to bank loans as the key mediator leading to the less earnings management for SOEs than NSOEs around IPOs.

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[9] Our sample period starts from 2003, because few IPOs before 2003 have sufficient data to estimate discretionary accruals in the issue year.

The rest of this paper proceeds as follows. Section 2 describes the special institutional background in China. Section 3 reviews the literature on earnings management around IPOs and puts forward our hypotheses. Section 4 describes our data and sample selection, and discusses our empirical research design. We report and discuss our empirical results in Section 5, and offer additional and sensitive analyses in Section 6. And Section 7 concludes the paper.

Chapter 2 Body of Dissertation

2.1 Institutional background

The Chinese stock market has become an increasingly important financing source for Chinese firms. Moreover, the Chinese stock market has become the second largest equity market in the world and plays an increasingly important role in the global economy. In the early 1990s, the Chinese government reestablished the stock market to solve the financing problems for SOEs. With the development over the last two decades, the number of listed firms (including A-shares and B-shares) is up to 1754, and the total market value of publicly traded shares exceeds 3573 billion U.S. dollars by the end of 2009.[10]

In the early stage of Chinese stock market, some policies implemented in the China's stock issuance procedure are irrational. For instance, prior to 2001, without approval by a local government or the departments in charge of central SOEs, a sponsor was not permitted to apply to related securities regulatory authority for an IPO and listing.[11] In addition, to improve the success rate of the initial public offerings, the CSRC regulated the pricing methods for IPOs. The pricing methods for this period were dominated by fixed price and relative fixed P/E ratio.[12] Since 1996, the CSRC has implemented a series of reforms to establish a market-oriented IPO procedure. In 2001, it is not necessary to obtain approvals from local government or central authorities before a firm's application for IPO. Since 2005, the accumulated bidding inquiry pricing method,

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[10] Data are collected from http://www.world-exchanges.org/statistics/time-series/market-capitalization.

[11] This is called examination and approval system.

[12] Under fixed price method, the IPO issue price is calculated mainly based on earning forecast estimated according to prior earnings. Under relative fixed P/E ratio method, the issue price is calculated as the average of realized profits per share after taxes for the last three years multiply a certain P/E ratio between 13 and 16.

which is wildly adopted by most of developed stock markets, has been used to replace the controllable P/E ratio pricing method. [13] Yet, government intervention has still been an important feature of the Chinese stock market. Except for government intervention, China stock market exhibits many typical features of an emerging capital market. For example, internal and external monitoring is weak, litigation risk is low, the level of investors' protection is low, and the institutional environment is underdeveloped.

A unique aspect of Chinese capital market is that more than half of listed firms are controlled by the government. Among the 1754 listed firms in Shanghai and Shenzhen stock exchanges, there are 964 listed SOEs by the end of 2009. On the one hand, the Chinese government, as the largest shareholder of SOEs, has adopted a number of policies to aid them when they are in trouble. On the other hand, CEOs of SOEs are generally appointed by the state government, while most of them are current or former government officials. These CEOs are very likely to take advantage of their own political connection to benefit the SOEs. Therefore, being compared with NSOEs, SOEs peculiarly have favorable access to the stock market (Aharony, Lee and Wong, 2000), and enjoy government subsidy and lighter taxation. In addition, SOEs have favorable access to bank loans in contrast with NSOEs. This is because four state-owned banks[14] largely monopolize China's banking sector, and state-owned banks typically prefer to grant loans to SOEs rather than NSOEs, sometimes for non-profit reasons, such as political, ideological or personal goals (Brandt and Li, 2003).

As mentioned before, CEOs of SOEs usually hold government positions and some of them are very likely to receive a political promotion in the future. Consequently, these

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[13] Under controllable P/E ratio approach, IPO issue price is determined by accumulated bidding inquiry pricing method, but the issue price should be less than 20 times P/E ratio. To test whether the change in pricing method affects earnings management patterns for IPOs, we rerun our main test using two subsamples: IPOs from 2003 to 2004 and IPOs after 2004. We find that the empirical results for each subsample are consistent with our main results.

[14] That is, the Bank of China, Industrial and Commercial Bank of China, Construction Bank of China, and the Agricultural Bank of China.

CEOs act more as politicians rather than businessmen, and their performances are evaluated not only by financial performance but also by various political and social achievements, such as the improvement of employment rate and the contribution to national tax revenue (Fan et al., 2007). Therefore, except for maximizing their firms' values, CEOs in SOEs have various other objectives. In contrast with SOEs, financial performance is the most important criteria to evaluate CEOs' performances in NSOEs. These imply that SOEs have weaker incentives to manage earnings than NSOEs.

Monitoring is weak in China, as we discussed before. For example, the monitoring from the China Securities Regulatory Commission (CSRC) is generally weak. Regulators are reluctant to restrict earnings management, since the state controls ownership in the vast majority of listed firms. In addition, previous studies in corporate governance document low investor protection and poor enforcement of law in China. This means that the litigation risk faced by managers who manage earnings is low.

2.2 Hypothesis development

In US and in UK, the managers, who typically hold a certain fraction of the firm's equity, have incentives to inflate earnings upward to influence IPO pricing. However, Ball and Shivakumar (2008) document that UK IPO firms do not report earnings opportunistically. Consistent with the evidence from UK IPO firms, Armstrong et al. (2009) find that the discretionary accruals in the year of IPO are not significantly different from zero using the U.S. data. In short, no earning management is found in the IPO setting recently both in U.S. and in UK. Ball and Shivakumar (2008) explain the findings as follows:

> *We attribute this to the higher quality reporting demanded of pubic firms by*
>
> *financial statement users and consequentially higher monitoring by auditors,*

boards, analysts, rating agencies, press, and litigants, and to greater regulatory scrutiny.

For US firms and UK firms, even though managers have the incentives to manipulate earnings upward around IPOs, they do not engage in it due to higher monitoring and greater regulatory scrutiny.

Like the listed firms in US and UK, both Chinese NSOEs and SOEs have incentives to manipulate earnings upward around IPOs. For Chinese NSOEs, the wealth of managers, is usually concentrated on the firm's equity prior to an IPO, will be evaluated based on its stock price. Thus, the managers have incentives to manage earnings upward to boost the issue price. For Chinese SOEs, the managers, who have few shares of their firms and no stock options, may not have direct incentives to manage earnings. Yet, the listing status of SOEs may bring their managers higher prestige and other non-pecuniary benefits such as political promotion (Aharony et al., 1995). Consequently, managers of SOEs are motivated to enhance their firms' chances to be selected for listing through inflating earnings.

Unlike the stock markets in US and UK, the China's stock market exhibits some typical features in emerging equity markets – internal and external monitoring is weak, litigation risk is low, the level of investors' protection is low, and the institutional environment is underdeveloped. Given that the monitoring and the regulatory scrutiny in Chinese equity market are weak, we predict that Chinese IPO firms will manage earnings around IPOs. Based on these arguments, we form our first hypothesis:

H1: IPO firms engage in accruals-based earnings management in China.

Compared with NSOEs, internal and external monitoring is weak for SOEs. Fan et al. (2007) argue and document that firms' governance characteristics are weak and less professional when their CEOs have political connections. We can infer that the corporate governance is weak in SOEs because their CEOs are generally connected with the government. Wang et al. (2008) find that local and central SOEs tend to hire small local auditors who, on average, provide low quality audit services. In addition, Chen et al. (2010) argue that state-owned banks often make loan granting decision to SOEs based on political considerations, but not on profitability and the credibility of the accounting information. To sum up, monitoring for SOEs is weaker than that for NSOEs, which should be true to IPO firms. Thus, SOEs should manage earnings more than NSOEs around IPOs.

However, the incentives to inflate earnings for SOEs are weaker than their NSOE counterparts for three reasons. First, as argued by Chen et al. (2011), the compensation contracts for CEOs in SOEs are usually measured by various social and political objectives besides firm value maximization, and those contracts place relatively less weight on firms' accounting performances than those for managers of NSOEs. In addition, there are little pecuniary benefits from IPOs for CEOs, whose wealth are less likely concentrate on the equity in SOEs. As a result, CEOs of SOEs have weaker incentives to manipulate reported earnings around IPOs. Second, as pointed out by Aharony et al. (1995), a firm's chance of being selected to go public is also related to some non-economic factors, such as political connection and government policies. It is known that SOEs are more closely related to the government than NSOEs so that SOEs have more favorable access to the equity market. Consequently, SOEs have weaker incentives to manipulate reported earnings than NSOEs. Last, the state-owned banks, dominating the banking industry, prefer to grant loans to SOEs rather than NSOEs (Brandt and Li, 2003). Therefore, SOEs, which have favorable access to bank loans and

are less likely in financial constraints, have weaker incentives to manage earnings around IPOs.

Based on the above analysis, both monitoring and incentives are weaker for SOEs than NSOEs. Weaker monitoring should result in more earnings management for SOEs than NSOEs; weaker incentives should lead SOEs to manage earnings less than NSOEs. We do not have a prediction on the combined effects of weaker monitoring and weaker incentives on earnings management for SOEs. Therefore, we cannot predict which group of firms, SOEs or NSOEs, manipulates earnings more. We form our second hypothesis as follows:

H2: *The levels of earnings management for IPO firms are the same between SOEs and NSOEs.*

2.3 Variable measurement and research design

2.3.1 Data and sample selection

Our original data consists of all Chinese initial public offerings over the 2003 to 2009 period, and is obtained from the China Stock Market & Accounting Research (CSMAR) Database. All the IPOs in our sample are required to issue domestic A-Shares in Shanghai Stock Exchange or Shenzhen Stock Exchange,[15] and also are required to have annual financial statement data to calculate the discretionary accruals (earnings management proxy) for the IPO year and one year preceding it. Moreover, we restrict

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[15] Growth Enterprises Market (GEM) is inferior to and independent from A-Share markets. Like NASDAQ in US, GEM is established to provide financing sources for small and medium-sized enterprises and the emerging companies. IPOs in GEM are excluded since their financial requirements for going public are different from those of IPOs in the A-Share Market.

our sample to all nonfinancial firms based on the Industry Classifying Index Code of Listed Companies released by CSRC.

We also collect our financial data from CSMAR database. We require at least 10 observations in each CSRC industry per year, and each firm-year observation with sufficient data to calculate the discretionary accruals. We measure total accruals (TA) using statement of cash flow data as the earnings before extraordinary items (operating income) less operating cash flows (CFO) .

Our study requires firm's ownership information which is collected from prospectus. In terms of the identity of the ultimate owner which is disclosed in a firm's prospectus, we identify its ownership type, SOE or NSOE. We define SOEs as those firms whose ultimate owners are state asset management bureaus, the central government or the local government. While, NSOEs are defined as those firms whose ultimate owners are individuals or private investors. Following Chen et al. (2011), township-village enterprises are excluded from our sample. [16]

Panel A of Table 1 summarizes our sample selection procedure. Following the sample selection criteria, we obtain 437 IPOs in our final sample over the period from 2003 to 2009. Panel B of Table 1 reports the distribution of our sample by year. There are only 13 IPOs in 2005 since IPO was suspended for more than one year starting from May of 2005 due to Non-tradable Shares Reform.[17] Consistent with the belief that firms are more likely to issue equity when their market values are high, there are 106 IPOs in the year of 2007 when the Chinese capital market is booming. Since 2006, the number of

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[16] A township-village enterprise refers to a business unit that belongs to all residents of a rural community. It is a community enterprise controlled by community government. Che and Qian (1998) point out those township-village enterprises are neither SOEs nor NSOEs.

[17] Non-tradable Share Reform refers to a process making state shares and other non-tradable shares tradable on the equity markets. This reform, starting in 2005 and lasting for more than a year, drove the price of former tradable shares to decrease.

NSOEs going public exceeds that of SOEs. This suggests that NSOEs have been under less adverse conditions to access to equity market than ever before.

Panel C of Table 1 reports the distribution of our sample by industry, showing that IPOs distribute nearly in all industries. However, they cluster in a few industries, such as machinery manufacturing, chemical products manufacturing, metal and non-metal manufacturing, and information technology. Together, IPOs in these four industries comprise more than 45% of our sample. In addition, IPO firms in some industries are dominated by SOEs, such as Mining, Utilities, transportation and warehousing, and construction.

2.3.2 Measuring discretionary accruals

We use a modified cross-sectional Jones model to estimate the discretionary accruals[18]. For each year, we estimate the model for each industry using non-IPO firms (excluding all observations within two years of an IPO), allowing the coefficients to vary cross industries and over time (DeFond and Jiambalvo, 1994). Our primary model to estimate discretionary accruals is based on the following across-sectional model estimated for each CSRC industry as follows:

$$\frac{ACC_{it}}{ATA_{it}} = \alpha_0 + \alpha_1 \frac{1}{ATA_{it}} + \alpha_2 \frac{\Delta Sales_{it}}{ATA_{it}} + \alpha_3 \frac{PPE_{it}}{ATA_{it}} + \varepsilon_{it} \qquad (1)$$

Where, for fiscal year t and firm i, ACC_{it} = OPE_{it} - CFO_{it}, where OPE_{it} is the earnings before extraordinary items (operating income) and CFO_{it} is the operating cash flows taken from the statement of cash flows; ATA_{it} is average total assets (($Assets_{it-1}$+ $Assets_{it}$)/2); $\Delta Sales_{it}$ is the change in total sales; PPE_{it} is the value of net fixed assets.

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[18] As a sensitivity test, we use the performance-matched model suggested by Kothari et al. (2005) to calculate the discretionary accruals. The main results are unchanged when we use performance-matched abnormal accruals as a measure of earnings management.

The coefficient estimates from Eq. (1) are used to calculate the firm-specific non-discretionary accruals (NDA) and discretionary accruals (DA) for the IPO firms in our sample. [19]

$$NDA_{it} = \hat{\alpha}_0 + \hat{\alpha}_1 \frac{1}{ATA_{it}} + \hat{\alpha}_2 \frac{(\Delta Sales_{it} - \Delta AR_{it})}{ATA_{it}} + \hat{\alpha}_3 \frac{PPE_{it}}{ATA_{it}}$$

$$DA_{it} = \frac{ACC_{it}}{ATA_{it}} - NDA_{it}$$

(2)

Where the coefficients are obtained from Eq. (1) for the respective industry and year, ΔAR_{it} is the change in accounts receivables.

2.3.3 Model specification

Hypothesis H2 states that the levels of earnings management for IPO firms are the same between SOEs and NSOEs. For SOEs, both monitoring and incentives of earnings management are weaker than those for NSOEs. The effects of weaker monitoring and weaker incentives on SOEs' earnings management are opposite. Weaker monitoring means that SOEs should manage earnings more than NSOEs around IPOs. While weaker incentives induce SOEs to manage earning more than NSOEs. We cannot predict which of the two aspects – weaker incentives and weaker monitoring – has more influence on earnings management for SOEs. To test this hypothesis, we employ a

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[19] We fit the Eq. (1) to non-IPO firms, and then apply the fitted model to IPO firms to separate the total accruals into "discretionary" and "non-discretionary" components. This method is incorrect when non-discretionary accruals of IPO and non-IPO firms are determined in different ways (i.e., share different model parameters). To alleviate this problem, we re- estimate Eq. (1) using data including IPO firms and non-IPO firms, but allow the coefficients to vary between IPO and non-IPO firms. Then, we apply the parameters for IPO firms to IPO firms to estimate the "discretionary" and "non-discretionary" components. Using this method to estimate the discretionary accruals does not change the main results.

regression model that is motivated by the models of Teoh et al. (1998b) and Fan (2007). The regression model is as follows:[20]

$$
\begin{aligned}
DA_{it} = {} & \alpha_0 + \alpha_1 SOE_{it} + \alpha_2 MARKETI_{it} + \alpha_3 RETENTION_{it} + \alpha_4 AGE_{it} \\
& + \alpha_5 AUDITOR_{it} + \alpha_6 REPUTATION_{it} + \alpha_7 SIZE_{it} + \alpha_8 LEV_{it} + \alpha_9 CFOA_{it} \quad (3) \\
& + \alpha_{10} GROWTH_{it} + \sum_{t=1}^{6} \delta_t YEAR_t + \sum_{j=1}^{16} \gamma_j INDUSTRY_j + \nu_{it}
\end{aligned}
$$

Where, the dependent variable, DA, is discretionary accruals. SOE is a dummy variable that equal to one if a firm's ultimate owners are state asset management bureaus, the central government or the local government; zero if a firm's ultimate owners are individuals or private investors. MARKETI is the Marketization Index for each province or provincial level constructed by Fan et al (2009). RETENTION is ownership retention, 1-(number of public shares offered/number of total shares offered). AGE equals to log (1+firm age), firm age is the difference between the founding year and IPO issue year. AUDITOR is a dummy variable that equals one if the firm's auditor belongs to the Big Eight auditing firms and zero otherwise[21]. REPUTATION is a dummy variable that gets the value of one if the market share of an IPO firm's lead underwriter is within top 20 each year; zero otherwise[22]. This variable is a proxy for the lead underwriter's reputation. SIZE is the natural logarithm of total asset measured at the beginning of the year. LEV is leverage ratio, measured as total liabilities divided by total assets. CFOA is cash flow on assets defined as operating cash flow divided by average total assets. GROWTH is growth in sales, measured as the change of sales divided by total sales at the beginning of the year.

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[20] We also use the censored model (Tobit model) to run the equation (3). If the discretionary accruals (DA) are less than zero, we make DA equal to zero. The main regression results are unchanged when we use the Tobit model.

[21] The Big 8 in china include PwC, E&Y, Deloitte, KPMG, RSM China, Shu Lun Pan, Zhejiang Pan-China, and Shine Wing.

[22] Because there is, to date, no IPO underwriter reputation ranking reported by any prestigious research institutes in China, we use each underwriter's share in the stock underwriting market as a proxy for the underwriter's reputation.

In Eq. (3), the intercept (α_0) indicates the level of earnings management for NSOEs. $\alpha_0 + \alpha_1$ indicates the level of earnings management for SOEs. The difference, α_1, indicates the difference in the levels of earnings management between SOEs and NSOEs. If SOEs engage in more (less) earnings management than NSOEs in the issue year, we expect α_1 to be positive (negative).

2.4 Empirical results

2.4.1 Earnings management around IPOs

Panel A of Table 2 presents the mean and the median discretionary accruals for years -2 to +2 relative to the IPO year (year 0). We find that the mean discretionary accruals are significantly positive in the IPO year and the years preceding it[23]. The median discretionary accruals, which are less likely to be influenced by extreme values, also are significantly positive. Therefore, our results are consistent with hypothesis H1, indicating that the China's IPO firms engage in accruals-based earnings management.

Panel B of Table 2 reports the mean and the median discretionary accruals separately for SOEs and NSOEs around IPOs. We find that both the mean and the median discretionary accruals are significantly positive for SOEs and NSOEs around the issue year. This result indicates that both SOEs and NSOEs firms manage earnings by taking positive discretionary accruals. It is interesting to note that the mean discretionary accruals for NSOEs (0.070, 0.085, 0.090, 0.054 and 0.048) for event years -2 to +2 are much greater than those for SOEs (0.039, 0.041, 0.057, 0.036 and 0.021). Similarly, the

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[23] It is surprising to note that the abnormal accruals are still significantly positive for the years following the issue year. This result may be driven by the fact that the lockup period for the ultimate controller and the controlling shareholders are 36 months after the IPO. Therefore, firms still have incentives to inflate earnings to prevent the stock price from decreasing sharply within three years after an IPO.

median discretionary accruals for NSOEs are greater than those for SOEs. This finding seemingly indicates that NSOEs tend to engage in more accruals-based earnings management than SOEs. It is just the prima facie evidence for hypothesis H2 here, and we will examine the hypothesis in depth using regression analyses.

To examine the earnings performance for IPO firms, Table 3 reports the means and the medians of both earnings on assets (ROA) and difference in ROA (DROA[24]) around the issue year. Panel A presents the means and the medians of ROA and DROA for the whole sample from event year -2 to +2 relative to the IPO year. We find that both the mean and the median ROA for the post-IPO years is much lower than that for the IPO year and years preceding it. Also, we find that the DROA for event year -2 and event year -1 is positive, but changes to be negative for event years after the IPO year. This post-issue poor earnings performance is consistent with the findings of prior research (Aharony, Lee and Wong, 2000), and can be partially explained by the reversal of accruals. Panel B reports the mean and the median of both ROA and DROA for SOEs and NSOEs, respectively. We note that the post-issue earnings performances for SOEs as well as for NSOEs firms are poor in our sample.

To sum up, the empirical results indicate that the China's IPO firms, including SOEs and NSOEs, engage in accruals-based earnings management. This leads poor post-issue earnings performance to them. Thus, the findings are consistence with H1.

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[24] DROA is calculated as the annual ROA minus the ROA in the IPO year.

2.4.2 The impact of state ownership on earnings management around IPOs

Panel A of Table 4 presents the descriptive statistics of firm characteristics for the full sample in the IPO year[25]. The mean (median) discretionary accruals (DA) are 0.077 (0.069). SOEs make up 39.7 percent of the firms in our sample. There is, on average, 16.1 percent of firms' shares are non-tradable in the equity market. Since the year of establishment, firms in our sample, on average, choose to go public about five years later. The Big 8 auditors audit 31.2 percent of all firms. The top 20 investment banks in China underwrite 56.0 percent of all the IPO firms as the leader underwriter. On average, 44.4 percent of CEOs hold their own firms' stocks; 11.3 percent of the liability is long-term liability; 7.3 percent of IPO firms belong to the protected industries.

Panel B of Table 4 reports the descriptive statistics for SOEs and NSOEs separately. The mean (median) discretionary accruals (DA) for SOEs 0.058 (0.046) are lower than those for NSOEs 0.091 (0.081). Being compared with SOEs, NSOEs tend to locate in regions with higher marketization index. SOEs are, on average, much larger than NSOEs in our sample. We also note that the debt-to-assets ratio is higher for SOEs (0.38) than for NSOEs (0.324). In addition, the ratio of long-term debt to total liability for SOEs (0.177) is higher than that for NSOEs (0.071). This result may be driven by the fact that SOEs have better access to bank loans from state-owned banks. There are 59.2 percent of CEOs in NSOEs, who hold their own firms' shares. By contrast, only 22.0 percent of CEOs in SOEs have stock compensation. All firms in protected industries belong to SOEs.

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[25] We require that the offering characteristic variables and other control variables are available for IPO firms. Thus, our sample used in the regression analyses is 423 IPO firms.

In Panel C of Table 4, we report Pearson correlation matrix for variables used in the regression analysis and the path analysis. We note that SOE is negatively correlated with the discretionary accruals (DA). We observe that discretionary accruals (DA) are not significantly correlated with marketization index (CREDTMI), ownership retention (RETENTION), firm age (AGE), auditor choice (AUDITOR) and the lead underwriter's reputation (REPUTATION). Not surprising, the discretionary accruals (DA) are significantly positively related with CEOSH. The ratio of long-term debt to total liability (LTS) is significantly negative related with the discretionary accruals (DA). This finding seems to suggest that IPO firms, having favorable access to the bank loans (i.e., with higher LTS), are less likely to manage earnings opportunistically. We also note that firms in protected industries (PI) have less discretionary accruals (DA). In addition, the correlation coefficients among the independent variables (excluding DA) are about or less than 0.5. This means that our regression analyses do not seriously suffer from multiple-linearity problem.

Table 5 reports the OLS regression results of Eq. (3). In Panel A, the dependent variable, which reflects the level of income-increasing earnings management, is positive discretionary accruals (DA>0). The intercept (α_0), which indicates the level of earnings management for NSOEs, is 0.386 (t=5.07), and $\alpha_0 + \alpha_1$, which indicates the level of earnings management for SOEs, is 0.364 (0.386-0.022). The difference, α_1, is significantly negative (α_1=-0.022, t=2.78), suggesting that the discretionary accruals for SOEs are significantly smaller than that for NSOEs. Our second hypothesis predicts that the levels of earnings management for IPO firms are the same between SOEs and NSOEs. The regression results reject this hypothesis. The level of income-increasing earnings management is lower for SOEs than that for NSOEs. In addition, we find that the level of income-increasing earnings management decrease with SIZE, LEV and CFOA. The coefficients for AUDITOR and REPUTATION are not significantly negative, suggesting that the auditors and underwriters do not play a role in restricting

IPO firms' earnings management. This finding is consistent with the argument that the institutional environment is underdeveloped in China.

In Panel B of Table 5, the dependent variable, which reflects the level of income-decreasing earnings management, is negative discretionary accruals (DA<0). We note that the coefficient for SOE (α_1), which indicates the differences in levels of earnings management for SOEs and for NSOEs, is insignificant (α_1=0.004, t=0.30). However, we cannot figure out any incentives for IPO firms to manage earnings downward. The negative discretionary accruals perhaps are caused by measurement error.

In short, the results in Table 5 reject Hypothesis H2, indicating that the level of income-increasing earnings management is lower for SOEs than that for NSOEs.

2.4.3 Path analysis

In this section, we use path analysis[26] to decompose the correlation between state ownership and IPO firms' earnings management into direct and indirect paths. This method not only can examine the existence of the direct and indirect path between state ownership and earnings management, but also can provides evidence on the relative importance of each link.

We specify three indirect links that are respectively mediated by protected industry (PI), CEO shares holding (CEOSH) and the accessibility to bank loans (LTS). *First,* as pointed out by Aharony et al. (1995), firms in protected industries are generally large SOEs which are directly supervised by the state council and thus have close relationship

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[26] In statistics, path analysis is used to describe the directed dependencies among a set of variables. It has been more used in auditing and managerial accounting research than in capital markets research. In capital market research literature, Bhattacharya et al. (2012) use path analysis to examine the direct and indirect links between three measures of earnings quality and the cost of equity.

with the state council. Their close relations with the state council enable them to receive more favorable access to the equity market than other SOEs and NSOEs. Consequently, these firms have weaker incentives to manage earnings to enhance the chance for public listing. Therefore, State ownership has effects on earnings management around IPOs indirectly, via the relation with protected industry (PI). *Second,* Armstrong et al. (2009) claim that managers, who usually hold their own firms shares, have incentives to manipulate earnings around IPOs. Once the company goes public, managers' wealth will be evaluated on the basis of stock price. In China, managers in SOEs hold few shares and no stock options, while managers of NSOEs usually hold considerable shares of their own firms. Thereby, state ownership can affect IPO firms' earnings management indirectly, through influencing CEO share holding. *Third,* as we argued, SOEs have more favorable access to the bank loans from state-owned banks. They are less likely in financial constrains. Thus, SOEs have weaker incentives to manage earnings around IPOs. Therefore, state ownership can impact the IPO firms' earnings management indirectly, through influencing firms' access to bank loans.

Table 6 reports the results for the path analysis. The first two columns show results when only two mediated (by protected industry (PI), and by CEO share holding (CEOSH)) links between state ownership and earnings management are considered. Starting with the Pearson correlation between state ownership (SOE) and earnings management (DA), r[SOE, DA] equals to -0.170, significant at the 0.001 level. p[SOE, DA] is the direct path coefficient, and the direct path captures 54.73% of the relation between state ownership and IPO firms' earnings management. p[SOE, PI]and p[PI, DA] are the path coefficients between state ownership and protected industry, and between the protected industry and earnings management. The indirect path mediated by protected industry (PI) is calculated as the product of p[SOE, PI]and p[PI, DA]. The indirect path coefficient is -0.044 (p[SOE, PI] × p[PI, DA]), capturing 25.91% of the total correlation. Similarly, the indirect path (mediated by CEO share holding) coefficient is -0.033, explaining 19.36% of the total correlation.

The last two columns present the path analysis when we consider the three indirect links between state ownership and earnings management. Again, we begin our analysis with the Pearson correlation coefficient, r[SOE, DA], which is -0.170 (t=3.18). 33.51% of the correlation between SOE and DA is attributed to a direct path p[SOE, DA], 19.28% attributable to a indirect path (mediated by protected industry, PI), 14.99% stemming from a indirect path (mediated by CEO share holding, CEOSH), 32.22% stemming from a indirect path (mediated by the accessibility to the bank loans, LTS). This result suggests that the three mediators (PI, CEOSH, and LTS) account for more than 65% of total correlation between SOE and DA, and that the accessibility to bank loans (LTS) is the key mediator of the three leading to the less earnings management for SOEs than NSOEs around IPOs.

2.5 Additional and sensitivity tests

2.5.1 Conditional conservatism and abnormal accruals using Ball and Shivakumar's (2008) model

One may argue that the reason why our results do not accord with the findings of Ball and Shivakumar (2008) is that our model used to estimate the discretionary accruals differs from theirs. To address this concern, we estimate conditional conservatism and abnormal accruals using Ball and Shivakumar's (2008) model. In Panel A of Table 7, the coefficients on DCFO*CFO, reflecting conditional conservatism, are -0.581 (t=-8.20) for event year 0, -0.559(-5.03) for event year -1 and -0.617 (t=-7.81) for event year -2. This result suggests that Chinese IPO firms do not report earnings conservatively in the issue year and years preceding it. Panel B of Table 7 reports the abnormal accruals estimated by Ball and Shivakumar's (2008) model. We find that the mean and the

median of abnormal accruals are positive and significant. This finding is consistent with our main results and indicates that China's IPO firms in our sample, on average, engage in earnings management through taking positive abnormal accruals around IPOs.

2.5.2 Central SOEs and local SOEs

In this section, we classify SOEs into two groups: central SOEs and local SOEs.[27] This is because some governance characteristics are different between them, such as the auditor choice and the extent of related party transactions (Wang et al., 2008; Jian and Wong, 2010). Considering the possible difference in the levels of earnings management for central SOEs and local SOEs, we estimate Eq. (4) where the variable SOE is replaced by CSOE, which is dummy variable that equal to one if a firm is indentified to be a central SOE, zero otherwise. Table 8 reports the regression results. If the dependent variable is positive abnormal accruals (DA>0), the coefficient on CSOE is not significantly different from zero (α_1=-0.008 (t=-0.72)), indicating that the levels of income-increasing earnings management for central SOEs are not different from local SOEs. Also, the levels of income-decreasing earnings management do not differ between central SOEs and local SOEs because the coefficient for CSOE is not different from zero (α_1=-0.020 (t=-0.53)) when the dependent variable is negative abnormal accruals. In sum, the results in Table 8 indicate that there is no difference in the levels of earnings management for central SOEs and local SOEs in the IPO year.

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[27] Central SOEs are defined as those SOEs owned by departments of the central government, such as the State-owned Assets Supervision and Administration Commission (SASAC) or ministry of finance; local SOEs are owned by agencies of the local government, such as the provincial state asset management bureaus or finance bureau.

2.5.3 Performance-matched abnormal accruals

We also repeat our analyses using the performance-matched abnormal accruals suggested by Kothari et al. (2005). Following Kothari et al. (2005), we match each observation in our IPO sample with another non-IPO firm with the closest ROA (earnings before extraordinary item scaled by average total assets) from the same industry and the same year. Then, we estimate the Modified Jones model for both IPO firms and their matched non-IPO firms. The performance-matched abnormal accruals for the IPO firm i are measured as the abnormal accruals for firm i minus the matched firm's abnormal accruals. We find that our main tests results (untabulated) are unchanged when we replicate our analyses using performance-matched abnormal accruals as a measure of earnings management.

2.5.4 Regression results in the year of IPO and years preceding it

In our main test, we only examine whether our hypothesis H2 hold in the year of IPO. Still, Chinese IPO firms have strong incentives to manage earnings in years prior to the issuing year. To examine whether our main regression results are stable, we rerun our main test using data for years preceding the IPO year. Consistent with our main results, untabulated results reveal that SOEs also manage earnings less than NSOEs before the year of IPO.

2.5.5 Pricing method changes

In 2005, the pricing method for IPOs changed from the controllable P/E ratio approach to accumulated bidding inquiry approach. To test whether the change in pricing method can affect earnings management patterns for IPOs, we rerun our main test using two

subsamples: IPOs from 2003 to 2004 and IPOs after 2004. We find that the empirical results for each subsample are consistent with our main results.

2.6 Conclusion

This study investigates whether China's firms inflate earnings by taking abnormal accruals around the time of their IPOs and which group of IPO firms, SOEs or NSOEs, engages in more earnings management. Using a sample of 437 Chinese IPO firms over the 2003 to 2009 period, we find that IPO firms, on average, have high positive abnormal accruals in the issue year and years preceding it. Our findings are in sharp contrast to those from Ball and Shivakumar (2008) and Armstrong, Foster and Taylor (2009). This is because in Chinese equity market, monitoring and regulatory scrutiny are weak, which makes a difference from the equity markets in U.S. and UK. For SOEs, both incentives and monitoring for earnings management are weaker when being compared with NSOEs. Thus, which group of firms manipulates earnings more is an empirical question. We document that SOEs tend to manage earnings less than NSOEs around IPOs. In addition, we use path analysis to examine the direct and indirect links between state ownership and earnings management for IPO firms. We identify three mediators – protected industry, CEO share holding and the accessibility to bank loans – explaining more than 65% of the total correlation between state ownership and IPO firms' earnings management.

We make three contributions to the literature. First, in contrast to the recent findings in US and UK markets, we document that Chinese firms manipulate earnings opportunistically around IPOs. The reason for the different findings is due to weak monitoring in China. Second, we provide empirical evidence to reject the claim that the levels of earnings management for IPO firms are the same between SOEs and NSOEs. In particular, we find that the levels of earnings management for SOEs are lower than

those for NSOEs. Last, we use path analysis to confirm three mediators (accessibility to bank loans, protected industries, and CEO shareholding) for understanding why SOEs have less earnings management than NSOEs at IPOs. We find that the accessibility to bank loans is the key mediator resulting in the less earnings management for SOEs than NSOEs around IPOs.

References

[1] Aharony, J., C.W.(Jevons) Lee and T.J. Wong. 2000. Financial packaging of IPO firms in China. Journal of Accounting Research 38, 103 - 126.

[2] Armstrong, C.S., G. Foster and D.J. Taylor. 2008. Earnings management around initial public offerings:A re-examination. Working paper, University of Pennsylvania.

[3] Armstrong, C.S., W.R. Guay and J.P. Weber. 2010. The role of information and financial reporting in corporate governance and debt contracting. Journal of Accounting and Economics 50, 179 – 234.

[4] Ayyagari, M., A.D. Kunt and V. Maksimovic. Formal versus informal finance: Evidence from China. The Review of Financial Studies 23, 3048-3097.

[5] Ball, R. and L. Shivakumar. 2005. Earnings quality in UK private firms: comparative loss recognition timeliness. Journal of Accounting and Economics 39, 83-128.

[6] Ball, R. and L. Shivakumar. 2008. Earnings quality at initial public offerings. Journal of Accounting and Economics 45, 324-349.

[7] Becker, C.L., M.L. Defond, J. Jiambalvo and K.R. Subramanyam. 1998. The effect of audit quality on earnings management. Contemporary Accounting Research 15, 1-24.

[8] Bhattacharya, N., F. Ecker, P. Olsson and K. Schipper. 2012. Direct and mediated associations among earnings quality, information asymmetry and the cost of equity. The Accounting Review 87, 449-482.

[9] Billings, M.B. and M.F. Lewis. 2010. Opportunism and the related consequences in the IPO setting. Working paper, New York University.

[10] Boulton, T., S.B. Smart and C.J. Zutter. 2011. Earnings quality and international IPO underpricing. The Accounting Review 86(2), 483 – 506.

[11] Brandt, L. and H. Li. 2003. Bank discrimination in transition economies: ideology, information, or incentives? Journal of Comparative Economics 31, 387-413.

[12] Brau, J.C. and S.E. Fawcett. 2006. Initial public offerings: An analysis of theory and practice. Journal of Finance 61, 399 – 436.

[13] Cao, J., M. Lemmon, X. Pan, M, Qian and G. Tian. 2011. Political promotion, CEO incentives, and the relationship between pay and performance. Working Paper, Singapore Management University.

[14] Cecchini, M., S.B. Jackson and X. Liu. 2012. Do initial public offering firms manage accruals? Evidence from individual accounts. Review of Accounting Studies 17, 22-40.

[15] Chen, H., J. Chen, G.J. Lobo and Y. Wang. 2011. Effects of audit quality on earnings management and cost of equity capital: evidence from China. Contemporary Accounting Research 28, 892-925.

[16] Chen, H., J. Chen, G.J. Lobo and Y. Wang. 2010. Association between borrower and lender state ownership and accounting conservatism. Journal of Accounting Research 48, 973-1014.

[17] Chen, C.W. (Kevin) and H.Yuan. 2004. Earnings management and capital resource allocation: Evidence from China's accounting-based regulation of rights issues. The Accounting Review 79(3), 645 – 665.

[18] Cheng, C.S.A., C.Z. Liu, and W. Thomas. 2011. Abnormal accrual estimates and evidence of mispricing. Journal of Business Finance & Accounting 39, 1-34.

[19] Cheng, Q. and T.D. Warfield. 2005. Equity incentives and earnings management. The Accounting Review 80(2), 441-476.

[20] Claessens, S., E. Feijen and L. Laeven. 2008. Political connections and preferential access to finance: The role of campaign contributions. Journal of Financial Economics 88, 554-580.

[21] Cohen, D. and P. Zarowin. 2008. Economic consequences of real and accrual-based earnings Management Activities. Working paper, New York University.

[22] Cohen, D.A., A. Dey and T.Z. Lys. 2008. Real and accrual-based earnings management in the pre- and post-Sarbanes Oxley periods. The Accounting Review 83, 757 – 787.

[23] Cohen, D.A. and P. Zarowin. 2010. Accrual-based and real earnings management activities around seasoned equity offerings. Journal of Accounting and Economics 50, 2-19.

[24] Cook, K, G. Huston and M. Kinney. 2009. Managing earnings by manipulating production: The effects of timing, tax, compensation, and governance considerations. Working paper, University of Arizona.

[25] Dechow, P. 1994. Accounting earnings and cash flows as measures of firm performance: The role of accounting accruals. Journal of Accounting and Economics 18, 3 – 42.

[26] Dechow, P.M., R.G. Sloan and A.P. Sweeney. 1995. Detecting earnings management. The Accounting Review 70 (2), 193 – 225.

[27] Dechow, P. and I. Dichev. 2002. The quality of accruals and earnings: The role of accrual Estimation error. The Accounting review 77, 35 – 59.

[28] Dechow, P., W. Ge and C. Schrand. 2010. Understanding earnings quality: A review of the proxies, their determinants and their consequences. Journal of Accounting and Economics 50, 344-401.

[29] DeFond, M.L. and J. Jiambalvo. 1994. Debt covenant effects and the manipulation of accruals. Journal of Accounting and Economics 17, 145 – 176.

[30] Ertimur, Y., E.Sletten and J. Sunder. 2011. Disclosure strategies and IPO lockup expiration returns. Working paper, Duke University.

[31] Faccio, M., R.W. Masulis and J.J. Mcconnell. 2006. Political connections and corporate bailouts. The Journal of Finance 61, 2597-2635.

[32] Fan, G, X. Wong and H. Zhu. 2009. NERI index of monetization of China's provinces 2009 report. Economic Science Press.

[33] Fan, P.H. (Joseph), T.J. Wong and T. Zhang. 2007. Politically connected CEOs, corporate governance, and post-IPO performance of China's newly partially privatized firms. Journal of Financial Economics 84, 330-357.

[34] Fan,Q. 2007. Earnings management and ownership retention for initial public offering firms: theory and evidence. The Accounting review 82, 27 – 64.

[35] Givoly, D. and C. Hayn. 2000. The changing time-series properties of earnings, cash flows and accruals: Has financial reporting become more conservative? Journal of Accounting and Economics 29 (3), 287 – 320.

[36] Graham, J.R., C.R. Harvey and S. Rajgopal. 2005. The economic implications of corporate Financial reporting. Journal of Accounting and Economics 40, 3 – 73.

[37] Healy, P. 1985. The effect of bonus schemes on accounting decisions. Journal of Accounting and Economics 7, 85 – 107.

[38] Healy P. and J.M. Wahlen. 1999. A review of the earnings management literature and its implications for standard setting. Journal of Accounting Horizons 13(4), 365-383.

[39] Hribar, P. and D.W. Collins. 2002. Errors in estimating accruals: Implications for empirical research. Journal of Accounting Research 40, 105 – 134.

[40] Jian, M. and T.J. Wong. 2010. Propping through related party transactions. Review of Accounting Studies15, 70-105.

[41] Jones, J. 1991. Earnings management during import relief investigations. Journal of Accounting Research 29, 193 – 228.

[42] Kothari, S.P., A. Leone and C. Wasley. 2005. Performance matched discretionary accrual measures. Journal of Accounting and Economics 39(1), 163 – 197.

[43] Liu, Q. and Z. Lu. 2007. Corporate governance and earnings management in the Chinese listed companies: A tunneling perspective. Journal of Corporate Finance 13, 881-906.

[44] Lo, K. 2008. Earnings management and earnings quality. Journal of Accounting and Economics 45, 350 - 357.

[45] Mayers J.N., L.A.Mayers and T.C. Omer. 2003. Exploring the term of the auditor-client relationship and the quality of earnings: A case for mandatory auditor rotation? The Accounting Review 78, 779-799.

[46] Piotroski, J.D. and T.J. Wong. 2011. Institutions and information environment of Chinese listed firms. Working paper, Stanford University.

[47] Ramanna, K. and S. Roychowdhury. 2010. Elections and discretionary accruals: Evidence from 2004. Journal of Accounting Research 48, 445-475.

[48] Ritter, J.R. and I. Welch. 2002. A review of IPO activity, pricing, and allocations. Journal of Finance 57, 1795 – 1828.

[49] Richardson, S., I. Tuna and P. Wysocki. 2010. Accounting anomalies and fundamental analysis: A review of recent research advances. Journal of Accounting and Economics 50, 410 – 454.

[50] Roychowdhury, S. 2006. Earnings management through real activities manipulation. Journal of Accounting and Economics 42, 335 – 370.

[51] Sun, Q. and W.H.S. Tong. 2003. China share issue privatization: the extent of its success. Journal of Financial Economics70, 183-222.

[52] Teoh, S.H., I. Welch and T.J. Wong. 1998. Earnings management and the long-run market performance of initial public offerings. The Journal of Finance 53, 1935 – 1975.

[53] Teoh, S.H., T.J. Wong and G.R. Rao. 1998a. Are accruals during initial public offerings opportunistic? Review of Accounting Studies 3, 281 – 308.

[54] Teoh, S.H., T.J. Wong and G.R. Rao. 1998b. Incentives and opportunities for earnings management in initial public offerings. Review of Accounting Studies 3, 175 – 208.

[55] Wang, Q., T.J. Wong and L. Xia. 2008. State ownership, the institutional environment, and auditor choice: Evidence from China. Journal of Accounting and Economics 46, 112-134.

[56] Yang, J.J., J. Chi and M. Yong. 2011. A review of earnings management in China and its implications. Working paper, Massey University.

Table 1. Sample selection and sample description

Panel A: Sample selection

Total IPO firms available on CSMAR from 2003to 2009	560
Less:	
Firms listed on the Growth Enterprises Market (GEM) Board	(42)
Firms in the financial industry	(17)
Firms with insufficient annual financial statement data to calculate discretionary accruals for one year prior to the IPO date and the offer year	(32)
Firms with the highest or the lowest one percent discretionary accruals	(18)
Township-village enterprises and firms whose ultimate controlling shareholders cannot be identified	(15)
Final Sample	437

Panel B: Sample distribution by year

Year	No. of IPO State-owned enterprises	No. of IPO Non-state-owned enterprises	No. of IPO firms in sample	% of IPO firms in sample
2003	34	19	53	0.12
2004	44	43	87	0.20
2005	7	6	13	0.03
2006	27	34	61	0.14
2007	37	64	101	0.23
2008	16	50	66	0.15
2009	12	44	56	0.13
Total	177	260	437	1.00

Panel C: Sample distribution by industry

CSRC industry	CRSC code	# of IPO firms		
		State-owned enterprises	Non-state-owned enterprises	Total firms
Farming, Forestry, Animal Husbandry, and Fishing	A01, A03, A05, A07, A09	3	7	10
Mining	B01, B03, B05, B07, B09, B50	19	0	19
Food and Beverage	C01, C03, C05	6	6	12
Textile, Apparel, Fur and Leather	C11, C13, C14	7	15	22
Paper and Allied Products; Printing	C31, C35, C37	2	13	15
Chemical Products Manufacturing	C41, C43, C47, C48, C49	21	28	49
Electronics	C51, C55, C57	10	26	36
Metal and Non-mental	C61, C65, C67, C69	20	22	42
Machinery Manufacturing	C71, C73, C75, C76, C78	19	59	78

Medicine and Biological Products, and other Manufacturing	C81, C85, C99	8	26	34
Utilities	D01, D03, D05	12	0	12
Construction	E01, E05	14	7	21
Transportation and Warehousing	F01, F03, F05, F07, F09, F11, F19, F21	16	3	19
Information Technology	G81, G83, G85, G87	8	32	40
Wholesale and Retail trades	H01, H03, H11, H21	2	7	9
Real Estate	J01, J05, J09	2	5	7
Public Facilities, Public Service, Communication and Culture	K01, K20, K30, K32, K34, K99, L01, L10, L20, L99	8	4	12
Total		177	260	437

Notes: Panel A shows the sample selection process. Panel B reports the sample composition by year. Panel C presents the industry distribution of our sample. We restrict our sample to all nonfinancial firms subject to the Industry Classifying Index Code of Listed Companies released by the China's Securities Regulatory Commission (CSRC). We define state-owned enterprises (SOEs) as those firms whose ultimate owners are state asset management bureaus, the central government or local governments, while non-state-owned enterprises (NSOEs) are defined as those firms whose ultimate owners are individuals or private investors.

Table 2. Earnings management around initial public offerings (IPOs)

Panel A: Discretionary accruals around IPOs

Year	-2	-1	0	1	2
Abnormal accruals					
Mean	0.059	0.067	0.077	0.046	0.035
t-Statistic	**8.759**	**12.386**	**17.104**	**10.501**	**7.720**
Median	0.044	0.055	0.068	0.039	0.035
Sign test (*p*-value)	**<0.01**	**<0.01**	**<0.01**	**<0.01**	**<0.01**
No. of observations	312	437	437	375	308

Panel B: Discretionary accruals around IPOs by ownership type

Year	-2	-1	0	1	2
State-owned enterprises (SOEs)					
Mean	0.039	0.041	0.057	0.036	0.021
t-Statistic	**3.776**	**5.188**	**8.598**	**5.518**	**3.103**
Median	0.023	0.031	0.046	0.034	0.030
Sign test (*p*-value)	**<0.01**	**<0.01**	**<0.01**	**<0.01**	**<0.01**
No. of observations	109	177	177	162	144
Non-state-owned enterprises(NSOEs)					
Mean	0.070	0.085	0.090	0.054	0.048
t-Statistic	**8.048**	**11.852**	**15.266**	**9.133**	**7.863**
Median	0.061	0.082	0.081	0.045	0.049
Sign test (*p*-value)	**<0.01**	**<0.01**	**<0.01**	**<0.01**	**<0.01**
No. of observations	203	260	260	213	164

Notes: Panel A reports the mean and median abnormal accruals from year -2 to year +2 relative to the initial public offering (year 0). Panel B presents the mean and median abnormal accruals around IPOs for the SOE and NSOE subsamples.

We use the modified Jones model to estimate the discretionary accruals. We define state-owned enterprises (SOEs) as those firms whose ultimate owners are state asset management bureaus, the central government or local governments, while non-state-owned enterprises (NSOEs) are defined as those firms whose ultimate owners are individuals or private investors.

[***], [**], [*] represent significance at the 1%, 5%, and 10% levels, respectively.

Table 3. Earnings performance around initial public offerings (IPOs)

Panel A: Earnings performance for the full sample

Year	-2	-1	0	1	2
Earnings on assets (ROA)					
Mean	0.144	0.142	0.097	0.068	0.056
Median	0.128	0.126	0.089	0.063	0.048
Difference in ROA (DROA)					
Mean	0.046	0.044	0.000	-0.028	-0.037
Median	0.037	0.034	0.000	-0.023	-0.031
No. of observations	312	437	437	375	308

Panel B: Earnings performance by ownership type

Year	-2	-1	0	1	2
State-owned enterprises (SOEs)					
Returns on assets (ROA)					
Mean	0.129	0.127	0.090	0.060	0.051
Median	0.106	0.101	0.074	0.056	0.044
Difference in ROA (DROA)					
Mean	0.038	0.037	0.000	-0.029	-0.035
Median	0.031	0.025	0.000	-0.017	-0.023
No. of observations	109	177	177	162	144
Non-state-owned enterprises (NSOEs)					
Returns on assets (ROA)					
Mean	0.153	0.152	0.102	0.073	0.061
Median	0.140	0.141	0.097	0.070	0.055
Difference in ROA (DROA)					
Mean	0.050	0.049	0.000	-0.028	-0.038
Median	0.042	0.042	0.000	-0.025	-0.038
No. of observations	203	260	260	213	164

Notes: Panel A reports earnings performance from year -2 to year +2 relative to the year of IPO (year 0). Panel B reports earrings performance for state-owned IPO firms and non-state-owned IPO firms, respectively.

Returns on assets (ROA) are defined as operating income divided by average total assets. Difference in ROA (DROA) is the difference between ROA in a year and the ROA in the IPO year. We define state-owned enterprises (SOEs) as those firms whose ultimate owners are state asset management bureaus, the central government or local governments, while non-state-owned enterprises (NSOEs) are defined as those firms whose ultimate owners are individuals or private investors.

Table 4. Descriptive statistics

Panel A: Descriptive statistics of the full sample (N=423)

Variables	Mean	Std. Dev.	Min	25%	Median	75%	Max	t
DA	0.077	0.094	-0.216	0.020	0.069	0.124	0.399	16.94
SOE	0.397	0.490	0	0	0	1	1	16.67
MARKETI	8.779	2.113	4.110	7.200	9.350	10.550	11.710	85.46
RETENTION	0.161	0.125	0.000	0.013	0.200	0.200	0.771	26.61
AGE	5.149	3.250	0	3	4	7	20	32.58
AUDITOR	0.312	0.464	0	0	0	1	1	13.84
REPUTATION	0.560	0.497	0	0	1	1	1	23.19
SIZE	20.289	1.287	18.443	19.438	20.008	20.681	27.427	324.25
LEV	0.346	0.175	0.025	0.203	0.335	0.475	0.830	40.78
CFOA	0.056	0.101	-0.329	0.005	0.054	0.118	0.376	11.38
GROWTH	0.273	0.400	-0.499	0.099	0.217	0.377	5.318	14.02
CEOSH	0.444	0.497	0	0	0	1	1	18.37
LTS	0.113	0.157	0	0	0.044	0.175	0.839	14.82
PI	0.073	0.261	0	0	0	0	1	5.78

Panel B: Descriptive statistics by ownership type

	SOEs (N=168)			NSOEs (N=255)			Difference	
Variables	Mean	Median	Std. Dev.	Mean	Median	Std. Dev.	Mean	Median
DA	0.058	0.046	0.089	0.091	0.081	0.095	-0.033	-0.035
MARKETI	7.530	7.420	2.019	9.602	9.800	1.739	-2.072	-2.380
RETENTION	0.159	0.200	0.160	0.163	0.200	0.095	-0.004	0
AGE	5.387	4.500	3.344	4.992	4	3.183	0.395	0.500
AUDITOR	0.333	0	0.473	0.298	0	0.458	0.035	0
REPUTATION	0.488	0	0.501	0.608	1	0.489	-0.120	-1
SIZE	20.869	20.399	1.662	19.907	19.791	0.752	0.962	0.608
LEV	0.380	0.365	0.183	0.324	0.327	0.165	0.056	0.038
CFOA	0.066	0.062	0.103	0.049	0.053	0.099	0.016	0.009
GROWTH	0.253	0.193	0.284	0.286	0.228	0.461	-0.032	-0.035
CEOSH	0.220	0	0.416	0.592	1	0.492	-0.372	-1

LTS		0.177	0.124	0.191	0.071	0.011	0.112	0.107		0.112
PI		0.185	0	0.389	0	0	0	0.185		0

Panel C: Correlation matrix

Variable		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
DA	(1)	1													
SOE	(2)	**-0.172**	1												
MARKETI	(3)	0.006	**-0.480**	1											
RETENTION	(4)	-0.066	-0.014	**0.315**	1										
AGE	(5)	0.003	0.060	0.040	**0.180**	1									
AUDITOR	(6)	-0.073	0.037	**0.219**	**0.142**	0.001	1								
REPUTATION	(7)	-0.062	**-0.118**	**0.214**	**0.174**	0.036	0.011	1							
SIZE	(8)	**-0.263**	**0.366**	-0.018	**0.399**	0.052	**0.275**	0.072	1						
LEV	(9)	0.003	**0.158**	-0.041	**0.095**	0.014	0.048	-0.042	**0.463**	1					
CFOA	(10)	**-0.725**	0.079	-0.014	0.063	-0.017	0.069	0.065	**0.096**	**-0.309**	1				
GROWTH	(11)	-0.080	-0.040	0.042	-0.023	**-0.106**	-0.026	0.058	0.060	**0.238**	0.008	1			
CEOSH	(12)	**0.137**	**-0.366**	**0.295**	0.009	**0.120**	0.055	0.016	-0.263	**-0.126**	**-0.063**	0.003	1		
LTS	(13)	**-0.185**	**0.333**	**-0.252**	0.078	0.057	0.058	-0.008	0.360	0.221	0.125	-0.008	**-0.238**	1	
PI	(14)	**-0.208**	**0.346**	**-0.219**	0.020	-0.002	**0.085**	-0.080	**0.370**	0.081	0.230	-0.018	**-0.233**	**0.337**	1

Notes: Panel A reports the descriptive statistics of firm characteristics in the year of IPO, including firm initial public offerings characteristics and firm financial characteristics. Panel B presents descriptive statistics for the SOEs and NSOEs, respectively. Panel C reports the correlation matrix for all variables used in the regressions in following tables, Pearson correlations are presented below the diagonal. **Bold** indicates significance at the 10% level.

DA is the discretionary accruals estimated by using the Modified Jones model. SOE is a dummy variable that equals one if a firm's ultimate owners are state asset management bureaus, the central government or local governments and zero if a firm's ultimate owners are individuals or private investors. MARKETI is the marketization index for each province or provincial level city constructed by Fan et al (2009). RETENTION is the ownership retention, *i.e.,* 1-(number of public shares offered/number of total shares offered). AGE equals log (1+firm age), where firm age is calculated as the difference between the IPO issuing year and founding year. AUDITOR is a dummy variable that equals one if the firm's auditor belongs to the Big 8 auditing firms and zero otherwise REPUTATION is a dummy variable taking value one if the market share of an IPO firm's lead underwriter is within top 20 in the IPO year and zero otherwise. This variable is a proxy for the lead underwriter's reputation. SIZE is the natural logarithm of total assets measured at the beginning of the year. LEV is leverage ratio measured as total liabilities divided by total assets. CFOA is cash flow on assets defined as operating cash flow divided by average total assets. GROWTH is growth rate in sales measured as the change of sales divided by total sales of last year. CEOSH is a dummy variable that equals one if an IPO firm's CEO holds its shares of stock at the year of IPO and zero otherwise. LTS is a proxy for a firm's access to the banking capital, defined as the ratio of long-term liabilities to the total liabilities. PI is also a dummy variable taking value one if an IPO firm belongs to the protected industries, including mining, petrochemicals, utilities and transportation and zero otherwise.

Table 5. Regression analysis of the relation between ownership type and earnings management magnitude in the year of IPO

Panel A: The dependent variable is positive discretionary accruals (DA>0)

Variable	Pred. sign	Coefficient	t-value	Coefficient	t-value
INTERCEPT	?	0.395	5.15***	0.386	5.07***
SOE	-			-0.022	-2.78***
MARKETI	-	-0.001	-0.46	-0.003	-1.80*
RETENTION	-	0.007	0.15	0.002	0.04
AGE	-	0.000	-0.04	0.000	0.14
AUDITOR	-	0.003	0.47	0.004	0.72
REPUTATION	-	0.000	0.03	0.000	-0.06
SIZE	-	-0.013	-3.42***	-0.011	-2.72***
LEV	?	-0.065	-2.40**	-0.070	-2.58**
CFOA	-	-0.664	-17.68***	-0.667	-17.99***
GROWTH	?	0.005	0.76	0.003	0.41
YEAR DUMMY		YES		YES	
INDUSTRY DUMMY		YES		YES	
R-Square		0.508		0.518	
N		345		345	

Panel B: The dependent variable is negative discretionary accruals (DA<0)

Variable	Pred. sign	Coefficient	t-value	Coefficient	t-value
INTERCEPT	?	-0.131	-1.62	-0.130	-1.60
SOE	-			0.004	0.30
MARKETI	-	-0.003	-1.32	-0.003	-1.12
RETENTION	-	0.370	2.68**	0.373	2.67**
AGE	-	-0.003	-1.57	-0.003	-1.50
AUDITOR	-	0.019	1.36	0.019	1.36
REPUTATION	-	0.001	0.07	0.001	0.08
SIZE	-	-0.086	-2.48**	-0.085	-2.41**
LEV	?	0.008	2.12**	0.008	1.99*
CFOA	-	-0.313	-4.26***	-0.312	-4.23***
GROWTH	?	-0.046	-3.55***	-0.046	-3.55***
YEAR DUMMY				YES	
INDUSTRY DUMMY				YES	
R-Square				0.078	
N		78		78	

Notes: This table reports the regression results of the following model:

$$DA_j = \alpha_0 + \alpha_1 SOE_j + \alpha_2 MARKETI_j + \alpha_3 RETENTION_j + \alpha_4 AGE_j$$
$$+ \alpha_5 AUDITOR_j + \alpha_6 REPUTATION_j + \alpha_7 SIZE_j + \alpha_8 LEV_j + \alpha_9 CFOA_j$$
$$+ \alpha_{10} GROWTH_j + \sum_{i=1}^{6} \delta_i YEAR_{i,j} + \sum_{i=1}^{16} \gamma_i INDUSTRY_{i,j} + \varepsilon_j$$

Panel A presents the regression results using positive discretionary accruals (DA>0) as the dependent variable. Panel B reports the results using negative discretionary accruals (DA<0) as the dependent variable. DA is abnormal accruals calculated by using the Modified Jones model. SOE is a dummy variable that equals one if a firm's ultimate owners are state asset management bureaus, the central government or local governments and zero if a firm's ultimate owners are individuals or private investors. MARKETI is the marketization index for each province or provincial level city constructed by Fan et al (2009). RETENTION is the ownership retention, *i.e.,* 1-(number of public shares offered/number of total shares offered). AGE equals log (1+firm age), where firm age is calculated as the difference between the IPO issue year and the founding year. AUDITOR is a dummy variable that equals one if the firm's auditor belongs to the Big 8 auditing firms and zero otherwise. REPUTATION is a dummy variable taking value one if the market share of an IPO firm's lead underwriter is within top 20 each year and zero otherwise. This variable is a proxy for the lead underwriter's reputation. SIZE is the natural logarithm of total assets measured at the beginning of the year. LEV is leverage ratio measured as total liabilities divided by total assets. CFOA is cash flow on assets defined as operating cash flow divided by average total assets. GROWTH is growth rate in sales measured as the change of sales divided by sales of last year.

***, **, * represent significance at the 1%, 5%, and 10% levels, respectively.

Table 6. Path analysis for the direct and mediated earnings management effects of ownership type (DA>0)

	Coefficient	t-value	Coefficient	t-value
r[SOE, DA]	-0.170	3.18	-0.170	3.18
Direct path				
p[SOE, DA]	-0.093	-1.63	-0.057	-1.03
percentage	*54.73%*		*33.51%*	
Mediated path (PI)				
p[SOE, PI]	0.312	6.10	0.312	6.10
p[PI, DA]	-0.141	-4.55	-0.105	-3.08
Total mediated path	-0.044		-0.033	
percentage	*25.91%*		*19.28%*	
Mediated path (CEOSH)				
p[SOE, CEOHS]	-0.350	-6.92	-0.350	-6.92
p[CEOHS, DA]	0.094	1.65	0.073	1.28
Total mediated path	-0.033		-0.025	
Percentage	*19.36%*		*14.99%*	
Mediated path (LTS)				
p[SOE, LTS]			0.316	6.18
p[LTS, DA]			-0.173	-4.23
Total mediated path			-0.055	
percentage			*32.22%*	

Notes: This table reports the path analysis of the links between ownership type and firms' earnings management behaviors in the IPO setting. These links include a direct path and three mediated paths (by PI, by CEOSH and by LTS).
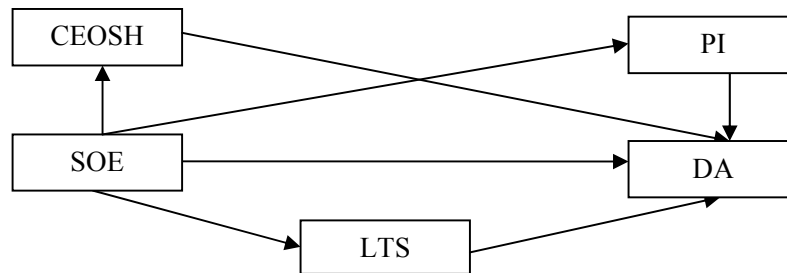
where DA is the discretionary accruals estimated by using the Modified Jones model. SOE is a dummy variable that equals one if a firm's ultimate owners are state asset management bureaus, the central government or local governments and zero if a firm's ultimate owners are individuals or private investors. PI is a dummy variable taking value one if an IPO firm belongs to the protected industries, including mining, petrochemicals, utilities and transportation, and zero otherwise. CEOSH is a dummy variable that equals one if an IPO firm's CEO holds its shares of stock at the year of IPO and zero otherwise. LTS is a

proxy for a firm's access to the banking capital, defined as the ratio of long-term liabilities to the total liabilities.

Table 7. Conditional conservatism and abnormal accruals estimated by using the Ball and Shivakumar's (2008) model for IPO firms

Panel A: Conditional conservatism for IPO firms

Variable	Pred. sign	Event year 0		Event year -1		Event year -2	
		Coefficient	t-value	Coefficient	t-value	Coefficient	t-value
INTERCEPT	?	0.086	10.74***	0.084	11.03***	0.068	4.97***
CFO	-	-0.420	-9.27***	-0.422	-9.27***	-0.421	-6.40***
ΔSALES	+	0.039	3.36***	0.054	6.53***	0.060	2.90***
PPE	-	-0.045	-3.32***	-0.073	-4.79***	-0.050	-2.43**
DCFO	?	0.031	2.43**	0.040	2.21**	0.066	3.28***
DCFO*CFO	+	-0.581	-8.20***	-0.559	-5.03***	-0.617	-7.81***
R-Square		0.717		0.534		0.554	
N		437		437		312	

Panel B: Discretionary accruals for IPO firms

Year	-2	-1	0	1	2
Discretionary accruals (DA)					
Mean	0.064	0.080	0.073	0.054	0.039
t-Statistic	**9.467**	**14.376**	**8.542**	**4.560**	**3.587**
Median	0.060	0.068	0.075	0.032	0.025
Sign test (p-value)	**<0.01**	**<0.01**	**<0.01**	**<0.01**	**<0.01**
No. of observations	312	437	437	375	308

Notes: Panel A reports the regression results to estimate the conditional conservatism using the following Ball and Shivakumar's (2008) model:

$$\frac{TA_{i,t}}{\text{Assets}_{i,t-1}} = \alpha_0 + \alpha_1 \frac{CFO_{i,t}}{\text{Assets}_{i,t-1}} + \alpha_2 \frac{\Delta Sales_{i,t}}{\text{Assets}_{i,t-1}} + \alpha_3 \frac{PPE_{i,t}}{\text{Assets}_{i,t-1}} + \alpha_4 DCFO_{i,t} + \alpha_5 DCFO_{i,t} * \frac{CFO_{i,t}}{\text{Assets}_{i,t-1}} + \varepsilon_{i,t}$$

where $TA_{i,t} = OPE_{i,t} - CFO_{i,t}$, where $OPE_{i,t}$ is the earnings before extraordinary items (operating earnings) and $CFO_{i,t}$ is the operating cash flows for firm i in year t; $\Delta SALES_{i,t}$ is the change in total sales; $PPE_{i,t}$ is the value of net fixed assets; $Assets_{i,t}$ represents the total assets at the beginning of year t; $DCFO_{i,t}$ takes value 1 if $CFO_{i,t} < 0$, and 0 otherwise.

Panel B reports the discretionary accruals estimated by using the following Ball and Shivakumar's (2008) model:

$$\frac{TA_{i,t}}{\text{Assets}_{i,t-1}} = \alpha_0 + \alpha_1 \frac{CFO_{i,t}}{\text{Assets}_{i,t-1}} + \alpha_2 \frac{\Delta Sales_{i,t}}{\text{Assets}_{i,t-1}} + \alpha_3 \frac{PPE_{i,t}}{\text{Assets}_{i,t-1}} + \alpha_4 DCFO_{i,t} + \alpha_5 DCFO_{i,t} * \frac{CFO_{i,t}}{\text{Assets}_{i,t-1}} + \varepsilon_{i,t}$$

where, the variables are defined above, and the parameters are estimated separately for each industry and each year. Non-discretionary accruals (NDA) and discretionary accruals (DA) for our sample firm *i* in year *t* are calculated as follows, by using the estimated coefficients obtained above:

$$NDA_{i,t} = \hat{\alpha}_0 + \hat{\alpha}_1 \frac{CFO_{i,t}}{Assets_{i,t-1}} + \hat{\alpha}_2 \frac{\Delta SALES_{i,t}}{Assets_{i,t-1}} + \hat{\alpha}_3 \frac{PPE_{i,t}}{Assets_{i,t-1}} + \hat{\alpha}_4 DCFO_{i,t} + \hat{\alpha}_5 DCFO_{i,t} * \frac{CFO_{i,t}}{Assets_{i,t-1}}$$

$$DA_{i,t} = \frac{TA_{i,t}}{Assets_{i,t-1}} - NDA_{i,t}$$

[***], [**], [*] represent significance at the 1%, 5%, and 10% levels, respectively.

Table 8. Regression analysis of the relation between different types of SOEs and earnings management magnitude in the year of IPO

Variable	Pred. sign	DA>0 Coefficient	DA>0 t-value	DA<0 Coefficient	DA<0 t-value
INTERCEPT	?	0.452	4.53***	0.184	0.64
CSOE		-0.008	-0.72	-0.020	-0.53
MARKETI	?	-0.003	-1.00	-0.005	-1.18
RETENTION	-	-0.030	-0.72	0.438	2.11*
AGE	-	-0.001	-0.70	-0.006	-1.22
AUDITOR	-	0.019	1.92*	0.121	2.74**
REPUTATION	-	0.004	0.56	0.069	3.65***
SIZE	-	-0.013	-2.64***	-0.146	-2.68**
LEV	?	-0.056	-1.52	-0.001	-0.09
CFOA	-	-0.720	-11.13***	-0.583	-4.19***
GROWTH	?	0.035	1.59	-0.043	-1.77
YEAR		YES		YES	
INDUSTRY		YES		YES	
R-Square		0.566		0.005	
N		129		39	

Notes: This table reports the regression results of the following model:

$$
\begin{aligned}
DA_j = {} & \alpha_0 + \alpha_1 CSOE_j + \alpha_2 MARKETI_j + \alpha_3 RETENTION_j + \alpha_4 AGE_j \\
& + \alpha_5 AUDITOR_j + \alpha_6 REPUTATION_j + \alpha_7 SIZE_j + \alpha_8 LEV_j + \alpha_9 CFOA_j \\
& + \alpha_{10} GROWTH_j + \sum_{i=1}^{6} \delta_i YEAR_{i,j} + \sum_{i=1}^{16} \gamma_i INDUSTRY_{i,j} + \varepsilon_j
\end{aligned}
$$

where dependent variables , DA, is the discretionary accruals estimated by using the Modified Jones model. CSOE is a dummy variable that equals one if a firm's ultimate owners are state asset management bureaus, or the central government; zero if a firm's ultimate owners are local governments. MARKETI is the marketization index for each province or provincial level city constructed by Fan et al. (2009). RETENTION is the ownership retention, 1-(number of public shares offered/number of total shares offered). AGE equals log (1+firm age), where firm age is calculated as the difference between the IPO issuing year and the founding year. AUDITOR is a dummy variable that equals one if the firm's auditor belongs to the Big 8 auditing firms and zero otherwise. REPUTATION is a dummy variable taking value one if the market share of an IPO firm's lead underwriter is within top 20 in the IPO year and zero otherwise. This variable is a proxy for the lead underwriter's reputation. SIZE is the natural logarithm of total assets measured at the beginning of the year. LEV is leverage ratio measured as total liabilities divided by total assets. CFOA is cash flow on assets defined as operating cash flow divided by average total assets. GROWTH is the growth rate in sales, measured as the change of sales divided by total sales of last year.
    ***, **, * represent significance at the 1%, 5%, and 10% levels, respectively.