When Does Internal Control over Financial Reporting Curb Resource Extraction? Evidence from China[*]

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Abstract

We examine whether the strength of internal control over financial reporting (internal control) reduces the expropriation of resources from the firm by managers and controlling shareholders. Although we have ample evidence from prior literature that internal controls reduce errors in financial reports, it is less clear that they can curb resource extraction, as management may fail to implement or simply override these controls. We exploit a rich Chinese dataset to distinguish between the design and implementation of internal controls. On average we find some evidence that internal controls curb resource extraction, but further investigation reveals that many firms with documented internal controls fail to implement these controls, or simply override them (i.e., form over substance), and these firms' controls do not curb resource extraction. We find that internal controls are most likely to be form over substance when they are policy driven instead of voluntarily adopted, and also when there are more severe agency problems. Although the analysis is conducted with Chinese data, the spirit of our findings should generalize to other settings. In particular, our findings suggest that management can use "window dressing" of internal control procedures while still engaging in undesirable behaviors.

1.   Introduction

We examine the relation between the strength of internal control over financial reporting (hereafter internal control) and resource extraction.[1] A number of studies provide evidence on the expected benefits of effective internal controls, such as higher quality financial reporting (e.g., Doyle et al. 2007; Ashbaugh-Skaife et al. 2008) and more efficient operational and investment activities (Feng et al. 2009; Cheng et al. 2013; Feng et al. 2015; Cheng et al. 2018). Much of the improvement in these studies stems from the correction of *unintentional* errors. However, little evidence is available on whether internal controls curb intentional resource extraction from the firm. Although safeguarding assets is one of the goals of establishing internal controls, it is possible managers can fail to implement or override internal controls.

We investigate if internal controls curb resource extraction using a rich Chinese dataset. Our setting is desirable for two reasons. First, in the U.S., internal control data is limited to a binary "effective" or "ineffective" indicator that combines the design of internal controls with their implementation (e.g., if a control is identified as overridden, the indicator shows it as ineffective regardless of its design).[2] In contrast, our Chinese internal control dataset provides a continuous measure of the quality of internal controls, and also allows us to distinguish between the design and implementation of internal controls.[3] Second, resource extraction is relatively

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[1] Internal control over financial reporting comprises the processes and procedures established by management to maintain records that accurately reflect the firm's transactions, and covers asset representation, including asset misappropriation. Many of the same policies, procedures, and controls that lead to effective internal controls over financial reporting therefore also affect firm resources and operations. We focus on internal controls over financial reporting rather than all internal controls because internal controls over financial reporting are the focus of Section 404 of the Sarbanes-Oxley Act and the subsequent regulations within numerous countries, including China. Thus, our study provides evidence on whether these regulations can be effective in curbing resource extraction.
[2] Regarding the binary nature of U.S. data, only 7.2% of firm-year observations disclose ineffective internal controls in the U.S. sample examined in Feng et al. (2015). The other 92.8% simply disclose that they maintain effective internal controls, whereas our data exhibits variation in internal control strength across the entire population.
[3] As we discuss in greater detail later, these data represent a score of the design but not the implementation of internal controls, allowing us to separate form over substance, whereas U.S. data pool these two facets. We use a

pervasive in China with several measurable proxies, which increases the power of our tests. Research in the U.S. on resource extraction is limited to indirect proxies such as insider trading profits (Skaife et al. 2012) or SEC enforcement actions (Donelson et al. 2017).[4] Although our research is conducted in China, we expect our results to generalize to the U.S. and other settings, where internal controls can also be ignored or overridden. Third, given the prominent role of China in the global economy, China is an interesting and important country to study. China is the second largest economy based on the most recent GDP ranking by World Bank (2017), and foreign direct investment has contributed significantly to the economic growth in China.[5] Thus, evidence on whether governance mechanisms such as internal controls are effective in curbing resource extraction would shed light on the risk associated with foreign investment in China.

We define resource extraction as a form of corporate abuse in which managers or controlling shareholders expropriate resources from the firm and therefore minority shareholders. We consider three types of resource extraction in our study: (1) the payment of private consumption expenses with firm resources (e.g., extravagant dinners or gambling expenses; Cai et al. 2011), (2) embezzlement or the receipt of bribes for self-enrichment—for example, CEOs

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proprietary database that tracks listed Chinese firms' internal control information from financial statements, filings to China Securities Regulatory Commission, government documents, and press releases (Chen et al. 2017). The database covers 99 percent of all public firms in China from 2007 through 2011 and allows us to measure the strength of internal control within the COSO framework. Specifically, we use the data from Chen et al. (2017) who collect 144 items related to various aspects of firms' internal controls, which we discuss extensively in Section 3 and Appendices A and B. We pare down the 144 items identified in Chen et al. (2017) to focus on internal controls over financial reporting (44 items). We corroborate our measure by confirming prior research that internal control strength is negatively associated with earnings management, measured by the incidence of financial statement restatements and the absolute value of discretionary accruals.

[4] Shu, Wang, Zhao, and Zheng (2015) also provide evidence that internal controls constrain resource extraction (or corruption) within Chinese state-owned firms. A key difference between the two studies is the measurement of internal control strength. Shu et al. (2015) utilize the Shenzhen DIBO Internal Control Database which does not measure a company's internal control procedures and policies directly, but instead evaluates the company's overall internal control efficiency based on the firm's operational outcomes, such as financial reporting quality and operating performance. An advantage of the internal control data we use is that it allows us to distinguish between the design of internal controls and the implementation of internal controls, facilitating conclusions about substance versus form.

[5] In fact, over half of China's exports and imports, 30 percent of industrial output, and 22 percent of industrial profits come from foreign invested enterprises (World Bank 2010).

are often persuaded through bribes to contract with inferior suppliers offering higher-priced or lower-quality inventory relative to other suppliers, and (3) the tunneling of cash from the firm through loans, which are generally not repaid (Jiang et al. 2010).[6]

We hypothesize that stronger internal controls will help mitigate the risk of resource extraction as a stricter control and monitoring environment would make it more difficult for top management or controlling shareholders to engage in activities that are harmful to minority shareholders. For example, the creation and implementation of a policy for which expenses should be reimbursed would reduce the likelihood of managers and controlling shareholders siphoning cash from corporate accounts. If, however, managers either fail to implement or are able to override the internal control policies and procedures, the internal control system would not effectively deter resource extraction, and would merely be window dressing (form over substance).

We study Chinese firms with available data listed on the Shanghai or Shenzhen Stock Exchanges, resulting in a sample of 8,497 firm-year observations from 2007 through 2011. We identify instrumental variables and then use a two-stage least-squares (2SLS) estimation procedure to mitigate concerns of correlated omitted variables (such as management integrity) affecting both the choice to establish internal controls and the choice to extract resources. We find some evidence that strong internal controls appear to curb both the extraction of resources through expense reimbursement and loans in the full sample, but find no evidence that internal controls curb embezzlement or the receipt of bribes to contract with inferior suppliers on

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[6] Jiang et al. (2010) document a decline in tunneling beginning in 2006. Although the magnitude of tunneling has declined, we continue to find evidence of tunneling with a mean of 2.7% of total assets. In addition, we complement the tunneling measure in Jiang et al. (2010) with the amount of loans from the listed firm to disclosed related parties. Finally, we provide evidence that tunneling negatively influences firms' future performance, consistent with our tunneling measures capturing tunneling behavior that is beyond legitimate operating activities. We discuss this issue further in Section 3.

average.

We next explore when internal control procedures exist, but are not followed or enforced, which we describe as window-dressing, or form over substance. We expect more window dressing when internal controls are policy driven, rather than voluntarily adopted. In our setting, we proxy for this difference by the ownership structure of the firm, where state-owned enterprises experienced political pressure to establish strong internal controls.[7,8] We expect that internal controls with form but not substance will be less effective at curbing resource extraction. Consistent with window dressing, we find that, across all the resource extraction measures, internal control strength is significantly less effective at curbing resource extraction within state-owned firms relative to non-state-owned firms.[9]

A second setting where internal controls could be more likely to be window dressing is when agency problems are more severe. A key agency problem in China is the conflict of interest between controlling and minority shareholders. For example, in our sample, the top shareholder owns about 36 percent of the company, on average, whereas the next four largest shareholders own about 10 percent combined. Among stated-owned firms, the government is not only the controlling shareholder but also has power over other shareholders. Thus, we examine the effect

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[7] An important ownership characteristic of China's listed firms is state ownership, where the government is the controlling shareholder and appoints the top management team. State-owned enterprises (SOEs) comprise more than half of all firms listed on China's stock exchanges (Piotroski et al. 2015). Managers of state-owned enterprises tend to be former government officials who face multiple—and potentially conflicting—objectives (e.g., political incentives versus incentives to maximize firm value).

[8] Providing some evidence of this, we find that economic determinants of internal control strength have lower explanatory power for internal control strength among SOEs relative to non-SOEs (Appendix D). We also find that the relation between internal control strength and earnings management is weaker among SOEs relative to non-SOEs. Finally, consistent with window dressing to please the government, we find that among SOEs, the establishment of strong internal control policies and procedures is positively associated with future CEO promotions (Section 5).

[9] This finding also allows us to mitigate concerns that it is the crackdown on resource extraction by the Chinese government, rather than the internal controls per se, that have curbed resource extraction. If it were solely the governmental oversight curbing resource extraction, we would expect it to either be pervasive across SOEs and non-SOEs, or be concentrated among SOEs, where the government has the greatest influence. Instead we find that internal controls curb resource extraction more among non-SOEs. We also include year fixed effects to further control for China's recent focus on curbing corruption.

of agency problems using only non-state-owned firms. It is likely that controlling shareholders within non-state-owned enterprises can exert significant influence over the implementation of the internal control system, and thus internal controls may not curb resource extraction when the agency problems are more severe. We proxy for the extent of agency conflicts between controlling and minority shareholders with the balance of power among the major shareholders (where greater balance is reflected with a greater proportion of shares owned by the second to fifth largest shareholders relative to the largest shareholder). We find that internal controls are more effective in curbing resource extraction when there is a greater balance of power among the major shareholders. Taken together, our findings are consistent with the notion that within some firms (in our study SOEs and those non-SOEs with more severe agency problems), internal controls may be more easily over-ridden and thus insufficient to curb resource extraction, even if present.

We conclude our analysis with a number of additional tests. For example, we find evidence that our measures of resource extraction are negatively associated with future operating performance, corroborating the validity of our proxies for resource extraction. We find a significant negative association between lagged internal control over financial reporting strength *(ICFRS)* and our resource extraction measures, but no association between lagged resource extraction measures and *ICFRS*, mitigating the concern that our results are driven by managers choosing weaker internal controls in order to misappropriate assets.

Taken together, our findings have broad implications for the literatures of internal control and regulation. Our results corroborate the notion that the effectiveness of internal controls relies heavily on enforcement by management, and thus requirements to maintain certain internal control procedures will not be unilaterally effective. In particular, our results highlight that

internal controls are significantly less effective in curbing resource extraction when the likelihood of management override is high. This finding is important given the recent wave of internal control regulation globally. In fact, many countries adopted similar internal control regulations following the Sarbanes-Oxley Act in the U.S. (Kim and Lu 2013; Coates and Srinivasan 2014). Our findings suggest that mandated internal controls will not necessarily curb intentional misreporting or resource extraction.

2.   Background and predictions

Under the COSO framework, internal control over financial reporting (herein internal control) is comprised of the processes and procedures established by management to maintain records that accurately reflect the firm's transactions. Researchers have examined various benefits of effective internal controls. Prior research has shown that effective internal controls reduce the unintentional errors in financial reporting (Ashbaugh-Skaife et al. 2008), leading to more accurate management forecasts as managers use more accurate financial inputs to form their forecasts (Feng et al. 2009), and improving investment decisions (Cheng et al. 2013) as well as firm operating efficiency and firm performance (Feng et al. 2015; Cheng et al. 2018). These studies rely on the notion that the financial reports generated from a system with ineffective internal controls contain errors (often unintentional errors), and thus the information that management uses to create financial statements and make decisions is faulty.

There is limited evidence, however, on whether internal controls reduce rent extraction. Donelson et al. (2017) examine the association between internal control weaknesses and financial reporting fraud, but do not examine resource extraction. Skaife et al. (2013) provide some evidence of rent extraction in that the profitability of insider trading is greater in firms with ineffective internal controls. They suggest that a weak internal control environment provides managers with an information advantage, enabling them to profit from their private information

by selling before stock price declines. They do not provide evidence, however, of the more direct resource extraction we consider. In particular, although selling personal shares at a profit is evidence of opportunism, it is both more indirect and less costly to shareholders than the more egregious and direct resource extraction we examine.[10] This is especially salient given Skaife et al. (2013) find only limited evidence of managers managing earnings before selling their personal shares. The focus of our study is whether internal controls reduce the extent of resource extraction, which is an escalated form of managerial rent seeking behavior that represents a much more direct and quantifiable cost to shareholders.

The limited research on the relation between internal controls and resource extraction in the U.S. is not surprising. Strong and well-enforced investor protection in the U.S. constrains the ability of insiders to acquire private control benefits (Leuz et al. 2003; La Porta et al. 2000); as a result, U.S. firms exhibit significantly less resource extraction, on average, than firms in countries with poor investor protection. It follows that there is no strong pattern of, or evidence on, how insiders engage in resource extraction in the U.S., making it difficult to measure resource extraction.

Using a sample of Chinese firms allows us to overcome these limitations.[11] Allen et al. (2005) provide evidence that among seven developing countries, China's corruption index is ranked as the most severe.[12] Thus, corrupt behavior by controlling shareholders and managers is

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[10] As an example, the CFO of South Airline Co., Liming Chen, tunneled cash from the company to related parties using numerous loans. For instance, he took a corporate loan of 30 million Chinese Yuan from China CITIC Bank, and then moved the money in the form of other receivables to a company controlled by his friend, Zhuangwen Yao. To return the favor, Zhuangwen Yao, gave Chen a BMW worth 700,000 Chinese Yuan and a house worth 2.25 million Chinese Yuan as gifts. In addition, Chen took bribes of over 53 million Chinese Yuan from various sources to enter into various contracts.

[11] China has particularly weak minority investor protection, in part because China's legal system lacks enforcement. According to the 2014 report by Word Bank Group, China was ranked 132 out of 189 countries in terms of the strength of minority shareholder protection.

[12] These seven countries are: China, India, Pakistan, South Africa, Argentina, Brazil, and Mexico. Allen et al. (2005) base their inferences on the International Country Risk Guide's assessment of the corruption in government. Lower

wide-spread in China (Jiang et al. 2010). This resource extraction is also measurable. Prior research provides evidence on common approaches through which controlling shareholders or managers expropriate resources from minority shareholders in China (Jiang et al. 2010; Cai et al. 2011). Therefore, we are able to measure specific resource extraction such as the payment of lavish entertainment expenses and other private consumption expenses with firm resources, the ex post revelation that managers accepted bribes (for example to contract with inferior suppliers) or embezzled from the firm, or the tunneling of cash from the firm through loans.

We predict that it is more difficult for managers and controlling shareholders to extract resources from the firm in a stricter internal control environment. For example, with respect to private consumption by management, it is possible that requiring separate personnel to approve versus pay for invoices (i.e., segregation of duties) would curb much of the inappropriate reimbursement of private consumption expenses. In addition, beyond the establishment of segregation of duties, routine reviews of expense reports or maintaining a clear reimbursement policy would likely further reduce corrupt behavior of reimbursing items used for personal reasons or simply faking receipts to extract resources. As another example related to accepting bribes, stricter purchase order authorization would mitigate managers' ability to contract with inferior suppliers or at unreasonable prices. Finally, the common technique of issuing loans to transfer cash (i.e., tunneling) would be curbed by the requirement of a loan approval process that spells out interest and repayment terms. Related controls would trigger personnel to follow up on expected interest and principal payments that have not been received. Therefore, we expect internal controls to reduce the extent of managers' and controlling shareholders' rent extraction behavior. We state our first hypothesis as the following, in the alternative form.

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scores suggest that "high government officials are likely to demand special payments" and "illegal payments are generally expected throughout lower levels of government" in the form of "bribes connected with import and export licenses, tax assessment, policy protection, etc."

HYPOTHESIS 1.   *Strong internal controls reduce resource extraction from the firm.*

Even in the presence of strong internal controls, managers or controlling shareholders may fail to implement the controls or, alternatively, override the controls. As a result, even a well-designed internal control system may not be effective in curbing resource extraction behavior (i.e., form over substance). Thus, we develop two additional hypotheses that examine cross-sectional variation in the effect of internal controls on resource extraction.

Our second hypothesis examines whether the relation between internal control strength and resource extraction varies with whether the internal controls were more likely to be voluntarily adopted or policy driven. To proxy for the construct of policy driven, we examine whether the firm is state-owned. As we describe below, we expect that state-owned enterprises (i.e., SOEs) in China receive more pressure from the government to improve internal controls, and thus these controls are more likely to be policy driven than voluntary. If the establishment of internal controls is policy driven, managers and boards might adopt boilerplate internal controls, and might not follow or enforce these policies and procedures.

As of 2010, sixty-five percent of listed firms in China were SOEs, accounting for 89 percent of total market capitalization in China (Piotroski et al. 2015). The government is the controlling shareholder of SOEs and appoints key executives such as the CEO and the Chairman of the Board. As a result, the top managers of SOEs have multiple objectives. In addition to profit maximization, they might also aspire to improve employment rates or build relationships with government superiors; these other objectives could cause significant inefficiencies for the firm (see Piotroski and Wong 2012; Piotroski et al. 2015).

Following the implementation of the Sarbanes-Oxley Act in the U.S., the Chinese government began to emphasize improving publicly listed firms' internal controls. In June 2005, the Ministry of Finance, the China Securities Regulatory Commission (CSRC), and the

State-Owned Assets Supervision and Administration Commission (SOASAC) jointly issued the "Report on Learning from Sarbanes-Oxley to Strengthen Our Listed Firms' Internal Controls." On March 5, 2006, Premier Jiabao Wen emphasized during the Fourth Plenary Meeting of the Tenth People's Congress that "we need to introduce and learn from other countries' experiences in corporate governance, standardize governance mechanisms, and improve internal control systems."

Although SOEs and non-SOEs were both required to comply with the same internal control requirements for listed firms, SOEs were under greater pressure to establish internal controls. The central government wanted SOEs to be "role models" to benefit the social goals of the government. Following Premier Wen's address, a series of governmental guidelines were issued that specifically targeted SOEs. For example, the guidelines issued by SOASAC state that central-government-controlled enterprises should develop internal control systems and prevent resource extraction. Moreover, the "Basic Standards for Large and Medium SOEs on Developing Modern Enterprises System and Strengthening Corporate Governance" issued by the General Office of the State Council of PRC states the following:

> "Those state-owned enterprises classified as major enterprises by the central and local governments are required to identify deficiencies according to the Standards and make improvements to comply with the Standards. All other enterprises should also follow the Standards and strive to meet all the requirements."

Further, the "State-Owned Assets Law of PRC" explicitly states that SOEs should consider internal control strength when evaluating the performance of managers. Thus, SOEs were under pressure from the government to establish certain types of internal control procedures, which was compounded by managers of the SOEs (current or former government bureaucrats) having incentives to maintain strong political connections with government officials.

In addition, prior research has shown that the level of executive compensation of SOEs is

significantly lower than that of non-SOEs (Chen et al. 2009). Thus, despite the pressure to establish strong internal controls, managers of SOEs likely still have strong incentives to extract resources from firms for their personal benefit. If SOEs adopt a boilerplate list of internal control procedures to satisfy government regulators but do not actually implement or enforce these internal control policies and procedures, such policy-driven internal controls may not be effective in achieving the stated goal of reducing resource extraction.[13]

In sum, although management of SOEs have incentives to adopt strong internal controls on paper, they may be less likely to follow and enforce internal controls because they likely have fewer incentives to actually realize the benefits of these internal control practices. For example, they are generally less focused on profit-maximization, and the receipt of bribes and other favors might be a key perquisite, and thus.[14] We thus hypothesize that policy-driven adoptions of internal control policies and procedures are less effective in reducing resource extraction:

> HYPOTHESIS 2. *Strong internal controls are less effective at curbing resource extraction when they are policy driven relative to when they are voluntarily adopted.*

We use the adoption of internal controls within SOEs to proxy for policy-driven adoptions and the adoption of internal controls within non-SOEs to proxy for voluntary adoptions. We conduct several tests to assess the validity of this proxy.[15]

In the above discussion, we assume that the Chinese government is not fully aware of the actual effectiveness of internal controls among SOEs. Although it is plausible for the Chinese

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[13]As suggested in Lin et al. (1998), policy burdens reduce the efficiency of SOEs' operations. In addition, as argued in Piotroski and Wong (2012), greater state involvement in an economy creates incentives for financial reporting opacity to hide the rent-seeking activities of politicians and related parties.

[14] As an example, Zhaolu Zhou, the CEO of Yunnan Copper Co., a state-controlled enterprise with a market capitalization of 14 billion Chinese Yuan, received at least 19 million Chinese Yuan in bribes to award certain contracts at the expense of shareholders. Specifically, Zhao acknowledged in his self-reflection report that he had too much power and was able to override the internal control systems within the firm.

[15] In particular, we document that SOEs tend to have stronger internal controls than non-SOEs, after controlling for known determinants of internal controls. This result is reported and discussed in Appendix D. In Section 5, we show that, among the SOEs, internal control strength is positively associated with the likelihood of CEOs receiving promotions, providing further support that the adoption of internal controls within SOEs is likely policy driven.

government to verify that internal control procedures were established, it is difficult and costly to continuously monitor the implementation of these procedures. Nevertheless, if the Chinese government is effective in engaging in such monitoring activities, and the monitoring from the Chinese government incentivizes SOEs to implement strong internal controls that would reduce resource extraction, this would increase the tension in H2 and we would observe that strong internal controls are more effective at curbing resource extraction among SOEs than non-SOEs.

Our third hypothesis examines how the severity of agency problems influences the effect of internal controls on resource extraction. Prior research has suggested that the primary agency problem in China is the risk that controlling shareholders expropriate resources at the cost of minority shareholders (Jiang et al. 2010). To the extent that the controlling shareholder influences the implementation of the internal control system (for example, if they are in a managerial role or serve on the board), the internal control system will be less effective at curbing resource extraction. Thus, we explore whether internal controls are more effective in curbing resource extraction when agency problems are less severe.

According to the government guidelines, the Board of Directors is in charge of establishing internal control systems, and management is expected to implement internal controls. Among state-owned firms, the government is the controlling shareholder with clear power over other shareholders. Among non-SOEs, however, there is more variation in the extent of agency conflicts between the controlling shareholder and other shareholders. As previously noted, the largest shareholder owns an average of 36 percent of the shares, whereas the next four shareholders own 10 percent combined. When there are more shares owned by non-controlling major shareholders relative to the controlling shareholder, these non-controlling major shareholders are more likely to have seats on the board and generally carry more weight at board

meetings and other interactions that shape internal control. As a result, the increased monitoring would constrain controlling shareholders' self-serving behavior.[16] It follows that in these instances, the establishment of internal controls is more likely a profit-maximizing decision and the controls in place are less likely to be window dressing (i.e., simply to comply with the internal control requirements for listed firms), but instead followed and enforced. In addition, with greater monitoring from other large shareholders, controlling shareholders and management are likely less able or willing to override these controls. Therefore, we expect internal controls to be more effective at curbing resource extraction when there are relatively fewer agency problems.

HYPOTHESIS 3. *Strong internal controls are more effective at curbing resource extraction when agency problems are less severe among non-SOEs.*

We use the balance of shareholder power among the major shareholders to proxy for the severity of agency problems.

3. Data, sample, and resource extraction measures
Internal control index and sample selection

Our measure of internal control over financial reporting strength is based on the underlying data used in Chen et al. (2017). These data cover 99% of all Chinese listed firms from 2007 through 2011 and indicate whether 144 specific firm features exist within each firm-year. These 144 firm features each fall within the five main aspects of internal control proposed by COSO: (1) Control Environment, (2) Risk Assessment, (3) Control Activities, (4) Information and Communication, and (5) Monitoring (see Appendix A).[17] As our focus is internal control

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[16] To the extent that non-controlling major shareholders collude with the controlling shareholder to expropriate resources from minority shareholders, we will not find evidence consistent with our hypothesis.

[17] These data were collected by the research team led by Hanwen Chen, supported by China NSF grant #71332008, and Ministry of Education Social Science Major Research grant #10JJD630003. These data are considered the most comprehensive and authoritative detail on internal control by Chinese regulators and security market participants. For example, on June 11, 2010, all three of the most authoritative Chinese financial newspapers, the *China Securities Journal, Shanghai Securities News*, and *Securities Times,* featured articles introducing the internal control

over financial reporting, we focus on the existence of 44 of the 144 firm features collected for the initial index (see Appendix B). Each of the 44 items receives a value between zero and one, which we then average within each control aspect (three-digit level in Chen et al. 2017).[18] Finally we aggregate the values from each control aspect and calculate an average score ranging from zero to one (*ICFRS*). See Appendix B for a more detailed description of the calculation of our ICFRS score. Appendix C provides the definitions for all of our variables.

We present the sample selection procedure in Table 1, Panel A. Our sample begins with all Chinese firms listed on the Shanghai and Shenzhen stock exchanges from 2007 through 2011. We remove 164 firm-years in the financial industry as financial firms are under different internal control requirements issued by the People's Bank of China and the China Securities Regulatory Commission. Of the remaining firms, we remove 121 firm-year observations without internal control data and 31 firm-years with missing data on whether the firm is controlled by the government, resulting in a sample of 8,497 firm-year observations. We obtain the information on firms' stock prices, company financials, industry classification, ownership structure, auditors, and largest shareholders from the Chinese Stock Market and Accounting Research (CSMAR) database. As shown in Panel B of Table 1, our sample is evenly distributed across our sample period, and 56% of our sample firms are state-owned enterprises, i.e., the controlling shareholders are either the central or local government, or their agencies.

[Table 1]

We validate our *ICFRS* measure in two ways. We first explore the underlying

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index developed based on the data. The researchers who developed the internal control index annually publish the top 100 firms that have the highest internal control scores in the *China Securities Journal*. Deloitte highlighted this index on the website of its Corporate Governance Center; and the Public Company Monitoring Division of the Shanghai Stock Exchange also acknowledged that the index "has significant reference values for our efforts of monitoring internal control and corporate governance."

[18] Forty three of the 44 items receive a score of one if a certain feature is in existence and zero otherwise; the one remaining item receives a standardized score ranging from zero to one.

determinants of *ICFRS* confirming that it exhibits expected associations with previously examined determinants of internal control strength (e.g., Doyle et al. 2007b). We also confirm the association between *ICFRS* and financial reporting quality documented in prior research (e.g., Doyle et al. 2007a; Chen et al. 2016) to further validate our internal control measure. Appendix D reports the results of these validity tests. For example, as reported in Appendix D, Table D2, *ICFRS* is negatively associated with the absolute value of discretionary accruals and the likelihood of restatements for both SOEs and non-SOEs. These associations help to mitigate concerns about measurement error in our proxy of ICFR strength. In particular, although some of the internal control assessments require subjectivity, and others could reflect window dressing by management, both of these measurement errors should add noise and thus lower the power of our tests. That we find the expected associations, on average, with both determinants and known consequences of internal control strength mitigates this measurement error concern.

Measures of resource extraction

Prior research has shown that corporate executives in China often misuse corporate funds for their private consumption such as dining, travel and entertainment. Our first measure of resource extraction identifies managers' expropriation of company funds and resources with private consumption. In China, entertainment providers generally are willing to provide generic or modified receipts for their clients, in order to facilitate reimbursement by their employers. Thus, lax accounting regulations and enforcement allow for the reimbursement of private consumption expenses to be classified as business related administrative expenses.[19] We manually collect the information from the notes to financial statements in the annual reports on

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[19] Anecdotal support of this behavior is common. As covered in the *Wall Street Journal* on November 4th, 2014, the casinos in Macau (a Chinese territory) experienced their largest sales decline ever of 23% in October of 2014. "Industry executives and analysts attribute the recent poor performance in Macau to a variety of factors, particularly a Beijing-led crackdown on corruption that has caused VIP gamblers to shy away from the baccarat tables" (O'Keeffe 2014).

the following expenditures: office supplies, business travel, entertainment, communication, training abroad, board meetings, automobile, conferences, and other expenses. Thus, our first proxy of resource extraction is the sum of these expenditures scaled by sales (*PRIVATE*) which is intended to capture managers' expropriation of corporate funds for private consumption (Cai et al. 2011). We acknowledge two limitations of the *PRIVATE* variable. First, *PRIVATE* not only captures private benefits enjoyed by the top management but also by other employees. Second, *PRIVATE* could also capture the expenditures used to bribe or entertain external parties for the purpose of negotiating deals that benefit the firm, which is implicitly a legitimate way of doing business in China. It is likely that internal controls will not curb such bribing behavior as it benefits the firm; therefore, this might weaken tests of our hypothesized relation between internal control and *PRIVATE*. However, we do control for the known determinants of profit-maximizing administrative expenses such that the residual of *PRIVATE* should capture resource extraction behavior.

Our second measure of resource extraction is the ex post detection and disclosure of corruption by either regulators or the media. We collect exposed corruption cases from both mainstream Chinese media sources and litigation cases to ensure the most comprehensive coverage.[20] We require that this disclosure indicates self-serving behavior (e.g., embezzlement or the receipt of bribes) by management or controlling shareholders. We analyze each corruption case to determine the timing of corrupt behavior (i.e., when management undertakes the corrupt behavior), and set *EXPOSED* equal to one for the firm-years with the corrupt behavior, and zero

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[20] To collect publicly disclosed corruption cases, we first search the "China Economic News Database," which consists of articles published in all Chinese newspapers and periodicals. We use the following keywords (in Chinese) to conduct the news search: corruption, Shuanggui (detained and interrogated), stepping down, economic issues, embezzlement, misappropriation, bribery, job suspension, favoritism, property transfer, and Xiake (a synonym of stepping down). Next we searched within all legal case documents that are relevant to corruption from the courts in accordance with "LawInfoChina" (LawInfoChina is a data center for court legal documents). Finally, we used the Baidu search engine to retrieve public companies' corruption materials based on company names identified from our search.

otherwise.[21] We examine the association between internal controls and corrupt behavior at the time the corruption occurred (not at the time of ex post disclosure).

The final form of resource extraction that we analyze is tunneling through the use of loans with indefinite repayment terms (hereafter tunneling). Jiang et al. (2010) document that tunneling is a prevalent and persistent method used by controlling shareholders to expropriate funds from minority shareholders.[22] We use two measures to capture tunneling behavior. Following Jiang et al. (2010) we first use other receivables scaled by total assets (*OTHREC*). In addition, Chinese listed firms are required to disclose related party loans in their annual reports; thus we adopt a second measure (*RELATEDLOAN*) that is the amount of loans from the listed firm to disclosed related parties (including the controlling shareholder, other companies controlled by the same controlling shareholder, subsidiaries, and joint ventures) scaled by year-end total assets. We view *OTHREC* and *RELATEDLOAN* as complementary. *OTHREC* could capture the expropriation of funds via loans that are not disclosed as related party loans in the annual report (e.g., funds to unidentified related parties) while *RELATEDLOAN* specifically captures lending behavior to related parties, but could miss other tunneling. At times, both measures will capture the same loan, as related party loans are often classified as other

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[21] We do not include corruption cases that involve giving bribes to external parties (e.g., the government) for the firm's benefits (e.g., obtaining a contract with the government). Of the 159 cases involving exposed corruption, 120 cases relate to accepting bribes at the expense of shareholders (e.g., to buy inventory at above-market prices). The remaining cases involve embezzlement. Because some corruption cases involve multiple years, we have 214 firm-year observations with *EXPOSED* = 1. To minimize the effect of Type II errors on our analyses (i.e., undetected corruption cases contaminating our control sample), we remove firms with other types of CSRC regulation violations or qualified audit opinions from the control sample, which reduces the sample size used in the analysis for *EXPOSED*.

[22] Clearly some of these loans are valid, with reasonable interest rates and standard repayment terms. These valid loans should serve to add noise, but not bias, to our analysis. We expect that the pervasiveness of tunneling has declined since the Jiang et al. study, but continue to find evidence of tunneling (see also footnote 24). We corroborate our inferences in Section 5 by documenting that this tunneling behavior is associated with poorer future performance.

receivables; the Spearman correlation between *OTHREC* and *RELATEDLOAN* is 0.39.[23]

We note that private consumption (*PRIVATE*) and accepting bribes (*EXPOSED*) are more likely to capture corrupt behavior by management, while tunneling behavior (*OTHREC* and *RELATEDLOAN*) is more likely to capture corrupt behavior by controlling shareholders. Also, *EXPOSED* measures corrupt behavior that is egregious in nature and thus the type I error rate is low. However, there could be selection biases in the exposed cases and many corruption cases may remain unidentified (the type II error rate is high). In contrast, it is likely that our other measures (*PRIVATE* and tunneling measures *OTHREC* and *RELATEDLOAN*) have higher type I error rates, but lower type II error rates. Thus, it is important to consider evidence from all of our corruption measures. To corroborate our main analysis, in Section 5 we provide evidence on the ex post performance consequences of resource extraction; that is, we expect and find that greater resource extraction is associated with lower future firm performance.

We report descriptive statistics of the main variables in Panel A of Table 2. In our sample, the mean (median) of *ICFRS* is 0.534 (0.538). This value is relatively sticky across time for the same firm, with an autocorrelation of 0.682. The mean (median) of *PRIVATE* is 2.6% (1.1%), where the mean (median) of sales revenue is 4,857 (1,304) million Chinese Yuan. During our sample period, on average 4.0% of sample firms are detected and exposed for self-dealing corruption such as accepting bribes or embezzling assets. The mean (median) of *OTHREC* (tunneling) is 2.4% (1.0%) of total assets, where the mean (median) of total assets is 7,941 (2,161) million Chinese Yuan.[24] The mean (median) of *RELATEDLOAN* is 0.8% (0.0%) of total

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[23] In a robustness test, we hand-collect the loan amount for which a firm serves as a guarantee for its related parties as another proxy for tunneling behavior. We discuss this robustness test in Section 4.

[24] The pervasiveness of tunneling was greater prior to the "crackdown" on these loans by the China Securities Regulatory Commission following the public disclosure of the evidence in Jiang et al. (2010). Thus, the mean of *OTHREC* in our sample is lower than that of Jiang et al. (2.7% versus 8.1%). Nonetheless, the extraction of resources via the tunneling of 2.7% of total assets remains material. To put this number in perspective, the mean of ROA is 3.6%. Further, we conducted a falsification test to examine whether our ICFRS score influences accounts

assets.

[Table 2]

We report descriptive statistics by state-owned enterprises (SOEs) and non-SOEs in Panel B of Table 2. *ICFRS* is higher for non-SOEs than SOEs at both the mean and median: the mean (median) score for non-SOEs is 0.541 (0.552) versus 0.528 (0.527) for SOEs. However, SOEs seem to have higher *ICFRS* scores after controlling for the determinants of internal control strength, such as complexity (see the results on determinants of *ICFRS* reported in Appendix D, Table D1), consistent with the push by the government to establish internal control procedures within SOEs.

With respect to our resource extraction measures, reimbursement of private consumption expenses (*PRIVATE*) and tunneling (*OTHREC* and *RELATEDLOAN*) appear more pervasive among non-SOEs, whereas there are notably more instances of publicly disclosed corruption within SOEs, with the mean value of *EXPOSED* equal to 0.062 for SOEs compared to a mean value of 0.011 for non-SOEs. Thus, there is some evidence that managers of non-SOEs are more likely to extract funds through questionable expense reimbursements or via loans that they do not expect to repay, relative to managers of SOEs, who are more likely to accept bribes to enter suboptimal contracts, or embezzle from their firms.

SOEs are generally larger than non-SOEs, but are slightly less profitable, consistent with these firms and managers having objectives other than solely profit maximization. Finally, the Big 10 audit firms have a much larger presence within SOEs, although the vast majority of firms are audited by smaller audit firms, which is consistent with prior research (e.g., Chen et al. 2010).

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receivable the same way as other receivables. Unlike *OTHREC*, we do not find a negative association between *ICFRS* and accounts receivable. This result is consistent with the notion that *OTHREC* likely captures tunneling behavior that is beyond legitimate operating activities. We provide evidence in Section 5 on the potential negative consequences of tunneling during our sample period by examining how tunneling influences firms' future performance to corroborate our inferences that *OTHREC* is costly to the firm.

Panel C of Table 2 presents the descriptive statistics of *ICFRS* and our resource extraction measures by industry. It appears that the Mining and Construction industries have the highest average *ICFRS* (0.573 and 0.572) while the industry of Agriculture, Forestry and Fishing has the lowest average *ICFRS* (0.489). Generally it appears that although our resource extraction measures are populated across industries, *PRIVATE* is highest within Information Technology, Communication, and Media (the latter perhaps reflecting a necessary cost in that industry), *EXPOSED* is most prevalent in Mining, and our tunneling measures are highest in Construction. Panel D of Table 2 presents the means of *ICFRS* and our resource extraction measures over time. In general, internal control strength has improved over time. Our resource extraction measures show a similar decline across time, consistent with improvements in internal control curbing resource extraction. Turning to the correlation table in Panel E of Table 2, we find that *ICFRS* is negatively correlated with *PRIVATE, OTHREC* and *RELATEDLOAN* (consistent with H1), but not *EXPOSED*. From the low correlations of our resource extraction variables (except for the previously noted correlation between *OTHREC* and *RELATEDLOAN*), it is clear that each captures a distinct component of resource extraction.

4. Internal control and resource extraction

Endogeneity and instrumental variables of internal control strength

Potential endogeneity issue arises because internal controls are not exogenous; instead managers and the Board of Directors choose to establish internal control policies and procedures. The choice of internal controls may be affected by firm characteristics such as firm complexity and available resources. It is also possible that both resource extraction and internal controls stem from firm characteristics, but that internal controls, per se, would not curb resource extraction. In this section, we discuss our approach in addressing the potential endogeneity concern.

We identify two instrumental variables and then use two-stage-least squares (2SLS) to address the endogeneity concern. Our first instrumental variable, *NEWIPO*, equals one for firms that listed (i.e., went public) for the first time on either the Shanghai or Shenzhen exchange after May 2006, and zero for firms went public before May 2006. In May 2006, the Chinese Security Commission issued new IPO regulations including requirements on internal control. For example, in order to qualify for an IPO, a firm must have an effective internal control system in place, with a CPA report attesting to the effectiveness. Therefore *NEWIPO* is likely associated with strong internal controls but we do not have a theoretical reason to expect it to have a direct association with resource extraction.

Our second instrumental variable, *ACCT_EDU*, captures the level of accounting and business education on internal controls that a firm's employees might have received. Specifically, we measure *ACCT_EDU* using the number of masters programs in accounting and masters programs in business administration in the same province where a firm's headquarters is located. Both masters programs' curricula typically include topics or courses on corporate internal controls. To the extent that people tend to stay in the same region and are hired by local companies after earning their degrees or local availability of these masters programs facilitates part-time training of accounting and finance, we expect *ACCT_EDU* to be positively related to internal control strength; however, there is no theoretical reason to expect a direct association between *ACCT_EDU* and resource extraction.

Table D1 in Appendix D reports the results on the determinants of internal controls. Consistent with our predictions, both instrumental variables *NEWIPO* and *ACCT_EDU* are significantly positively associated with our measure of internal control strength, *ICFRS*. We then follow the procedures recommended in Larcker and Rusticus (2010) to test the appropriateness

of our instrumental variable approach.

We first investigate the validity of our instrumental variables by conducting the over-identifying restriction test.[25] The over-identifying restriction test statistic is obtained by a regression of the second-stage residuals on all instrumental variables. If the instruments are valid, the coefficients on the instruments should be close to zero, and the R^2 should also be close to zero (Larcker and Rusticus 2010). We use the *NEWIPO* and *ACCT_EDU* as instrumental variables for *ICFRS* in the 2SLS analysis for each of our measures of resource extraction, and obtain the second-stage residuals. When we regress the second-stage residuals on these instrumental variables, we find that the coefficients on the instruments are insignificantly different from zero across all four resource extraction variables (p-values range from 0.259 to 0.781) and the R^2 from all regressions are zero, supporting the validity of these two instruments. Given the validity of our instrumental variables, we conduct the Hausman test by including both *ICFRS* and the predicted *ICFRS* from the first stage regression in the second-stage regressions. The coefficient on predicted *ICFRS* is significant in the regressions of *PRIVATE* (p-value=0.019), *OTHREC* (p-value=0.002), and *RELATEDLOAN* (p-value=0.068), but insignificant in the regression of *EXPOSED* (p-value=0.422). Thus, the Hausman test rejects the null of no endogeneity in all cases except for *EXPOSED*. Finally, we evaluate the strength of our instrumental variables by calculating the partial R^2 and partial F-statistics associated with *NEWIPO* and *ACCT_EDU* in the first stage regressions of *PRIVATE*, *EXPOSED*, *OTHREC*, and *RELATEDLOAN*. The partial R^2 ranges from 0.047 to 0.08; partial F-statistics range from 102.9 to 174.2 and are statistically significant (p-value < 0.001), alleviating the concern of weak

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[25] The over-identifying restriction test must be done before the Hausman test because the underlying assumption of the Hausman test is that at least one instrumental variable is valid.

instruments.[26]

After establishing the validity of the instrumental variables, we apply the 2SLS approach. The first-stage regression estimates the determinants of *ICFRS* (Table D1 in Appendix D). We use the predicted value, $\widehat{ICFRS}$, as our variable of interest in all regression models.

Internal control and private consumption

To explore whether internal controls curb private consumption expense reimbursement (*PRIVATE*), we estimate the following model:

$$PRIVATE = \beta_0 + \beta_1\widehat{ICFRS} + \beta_2 PAYRATIO + \beta_3 MGMTSHR + \beta_4 ASSETS + \beta_5 ATO + \beta_6 ROA$$
$$+ \beta_7 EISSUE + \beta_8 TOP1SHR + \beta_9 INVCOMP + \beta_{10} BOARD + \beta_{11} CEOCHAIR$$
$$+ \beta_{12} MARKETIZATION \tag{1}$$

PRIVATE is the sum of expenditures for office supplies, business travel, entertainment, communication, training abroad, board meetings, automobile, conferences, and other expenses scaled by sales. We predict a negative coefficient on $\widehat{ICFRS}$ because stronger internal controls should limit the magnitude of private benefits resulting from the resource extraction. We include several control variables from prior research. First, executives with lower pay have been found to be more likely to misappropriate corporate funds and assets for private consumption. Chen et al. (2005) find that executives substitute lower pay with excessive perquisite consumption. We follow their measure of executive compensation and control for the ratio of executive total compensation relative to other employees' average compensation (*PAYRATIO*). We also control for management ownership (*MGMTSHR*), measured as outstanding shares owned by executives, because management ownership helps align managers' objectives with shareholders' interests and reduces incentives for excessive perquisite consumption. We include the size of the firm (*ASSETS*) to control for scale, because larger firms may have lower expenses per sales dollar. We

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[26] In this test, in order to calculate the partial R^2, we use an OLS regression for *EXPOSED* rather than a logistic regression.

next include asset turnover (*ATO*) as a control variable to control for the effect of operating efficiency on selling, general and administrative expenses. We control for firm performance with return on assets (*ROA*) but we do not have a clear prediction for this variable. On one hand, more profits provide more resources for corrupt executives; on the other hand, uncorrupt managers might generate better performance (e.g., they will buy the best-value inventory). We control for new issuances of equity (*EISSUE*) since the expenditures included in our *PRIVATE* measure may increase during these financing activities. We further control for aspects related to corporate governance. A more powerful blockholder (indicated by larger firm ownership) may either deter management resource extraction behavior, or collude with management at the expense of minority shareholders. We include the percentage of shares owned by the largest blockholder (*TOP1SHR*) to measure blockholders' power. We also include two control variables based on corporate governance items collected by Chen et al. (2017). Specifically, *INVCOMP* is a summary measure based on the four items related the shareholder composition (e.g., percentage of ownership by institutional investors) and *BOARD* is a summary measure based on five items related to the characteristics of the Board of Directors (e.g., the number of board committees).[27] These two variables are described in detail in Appendix C. We include *CEOCHAIR* which equals one if the CEO is also the Chairman of the Board, because we expect more powerful CEOs to have more opportunities to misappropriate corporate funds. Lastly, we include the development of the regional market in which the firm is registered (*MARKETIZATION*) as prior research (Jiang et al. 2010 among others) shows that resource extraction is more serious in a less developed regional market as these markets are associated with weaker legal and regulatory environments. We include year and industry fixed effects in the regression.

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[27] This variable includes the number of dissenting proposals by independent directors, which offers a stronger measure of governance than independent directors in China, who may be ineffective (Lin et al. 2012).

Table 3 presents the regression results for *PRIVATE*, our proxy for private consumption expense reimbursement. As reported in Panel A, consistent with H1, we find a significant negative association between strength of internal controls and *PRIVATE* for the full sample (coefficient = –0.096; p-value = 0.009), suggesting that the strength of internal controls reduces resource extraction related to private consumption.

Next, we examine H2 by estimating Equation (1) separately for SOEs and non-SOEs. We find that $\widehat{ICFRS}$ is significantly and negatively associated with *PRIVATE* within SOEs (coefficient = –0.040; p-value = 0.098), as well as within non-SOEs (coefficient = –0.158; p-value = 0.017). However, the coefficient on $\widehat{ICFRS}$ within non-SOEs is economically larger in magnitude than the coefficient on $\widehat{ICFRS}$ within SOEs, and the difference in the coefficients is statistically significant (p-value = 0.071), in support of H2.[28] This result is consistent with our prediction that policy-driven adoptions of internal control are not as effective as adoptions that are more voluntary in nature (H2), highlighting the importance of substance over form.[29]

To test whether internal controls are more effective at curbing resource extraction when agency costs are lower (H3), we examine the balance of power between the controlling shareholder and other top shareholders within non-SOEs. We partition firms based on their *TOP2to5RATIO,* the ratio of ownership of the controlling shareholder's ownership to the second to fifth largest shareholders' ownership and create an indicator variable *TOP2to5IND* that takes the value of one if *TOP2to5RATIO* is greater than or equal to the non-SOE sample median, and

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[28] To test whether the main coefficients are the same across different SOE types, we use the following Z-statistics: $= \frac{b_i - b_j}{\sqrt{s^2(b_i) + s^2(b_j)}}$; where b_i and b_j are coefficient estimates from the two sub-samples, and $s^2(b)$ is the squared standard errors of the coefficients (Clogg et al. 1995, Chen et al. 2010).

[29] We also examine the robustness of this result by adopting a two-stage approach in measuring *PRIVATE*. First, we model *PRIVATE* by regressing *PRIVATE* on the potentially legitimate determinants (i.e., SOE, firm age, growth, leverage, size, ROA, the number of employees, and year and industry fixed effects) and then we estimate Equation (1) by using the residuals from the first stage regression. The results are inferentially similar (not tabulated).

zero otherwise. We then add *TOP2to5IND* and the interaction term, $\widehat{ICFRS} \times TOP2to5IND$, to Equation (1). We expect a negative coefficient on $\widehat{ICFRS} \times TOP2to5IND$ if internal controls are more effective in curbing resource extraction when *TOP2to5IND* is equal to one. As reported in Panel B of Table 3, we find that $\widehat{ICFRS} \times TOP2to5IND$ is significantly negative in explaining *PRIVATE* for the non-SOE sample, suggesting that *ICFRS* reduces private consumption more effectively when there is a greater balance of power among the large shareholders.[30,31]

Taken together, we find a negative association between internal control strength and resource extraction as proxied by private consumption among non-SOEs, but not SOEs, where internal controls were more likely to be policy driven than voluntarily adopted. Within non-SOEs we find the association is stronger when agency problems are less severe, that is, when there is a greater balance of power among the large shareholders. Together our results suggest that internal controls are not effective in all firms; instead window dressing appears to vary with institutional factors and incentives.

[Table 3]

Internal control and exposed corrupt behavior

The preceding analysis provides evidence on the effect of internal control on resource extraction specific to private consumption. Our next measure of resource extraction is exposed corruption cases (*EXPOSED*). We estimate the following model, where the dependent variable is *EXPOSED*:

$$EXPOSED = \beta_0 + \beta_1 \widehat{ICFRS} + \beta_2 PAYRATIO + \beta_3 MGMTSHR + \beta_4 ASSETS + \beta_5 ROA$$

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[30] We also consider an alternative shareholder power balance measure, which is the percentage of shares owned by the second to fifth largest shareholders. The results are similar in that internal controls are significantly negatively associated with resource extraction when the ownership of the second to fifth largest shareholders is higher than the sample median (not tabulated).

[31] An alternative partitioning variable is family firms, which comprise 80 percent of the non-SOEs in our sample. We do not focus on this partition for two reasons. First, given the high frequency of family firms, this partition would likely lack sufficient variation to be meaningful. Second, the variation we do examine (shareholdings by the second to fifth shareholder) also serves as a partitioning variable within family firms.

$$+\beta_6 EISSUE +\beta_7 LEV +\beta_8 GROWTH +\beta_9 M\&A +\beta_{10} MGMTCHANGE$$
$$+\beta_{11} TOP1SHR +\beta_{12} INVCOMP +\beta_{13} BOARD +\beta_{14} CEOCHAIR$$
$$+\beta_{15} MARKETIZATION + \varepsilon \tag{2}$$

EXPOSED is equal to one if we identify an exposed case of corrupt self-dealing (e.g., embezzlement or the receipt of bribes to conduct suboptimal transactions) from either mainstream Chinese media sources or litigation cases. In addition to the resource extraction determinants included previously, we include merger and acquisition activities (*M&A*) to control for the possibility that M&As are used as a mechanism to extract resources from the firm. We also control for changes in non-CEO executive positions (*MGMTCHANGE*) because openings of non-CEO positions in the top management team often provide opportunities for bribery in China. Finally, we include leverage (*LEV*) and sales growth (*GROWTH*) to control for firm characteristics. We predict a negative coefficient on *ICFRS* if stronger internal controls limit the opportunity for corrupt self-dealing behavior.

We provide the regression results for Equation (2) in Table 4. As reported in Panel A, the association between $\widehat{ICFRS}$ and *EXPOSED* is insignificant for the full sample and the SOE sample, but is significantly negative for the non-SOE sample. The coefficients are significantly different between the SOE and non-SOE samples. This is generally consistent with our results on private consumption in that internal controls appear to be effective at reducing resource extraction within firms owned and controlled by entrepreneurs and private investors, but not within state-owned enterprises.[32] Management ownership seems to reduce the incentives to engage in resource extraction for non-SOEs as results indicate a negative association between *EXPOSED* and *MGMTSHR*. Larger and more highly levered firms are associated with more exposed corruption cases in the full sample and among SOEs. The significant and positive

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[32] Exposed bribery cases are concentrated in SOEs, which is consistent with the larger size and greater scrutiny of SOEs. This bias should serve to work against us finding an association between *ICFRS* and *EXPOSED* among non-SOEs.

coefficient on *M&A* for the full, SOE, and non-SOE samples suggest that egregious corruption occurs more during mergers and acquisitions. Management turnover (*MGMTCHANGE*) is significantly and positively associated with *EXPOSED* for non-SOEs. We also find evidence that powerful CEOs (*CEOCHAIR* = 1) are more likely to accept bribes or embezzle for the full sample and within non-SOEs. Next, Panel B of Table 4 shows that, for non-SOEs, the strength of internal controls has a significantly negative effect on *EXPOSED* when there is greater balance of power among the large shareholders (*TOP2to5IND* = 1).

[Table 4]

Internal control and tunneling

Our last measure of resource extraction is tunneling activities. To explore whether internal controls curb tunneling, we estimate the following model:

$$OTHREC \text{ or } RELATEDLOAN = \beta_0 + \beta_1\widehat{ICFRS} + \beta_2 ASSETS + \beta_3 ROA + \beta_4 CFF$$
$$+ \beta_5 CASHCOVER + \beta_6 TOP1SHR + \beta_7 INVCOMP + \beta_8 BOARD + \beta_9 CEOCHAIR +$$
$$\beta_{10} MARKETIZATION + \beta_{11} EXCHANGE + \varepsilon \qquad (3)$$

The dependent variable is either *OTHREC* or *RELATEDLOAN*, both of which are intended to identify the existence of tunneling (cash loans that are not expected to be repaid). *OTHREC* is other receivables scaled by year-end total assets and *RELATEDLOAN* is the amount of loans from the listed firm to related parties scaled by year-end total assets. H1 predicts that effective internal controls reduce the extent of tunneling; therefore, we expect the coefficient on $\widehat{ICFRS}$ to be negative. Jiang et al. (2010) show that tunneling decreases with firm size and firm profitability. They also show that tunneling is associated with the ownership of the controlling shareholder as well as the firm's regional market. Thus, we include firm size (*ASSETS*), profitability (*ROA*), shares owned by the largest blockholder (*TOP1SHR*), and the development of the regional market in which the firm is registered (*MARKETIZATION*) as control variables.

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In addition, we control for cash flows using cash flows from financing (*CFF*), which we expect to increase regulatory scrutiny and thus constrain tunneling, and cash flows from operating activities divided by short-term debt (*CASHCOVER*), which we expect to increase the opportunity to tunnel as there is excess cash. We also include *EXCHANGE* to control for different regulations and requirements under the two exchanges, although we do not have a directional prediction for this variable. Similarly to Equations (1) and (2), we include governance-related variables, *INVCOMP, BOARD,* and *CEOCHAIR*, as well as year and industry fixed effects in the regression.

We report the regression results in Table 5, Panel A. Consistent with H1, the coefficient on $\widehat{ICFRS}$ is significantly negatively associated with both tunneling measures (e.g., coefficient = –0.092; p-value < 0.001 for *OTHREC*), suggesting that stronger internal controls curb tunneling. With respect to *OTHREC*, the coefficients on the control variables are consistent with those in Jiang et al. (2010). Specifically, *OTHREC* is decreasing in profitability (*ROA*), percentage of shares owned by the largest shareholder (*TOP1SHR*), and the degree of development of regional markets (*MARKETIZATION*). We also find that greater cash flows from financing (*CFF*) and more active investors (*INVCOMP*) are associated with less tunneling behavior. Opposite to our prediction, it appears that greater cash flows from operations relative to short-term obligations (*CASHCOVER*) is associated with less tunneling. We do not find a significant association between tunneling and a strong board or the CEO also being the Chairman.

The regression results examining tunneling are presented separately for SOEs and non-SOEs in Table 5, Panel B. For both tunneling measures, $\widehat{ICFRS}$ is no longer significant among SOEs, but is a strong predictor of tunneling within non-SOEs (e.g., coefficient = –0.206;

p-value < 0.001 for *OTHREC*).[33] The coefficient on *ICFRS* is statistically different between SOEs and non-SOEs (e.g., p-value = 0.001 for *OTHREC*). This result suggests that although internal control over financial reporting effectively mitigates tunneling within non-SOEs, this is not the case within SOEs, again supporting H2.[34]

Panel C of Table 5 reports the results for H3. We find that $\widehat{ICFRS} \times TOP2to5IND$ is significantly negative in explaining *OTHREC* and *RELATEDLOAN* within the non-SOE sample, consistent with H3. These results are consistent with our prediction (H3) that internal controls are more effective in curbing resource extraction when there is a greater balance of power among major shareholders.

In a robustness test, we hand-collect the loan amount for which a firm serves as a guarantee for its related parties. We scale the loan amount by total assets (*RELATED_GUARANTEE*). We use this variable as another proxy for tunneling behavior. We continue to find that firms with higher internal control scores have lower *RELATED_GUARANTEE* for the full sample, and the association is significantly weaker within non-SOEs with less balanced power among the top shareholders.

[Table 5]

In summary, our results from Tables 3–5 provide evidence that the strength of internal controls over financial reporting curbs resource extraction (H1). Internal controls within SOEs, however, are much less effective at curbing resource extraction across all of our tests, consistent with the effect of policy-driven versus voluntary adoption on the effectiveness of internal controls (H2). Finally, within non-SOEs, internal controls are more effective in reducing resource

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[33] We explore whether the insignificant coefficient within SOEs is driven by low variation in internal control strength within SOEs in Section 5, finding no support for this alternative explanation.

[34] This could reflect that internal controls do not constrain tunneling in SOEs, but could also reflect that tunneling is not present in SOEs. To explore which of these is more descriptive, we consider the "costs" to tunneling on future operating income and find that tunneling is associated with lower future operating income among SOEs, providing some evidence that tunneling is present among SOEs (see Section 5).

extraction when agency problems between the controlling shareholder and other shareholders are less severe (when there is a greater balance of power among shareholders), providing evidence on H3.

5.   Additional analyses and robustness tests
Corroboration of resource extraction measures

An underlying assumption in our prior tests is that our measures of resource extraction capture expropriation of resources from the firm and minority shareholders. If such behavior truly harms the firm, then we expect to observe poorer ex post firm performance for firms exhibiting more rent extraction. Thus, we expect our measures of resource extraction to be associated with lower future firm performance. We estimate the following model, where the dependent variable is one-year-ahead and two-year-ahead operating income scaled by average total assets (OI_{t+n}):

$$OI_{t+n}= \beta_0 +\beta_1 Resource\ extraction\ measures +\beta_2 PPE +\beta_3\ GROWTH +\beta_4 SEGMENTS +\beta_5 EXPORT +\beta_6 AGE +\beta_7 BIG10 +\beta_8 OI +\beta_9 ASSETS +\beta_{10} TOP1SHR + \varepsilon \qquad (4)$$

We base our control variables on those considered by Feng et al. (2015), who examine ex post performance following ineffective internal controls (see their Table 8), and include *TOP1SHR* following Fan et al. (2007). The results are reported in Table 6. We find that *PRIVATE, EXPOSED, OTHREC*, and *RELATEDLOAN* all have a significantly negative association with one-year-ahead and two-year-ahead operating income. These results suggest that our resource extraction measures do capture management behavior that is detrimental to subsequent firm performance. Among the control variables, we find that future operating income is higher for firms with higher past operating income and lower for firms with higher capital intensity, similar to the results in Feng et al. (2015). We also find that sales growth (*GROWTH*) is significantly and negatively associated with one-year-ahead operating income, but positively associated with

two-year-ahead operating income.[35]

[Table 6]

Corroboration of governmental pressure on SOEs

Our motivation for H2 is based on SOE management having different incentives to adopt internal control practices than non-SOE management, resulting in the establishment of internal controls in SOEs that are effectively "window-dressing." To provide evidence on this, we examine whether, for SOEs, internal control strength is associated with the likelihood of CEOs receiving promotions. We identify 548 CEO turnovers among SOEs and estimate the following model, where the dependent variable is *PROMOTION*.

$$PROMOTION= \beta_0 +\beta_1 ICFRS+\beta_2 ASSETS +\beta_3 OCF +\beta_4 ROA +\beta_5 LEV +\beta_6 GROWTH$$
$$+\beta_7 CEOAGE +\beta_8 EDUCATION +\beta_9 TENURE +\beta_{10} TOP1SHR +\beta_{11} MARKETIZATION + \varepsilon \quad (5)$$

We consider the CEO as having been promoted if in the year subsequent to her departure she became (1) the Chairman of the board at the same company, (2) the CEO or the Chairman/Vice Chairman of the board in the parent company, (3) the CEO at a larger public company where the assets of the new company are at least 20% larger than the former company, or (4) a government official of a higher rank.[36]

We first estimate Equation (5) using an Ordered Logit regression including all SOE firm-years. The dependent variable takes the value of two if the CEO is promoted in the following year, one if there is no CEO turnover, and zero if the CEO is demoted in the following year. Next we estimate a Logit regression including only firm-years with CEO turnovers. The dependent variable takes the value of one if the CEO is promoted in the following year, and zero

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[35] The results are similar when we estimate Equation (4) separately for SOEs and non-SOEs; that is, for both SOEs and non-SOEs, *PRIVATE, EXPOSED*, *OTHREC*, and *RELATEDLOAN* all have a significantly negative association with one-year-ahead and two-year-ahead operating income, with the exception of *EXPOSED* on one-year-ahead performance for non-SOE firms which is not significant (not tabulated).

[36] Executive positions at Chinese SOEs tend to have equivalent ranks as those of positions within the government, which allows us to assess whether a new governmental position is a promotion. For example, Yongkang Zhou, CEO of Chinese Petroleum had an equivalent rank of the Vice Minister of the State Owned Assets and Resources from 1996 to 1998. In 1998, he was promoted to the Minister of the State Owned Assets and Resources.

otherwise. The results and the definitions of control variables are presented in Table 7. The coefficient on *ICFRS* is significantly positive (p-value=0.014). In contrast, as expected, ICFRS is not associated with *PROMOTION* within non-SOEs (not tabulated). We find similar results using a Logit estimation within SOEs with CEO turnover. This finding suggests implementing strong internal controls improves career outcomes for SOE management, consistent with SOE management experiencing governmental pressure to establish certain internal control procedures.

[Table 7]

Robustness checks

We conduct five robustness checks. First, as pointed out in Lennox et al. (2012), in some cases the OLS approach is preferable because results based on the two-stage approach might be sensitive to the choice of the instrumental variable. Therefore, we check the robustness of our results by repeating our analyses using OLS. The OLS results are summarized and reported in Table 8. Our results are substantively similar for all four proxies of resource extraction. Firms with higher internal control scores have fewer expenses susceptible to private consumption (*PRIVATE*), fewer other receivables (*OTHREC*), and fewer loans issued to related parties (*RELATEDLOAN*) for the full sample, and the association is significantly weaker within SOEs and within non-SOEs with a lesser balance of power among the top shareholders. When examining *EXPOSED* as the dependent variable, we again only find evidence that internal controls are negatively associated with exposed corrupt behavior within non-SOEs with a greater balance of power among the major shareholders. Thus, our findings are robust to the OLS approach.

[Table 8]

Second, to further alleviate the endogeneity concern associated with internal controls (e.g., managers with a tendency to misappropriate assets may be more likely to choose weaker internal

controls), we also regress all four lagged resource extraction variables on current *ICFRS*, and find no relation for three out of four resource extraction variables (*PRIVATE*, *EXPOSED*, and *RELATEDLOAN*), mitigating the concern of reverse causality. We then repeat our main analyses on resource extraction using last-year's *ICFRS* instead of current year's *ICFRS*. We continue to find a significant negative association between lagged *ICFRS* and resource extraction using *PRIVATE*, *OTHREC*, and *RELATEDLOAN*, and the effects continue to be stronger among non-SOEs than SOEs.[37] Collectively, these additional results support our inferences that the strength of internal controls curbs resource extraction, but internal controls within SOEs and within non-SOEs with greater agency conflicts are less effective.[38]

Third, as mentioned earlier, one advantage of our Chinese internal control dataset is that it provides a continuous measure of internal control strength, whereas, in the U.S., internal control data is limited to a binary "effective" or "ineffective" indicator that combines the design of internal controls with their implementation. To examine whether the continuous nature of our internal control variable is truly advantageous, we rerun our analyses by replacing the continuous internal control variable (*ICFRS*) with an indicator variable equal to one if the ICFRS score falls into the top decile rank, which approximates the percentage of firms in the U.S. with ineffective

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[37] One possible correlated omitted variable might be China's crackdown on corruption over this time period. Were it the government, rather than internal controls curbing resource extraction, we would expect it to either be pervasive across SOEs and non-SOEs, or be concentrated among SOEs, where the government has the greatest influence. Instead we find that internal controls curb resource extraction more among non-SOEs. Further, our inclusion of year fixed effects should also help to capture China's recent focus on curbing corruption. We also note that the anti-corruption campaign began in 2012, which is beyond our sample period of 2007-2011.

[38] To further alleviate the concern of unidentified correlated omitted variables, we conduct a survey questioning management as to the link between internal controls over financial reporting and resource extraction. We randomly select 50 firms from our sample (24 SOEs and 26 non-SOEs) and administer a survey through the Accounting Office of the Shenzhen Stock Exchange. Our survey response rate is 100%. When asked whether effective internal controls over financial reporting can curb corrupt management behavior, 72 percent of the respondents strongly agreed. We do not find a statistically significant difference in the responses between SOEs and non-SOEs. This response is consistent with the notion that strong internal controls curb resource extraction and reduce resource extraction. We view this as complementing our empirical analyses and alleviating concerns of correlated omitted variables. Nevertheless, despite our numerous efforts in alleviating endogeneity concerns, we caveat that we cannot completely rule out that endogeneity affects our results. However, it is unlikely that endogeneity could explain the totality of our results.

internal controls. We find that results become notably weaker with the indicator variable, suggesting that our continuous variable of *ICFRS* is more powerful in capturing cross-sectional variation in internal control strength than the indicator variable.

Fourth, we interpret our finding that non-SOEs' *ICFRS* is negatively associated with resource extraction, while SOEs' *ICFRS* is not, as suggesting that policy-driven internal controls are not as effective at reducing resource extraction. It is possible, however, that the latter null result is a function of the variance of *ICFRS* differing across SOEs and non-SOEs. We find no evidence to support this, however, as the standard deviation of *ICFRS* is 0.108 among SOEs, relative to 0.105 among non-SOEs. Therefore, the insignificant coefficient on *ICFRS* does not appear to be driven by low variation in internal control strength among SOEs. However, we acknowledge that we cannot definitively rule out the possibility that SOEs might use other mechanisms to reduce resource extraction.

Finally, to examine whether our findings only pertain specifically to the 44 items we believe are most related to internal controls over financial reporting, we also randomly choose 44 items out of the 100 internal control items that are not related to financial reporting provided in Chen et al. (2017) and redo our analyses. We find that out of the four resource extraction measures, only *OTHREC* and *RELATEDLOAN* have significantly negative associations with *ICFRS* for non-SOE firms, suggesting that our inferences are specific to internal controls over financial reporting.

6. Conclusion

We examine the relation between the strength of internal control over financial reporting and resource extraction. Using a sample of Chinese firms, we find that after controlling for known determinants of resource extraction and internal control strength, firms with stronger internal controls exhibit significantly less resource extraction. Specifically, high internal control

scores are associated with significantly lower travel and entertainment costs (our proxy for private consumption expense reimbursement) and less tunneling of resources out of the firms.

We consider two cross-sectional partitions on the full sample to assess whether the effectiveness of internal controls will vary with institutional settings or incentives. We first use the setting of state ownership to explore the impact of voluntary versus policy-driven adoption, where we expect the latter to be more likely to lead to window dressing. Second, we use the setting of the balance of power among the major shareholders within non-SOEs to explore how window dressing varies with the severity of agency problems (where a greater balance of power among the major shareholders indicates fewer agency problems).

In summary, our results suggest that, on average, strong internal controls seem to reduce the extent of resource extraction; however, institutional factors and the associated incentives also play a significant role in the effectiveness of internal controls. Proper implementation and enforcement by management is necessary, and internal control systems that are only form, without substance, are less effective in curbing resource extraction.

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Appendix A: Overall Internal Control Index

This appendix provides a brief summary of the overall internal control index. For details about the index, please see Appendix 1 in Chen et al. (2017). A research team led by Professor Henwen Chen at the Xiamen University in China created the internal control index. The construction of the internal control index is based on the Basic Standards and the Guidelines for Chinese public companies,[39] and the requirements issued by the Shenzhen and Shanghai Exchanges.[40] The design of the index follows the *Internal Control—Integrated Framework* (released by the Committee of Sponsoring Organizations of the Treadway Commission in 1992). Under this framework, the internal control index contains five components: control environment, risk assessment, control activities, information and communication, and monitoring. The COSO framework has gained acceptance by regulators, such as the SEC and PCAOB, and forms the foundation of SOX 404.

The researchers adopted the analytic hierarchy process (AHP) developed by Thomas L. Saaty in the 1970s.[41] The internal control index begins with five first-level items, the same as the five components in the COSO framework. Each of the first-level items then contains more evaluation items. For example, the codes for the first item in the first three levels are IC1, IC11 and IC111, respectively. For the fourth level, the code is defined as, for example, IC11101. The first three numbers (111) represent the first three levels to which this item is affiliated. If there is no third level for a particular item, then the first two numbers are presented. Overall, there are five first-level items, 24 second-level items, 43 third-level items, and 144 fourth-level items.

In evaluating each of the 144 items regarding internal controls of a firm, the researchers collect its internal control information from publicly available sources such as financial statements, CSRC filings, government documents, and press releases. In most cases, a value of zero or one is assigned to a fourth-level item based on the information obtained (see Appendix B for examples). The researchers follow AHP to assign weights for the items (see Chen et al. for details on calculating the item weights) and the overall index score is the weighted average of all items. We identify 44 of the144 items that most directly relate to internal control over financial reporting strength (ICFRS). See Appendix B.

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[39] On July 15, 2006, five Chinese government authorities and regulatory bodies, the Ministry of Finance, the China Securities Regulatory Commission, the National Audit Office, the China Banking Regulatory Commission, and the China Insurance Regulatory Commission jointly established a Committee aiming to stipulate a set of universal, recognizable, and scientific rules governing firms' internal controls. After two years of conducting research and seeking feedback, the Committee on Internal Control Standards issued *The Basic Standards of Enterprise Internal Controls* (the Basic Standards) requiring that a listed firm issue a self-assessment of its internal controls and that a Certified Public Accountant issue a report on the firms' internal controls. Later, *Supplemental Guidelines of Firms' Internal Controls* (the Guidelines) was released on April 26, 2010. The Basic Standards became effective on January 1, 2011 for firms listed both on an exchange in China and another exchange abroad (dual-listed), and on January 1, 2012 for firms listed on the Shanghai Stock Exchange or the main section of the Shenzhen Stock Exchange.

[40] In July 2006, the Shanghai Stock Exchange (SSE) issued *A Guideline of Internal Controls for Listed Firms on Shanghai Stock Exchange*. Further, in September 2006, the Shenzhen Stock Exchange issued *A Guideline of Internal Controls for Listed Firms on Shenzhen Stock Exchange.*

[41] AHP decomposes a complex decision problem into a hierarchy of more easily comprehensible sub-problems, and then produces the qualitative and quantitative analyses of each sub-problem. AHP also makes pairwise comparisons of the same-level items in every sub-hierarchy, analyzing their relative impact on an element in the hierarchy above them.

Appendix B: Composition of the Internal Control over Financial Reporting Measure

Out of the 144 items of the internal control index, we select only those items that apply to internal control over financial reporting. We remove 68 items that are not directly related to internal control but instead related to corporate governance (e.g., percentage of institutional shareholders), or items reflecting the outcome of internal controls (e.g., whether the company reported inventory damages in the year). We classify another 32 items as relating to overall internal controls but not financial reporting. As a result, our ICFRS score consists of 44 evaluation items. The following provide a complete list of these components. Standardized values are calculated as the actual value for the item scaled by the maximum value of the same item across all firms in the dataset. We note the single instance (IC11304) as "to be standardized" in the following list. Since each third-level index evaluates a specific aspect, we first take the mean of the items under the same third-level index (second-level if there is no third-level), and then we take the mean over the third-level index as our measure of ICFRS. For example, we will first take the average of IC11101 and IC11102 as the score for IC111. Then ICFRS is calculated using the mean of scores of all the third-level (second-level if there is no third-level) index items. As an alternative measure, we also calculate ICFRS as the simple mean of the 44 fourth-level items. Our results remain unchanged using this alternative measure.

ICFRS Component (fourth level items)	*Value*	*Example*	*Mean*
IC1: Control Environment			
IC111: Institutional Arrangement			
IC11101: Existence of a manual or guideline on internal control in the company.	1 for yes, 0 for no	1.00	0.959
IC11102: Use of an outside professional to help the company improve its internal control.	1 for yes, 0 for no	1.00	0.064
IC113: Board of Directors			
IC11303: A board-level committee charged with the oversight of internal control (audit committee or risk management committee).	1 for yes, 0 for no	1.00	0.908
IC11304: Number of audit committee members	To be standardized	3.00	0.383
IC114: Board of Supervisors			
IC11404: Supervisors with legal and accounting expertise.	1 for yes, 0 for no	0.00	0.082
IC121: Internal Control Implementation			
IC12101：Existence of an internal control department in the company.	1 for yes, 0 for no	1.00	0.865
IC12102：The internal audit department reports to the board.	1 for yes, 0 for no	1.00	0.778

IC3: Control Activities			
IC31: Separation of Duties			
IC31101: Controls for incompatible separation of duties.	1 for yes, 0 for no	1.00	0.600
IC31102: Controls for authorizing and approving.	1 for yes, 0 for no	1.00	0.749
IC31103: Approval of material matters is in accordance with existing procedures.	1 for yes, 0 for no	1.00	0.736
IC32: Accounting Control			
IC32101: Company has an accounting information system.	1 for yes, 0 for no	1.00	0.493
IC34: Budget Control variable			
IC34101: Existence of a budgeting committee or department.	1 for yes, 0 for no	1.00	0.058
IC34102: A budget is implemented in the company.	1 for yes, 0 for no	1.00	0.841
IC34103: The annual budget is discussed in the shareholder meeting or other similar setting.	1 for yes, 0 for no	1.00	0.308
IC35: Operating Control			
IC35101：Existence of an operational analysis.	1 for yes, 0 for no	1.00	0.995
IC36: Performance Control			
IC36101：Existence of a performance analysis committee or department.	1 for yes, 0 for no	1.00	0.969
IC36102：A report is issued from the performance analysis.	1 for yes, 0 for no	1.00	0.867
IC37: Emergency Control			
IC37101：Existence of a system that generates early warnings for material risk.	1 for yes, 0 for no	1.00	0.136
IC37102：Existence of an emergency response system.	1 for yes, 0 for no	1.00	0.244
IC4: Information and Communication			
IC41: Information Collection			
IC41101：Existence of a channel for internal communication of information (e.g. financial analysis and staff meetings)	1 for yes, 0 for no	1.00	0.996
IC41102：Channel for external collection of information (e.g. information from regulatory bodies).	1 for yes, 0 for no	1.00	0.994

IC42: Information Communication			
IC42201: A system/mechanism governing information disclosure.	1 for yes, 0 for no	1.00	0.982
IC42205: Another platform for communicating with investors.	1 for yes, 0 for no	1.00	0.444
IC425: Internal Timeliness			
IC42501：Periodic reports are released on the scheduled date.	1 for yes, 0 for no	1.00	0.916
IC43: Information System			
IC43101：Existence of an information department or information security department.	1 for yes, 0 for no	1.00	0.143
IC441: Anti-Fraud Mechanism			
IC44101：Anti-fraud mechanisms in the company.	1 for yes, 0 for no	0.00	0.088
IC44102：A channel for whistle blowing.	1 for yes, 0 for no	0.00	0.089
IC442: Anti-Fraud Priority			
IC44201：The company specifies the priorities for anti-fraud.	1 for yes, 0 for no	0.00	0.052
IC5: Monitoring			
IC51: Internal Monitoring Function			
IC511: Monitoring from the Internal Audit Department			
IC51101：Inspection of internal control by the internal audit department.	1 for yes, 0 for no	1.00	0.757
IC513: Monitoring from the Board of Directors			
IC51301：The audit committee discusses the internal control inspection in its responsibility report.	1 for yes, 0 for no	0.00	0.411
IC51302：The independent directors discuss the internal control inspection in their responsibility report.	1 for yes, 0 for no	0.00	0.402
IC514: Special Monitoring			
IC51401：Monitoring for suspicious special events.	1 for yes, 0 for no	1.00	0.550
IC52: Internal Control Deficiencies			
IC52101：A standard for deficiency recognition.	1 for yes, 0 for no	0.00	0.076
IC52102：An analysis of the reasons for deficiencies.	1 for yes, 0 for no	0.00	0.271

IC52103：A plan for rectifying internal control deficiencies.	1 for yes, 0 for no	0.00	0.504
IC52104：The company tracks the remediation of internal control procedures.	1 for yes, 0 for no	0.00	0.507
IC53: Internal Control Disclosure			
IC53102：The internal controls are well designed.	1 for yes, 0 for no	1.00	0.627
IC53103：The internal controls appear to be implemented based on firms' disclosures.	1 for yes, 0 for no	1.00	0.628
IC53104：Performance of an inspection of the internal control system.	1 for yes, 0 for no	1.00	0.540
IC53106：The inspection of the internal control system was evaluated.	1 for yes, 0 for no	0.00	0.359
IC53107：A plan to improve internal control exists.	1 for yes, 0 for no	1.00	0.440
IC53108：A plan for next year's internal control exists.	1 for yes, 0 for no	0.00	0.106
IC53110：The board of supervisors evaluates the internal control system.	1 for yes, 0 for no	1.00	0.739
IC53111：The independent directors evaluate the internal control system.	1 for yes, 0 for no	0.00	0.500

Appendix C: Variable Definitions

INTERNAL CONTROL MEASURES	
ICFRS	A measure of the strength of internal control over financial reporting in year *t* based on 44 of the 144 items collected by Chen et.al. (2017); see Appendices A&B for details.
DEPENDENT VARIABLES	
PRIVATE	Private consumption expenses scaled by sales, including specific expenditures on office supplies, business travel, entertainment, tele-communication, training abroad, board meetings, automobile, conferences, and other expense. Data on these expenditures are collected from note disclosures;
EXPOSED	An indicator variable equal to one if there is ex post public disclosure of corrupt self-serving behavior by management (e.g. receipt of bribes) in year *t* (where year *t* is the year management undertook the corrupt behavior, not necessarily the year it was revealed), zero otherwise;
OTHREC	Evidence of tunneling (removal of cash from the firm), measured as other receivables scaled by year-end total assets;
RELATEDLOAN	Evidence of tunneling (removal of cash from the firm), measured as the amount of loans from the listed firm to related parties disclosed in the notes to the financial statements, scaled by year-end total assets;
ABSDA	Evidence of earnings management, measured using the absolute value of discretionary accruals in year *t* based on the performance-adjusted cross-sectional modified Jones model (Kothari et al. 2005);
RESTATE	Evidence of earnings management, measured as an indicator variable equal to one if there is a restatement of year *t* (discovered in subsequent years), zero otherwise;
OI	Operating income divided by average total assets;
CONTROL VARIABLES	
ACCT_EDU	Number of the master programs in accounting and in business administration in the province where a company's headquarter is located;
ASSETS	The logarithm of total assets (in Chinese Yuan);
ATO	Total sales in year *t* divided by average total assets;
BIG10	An indicator variable, equal to one if the company is audited by one of the ten largest audit firms operating in China, zero otherwise; the size of an audit firm is measured by the sum of total assets of its clients in a given year;
BOARD	The average of five components related to characteristics of the Board of Directors collected by Chen et al. (2017): board size, number of board committees, percentage of independent directors, average attendance ratio of board meetings for independent directors, and the number of dissenting proposals by independent directors. Each component is standardized to range from zero to

one (i.e., by scaling by the maximum value of that component) before averaging;

CASHCOVER	Cash flows from operating activities divided by current debt
CEOCHAIR	An indicator variable equal to one if the CEO is also the Chairman of the board, zero otherwise;
CFF	Cash flows from financing activities in a year, scaled by total assets
DISSUE	Annual percentage change in the amount of total debt;
EISSUE	Annual percentage change in the number of outstanding shares;
EXCHANGE	An indicator variable equal to one if the company is traded on the Shenzhen Stock Exchange, zero if the company is traded on the Shanghai Stock Exchange;
EXPORT	An indicator variable equal to one if the company exports merchandise to foreign countries and districts (including Hong Kong and Taiwan), zero otherwise;
FOREIGHSHR	Percentage of foreign institutional ownership;
GROWTH	Annual percentage change in total sales;
INVCOMP	The average of four components related to shareholder composition collected by Chen et al. (2017): Chairman of the Board is also the controlling shareholder (1 for no, 0 for yes), the ownership percentage of institutional investors, the number of institutional investors in list of top ten shareholders, and the average percentage of shareholders that attend annual shareholder meetings. Each component is standardized to range from zero to one (by scaling each value by the maximum value of that component) before averaging;
NEWIPO	An indicator variable equal to one if a company became listed on the Shenzhen or Shanghai Exchanges after May 2006, zero if it was already listed before May 2006;
LOSS	An indicator variable equal to one if the company reports a loss in the year, zero otherwise;
M&A	An indicator variable equal to one if the company completed a merger or acquisition during the year, zero otherwise;
MARKETIZATION	A comprehensive index measuring the development of the regional market in which a firm is registered based on Fan and Wang (2006) and Jiang et al. (2010);
MB	Market value of equity divided by book value of equity;
MGMTCHANGE	Number of non-CEO executive positions that had personnel changes during the year;
MGMTSHR	Percentage of outstanding shares held by top executives (multiplied by 100);
PAYRATIO	Ratio of the average executive total compensation relative to other employees' average total compensation;
ROA	Earnings before extraordinary items divided by average total assets;
SALES	The logarithm of total sales (in Chinese Yuan);
SEGMENTS	The logarithm of the number of the geographic segments;

SOE	An indicator variable equal to one if the company is controlled by the central or local government or their agencies, zero otherwise;
TOP1SHR	The percentage of outstanding shares held by the largest shareholder;
TOP2to5RATIO	The ratio of ownership by the second to fifth largest shareholders over the controlling shareholder's ownership;
TOP2to5IND	An indicator variable applied only for non-SOEs, equal to one if *TOP2to5RATIO* is above or equal to the non-SOE sample median, and zero otherwise.

Appendix D: Validation of the Internal Control over Financial Reporting Measure

Table D1: Determinants of Internal Control over Financial Reporting Strength

	Predicted Sign	Full Sample	SOEs	Non-SOEs
Intercept	?	0.017	-0.009	0.083
		(0.682)	(0.868)	(0.198)
NEWIPO	+	0.060***	0.055***	0.056***
		(<0.001)	(<0.001)	(<0.001)
ACCT_EDU	+	0.001***	0.001***	0.0005*
		(<0.001)	(<0.001)	(0.090)
SOE	+	0.003		
		(0.249)		
ASSETS	+	0.017***	0.018***	0.015***
		(<0.001)	(<0.001)	(<0.001)
ROA	+	0.081***	0.070**	0.080**
		(<0.001)	(0.030)	(0.015)
LOSS	–	-0.013**	-0.010	-0.017**
		(0.014)	(0.145)	(0.017)
MB	–	0.0001	0.001	-0.001
		(0.526)	(0.812)	(0.125)
EXPORT	?	0.018***	0.016***	0.018***
		(<0.001)	(0.001)	(0.001)
SEGMENTS	?	-0.001	0.001	-0.007
		(0.743)	(0.821)	(0.249)
M&A	–	0.002	0.003	0.002
		(0.805)	(0.762)	(0.728)
FOREIGHSHR	+	0.004	0.057	-0.018
		(0.440)	(0.100)	(0.747)
BIG10	+	0.005*	0.0003	0.011***
		(0.063)	(0.473)	(0.010)
MARKETIZATION	+	-0.0003	-0.0002	-0.001*
		(0.143)	(0.278)	(0.089)
EXCHANGE	?	0.062***	0.056***	0.073***
		(0.000)	(0.000)	(0.000)
Year effects		Included	Included	Included
Industry effects		Included	Included	Included
No. of Obs.		6,839	3,955	2,884
Adjusted R^2		0.385	0.326	0.465

All variables are defined in Appendix C. All continuous variables are winsorized at 1% and 99% to mitigate outliers. ***, **, * indicate statistical significance at the 0.01, 0.05, and 0.10 level, respectively. P-values reported in parentheses are based on one-tailed tests for variables with predicted signs and two-tailed tests for variables without predicted signs. Standard errors are clustered by firm.

Table D2: Internal Control and Earnings Quality

Dependent Variable	Predicted Signs	ABSDA(OLS)			RESTATE(Logit)		
		Full Sample	SOEs	Non-SOEs	Full Sample	SOEs	Non-SOEs
Intercept	?	0.301**	-0.253*	1.702***	-2.248	-2.795	1.030
		(0.028)	(0.088)	(0.000)	(0.120)	(0.103)	(0.709)
ICFRS	–	-0.239***	-0.168***	-0.396***	-3.075***	-2.736***	-3.942***
		(<0.001)	(0.002)	(<0.001)	(<0.001)	(<0.001)	(<0.001)
SOE	?	-0.005			0.143		
		(0.660)			(0.317)		
ASSETS	–	-0.012**	0.015**	-0.076***	0.042	0.056	-0.079
		(0.029)	(0.017)	(<0.001)	(0.741)	(0.764)	(0.262)
OCF	–	0.181	0.206	0.305	0.189	0.179	0.204
		(0.989)	(0.981)	(0.997)	(0.800)	(0.5742)	(0.729)
LEV	+	0.343***	0.262***	0.345***	0.521***	0.810**	0.290
		(<0.001)	(<0.001)	(<0.001)	(0.009)	(0.011)	(0.158)
ROA	?	-0.647***	-1.919***	0.674**	-2.542***	-2.214*	-2.411*
		(0.001)	(0.000)	(0.020)	(0.003)	(0.071)	(0.062)
MB	+	0.058***	0.062***	0.042***	-0.022	-0.022	-0.056
		(<0.001)	(<0.001)	(<0.001)	(0.736)	(0.664)	(0.862)
EISSUE	+	0.102***	0.133***	0.085***	-0.016	-0.056	0.126
		(<0.001)	(<0.001)	(<0.001)	(0.530)	(0.576)	(0.335)
DISSUE	+	0.131***	0.147***	0.127***	0.043	0.026	0.061
		(<0.001)	(<0.001)	(<0.001)	(0.331)	(0.424)	(0.323)
BIG10	–	-0.008	-0.002	-0.027*	-0.158*	-0.098	-0.217
		(0.202)	(0.425)	(0.056)	(0.095)	(0.261)	(0.133)
Top1SHR	–	0.092	0.081	0.071	-0.858**	-0.620	-1.582**
		(0.993)	(0.962)	(0.871)	(0.022)	(0.117)	(0.023)
Year effects		*Included*	*Included*	*Included*	*Included*	*Included*	*Included*
Industry effects		*Included*	*Included*	*Included*	*Included*	*Included*	*Included*
No. of Obs.		7,360	4,319	3,041	7,695	4,529	3,166
Adjusted (or Pseudo) R^2		0.210	0.275	0.249	0.051	0.045	0.758

OCF is operating cash flows divided by end-of-year total assets; All other variables are defined in Appendix C. All continuous variables are winsorized at 1% and 99% to mitigate outliers. ***, **, * indicate statistical significance at the 0.01, 0.05, 0.10 level, respectively. P-values reported in parentheses are based on one-tailed tests for variables with predicted signs and two-tailed tests for variables without predicted signs. Standard errors are clustered by firm.

Table 1
Panel A: Sample Selection

	Firm-year observations
Firm-years listed on Shenzhen and Shanghai exchanges 2007-2011*	8,813
Less：Firms in the financial industry	（164）
Missing data on internal control index	（121）
Missing data on controlling shareholders	(31)
Total sample used in multivariate analysis	8,497

*Firms traded on the Entrepreneur Section of the Shenzhen Exchange are excluded because the Entrepreneur Section was not established until 2009 and these firms are not covered by the Internal Control Index constructed by Chen et al. (2017).

Panel B: Distribution by Year

Year	SOEs		Non-SOEs		Total
	N	%	N	%	
2007	906	10.66	567	6.67	1,473
2008	933	10.98	621	7.31	1,554
2009	949	11.17	684	8.05	1,633
2010	979	11.52	867	10.20	1,846
2011	975	11.47	1,016	11.96	1,991
Total	4,742	55.81	3,755	44.19	8,497

Table 2
Panel A: Descriptive Statistics for Full Sample

Variable	N	Mean	Median	SD	Q1	Q3
ICFRS	8,497	0.534	0.538	0.119	0.449	0.620
PRIVATE	3,743	0.026	0.011	0.049	0.004	0.026
EXPOSED	8,497	0.040	0.000	0.195	0.000	0.000
OTHREC	8,493	0.024	0.010	0.038	0.004	0.025
RELATEDLOAN	8,494	0.008	0.000	0.032	0.000	0.001
Total Assets	8,497	7,941	2,161	28,568	1,050	5,056
Sales Revenue	8,497	4,857	1,304	12,659	543	3,233
# of Segment	7,527	2.555	2.000	1.752	1.000	3.000
ROA	7,960	0.042	0.039	0.078	0.013	0.073
LOSS	8,497	0.102	0.000	0.303	0.000	0.000
MB	8,210	2.246	1.665	2.001	0.950	2.814
EXPORT	8,457	0.470	0.000	0.499	0.000	1.000
M&A	8,497	0.300	0.000	0.458	0.000	1.000
FOREIGNSHR	8,497	0.013	0.000	0.060	0.000	0.000
BIG10	8,496	0.475	0.000	0.499	0.000	1.000
NEWIPO	8,497	0.236	0.000	0.424	0.000	0.000
MBAMPA	8,487	9.936	8.000	8.412	4.000	13.000
MARKETIZATION	8,497	7.859	6.950	5.832	5.580	8.050
EXCHENGE	8,497	0.505	1.000	0.500	0.000	1.000
PAYRATIO	8,297	4.343	3.323	3.694	2.005	5.461
MGMTSHR	7,945	0.063	0.000	0.158	0.000	0.002
ATO	7,932	0.754	0.634	0.542	0.383	0.964
EISSUE	7,959	0.154	0.005	0.319	-0.003	0.165
TOP1SHR	8,497	0.364	0.345	0.154	0.239	0.481
TOP2to5RATIO	8,497	0.576	0.408	0.541	0.147	0.846
INVCOMP	8,497	0.346	0.340	0.155	0.223	0.445
BOARD	8,497	0.574	0.577	0.037	0.556	0.597
CEOCHAIR	8,497	0.177	0.000	0.381	0.000	0.000
LEV	8,494	0.515	0.498	0.299	0.333	0.648
GROWTH	7,923	0.278	0.152	0.845	-0.002	0.336
MGMTCHANGE	8,414	5.443	2.000	7.293	0.000	7.000
CFF	8,494	0.047	0.005	0.145	-0.033	0.089
CASHCOVER	6,608	6.333	0.750	27.009	0.000	2.836

Total Assets and *Sales Revenues* are reported in millions of Chinese Yuan.

Table 2, Continued
Panel B: Descriptive Statistics for the SOE and Non-SOE Samples

	SOEs			Non-SOEs			Test of Differences	
	N	Mean	Median	N	Mean	Median	Mean Test	Median Test
ICFRS	4,742	0.528	0.527	3,755	0.541	0.552	*<0.001*	*<0.001*
PRIVATE	2,083	0.020	0.009	1,660	0.033	0.014	*<0.001*	*<0.001*
EXPOSED	4,742	0.062	0.000	3,755	0.011	0.000	*<0.001*	*<0.001*
OTHREC	4,740	0.021	0.009	3,753	0.027	0.011	*<0.001*	*<0.001*
RELATEDLOAN	4,740	0.008	0.000	3,754	0.009	0.000	*0.089*	*<0.001*
Total Assets	4,742	11968	3005	3,755	2854	1428	*<0.001*	*<0.001*
Sales Revenue	4,742	7064	1822	3,755	2069	871	*<0.001*	*<0.001*
# of Segment	4,130	2.777	2.000	3,397	2.284	2.000	*<0.001*	*<0.001*
ROA	4,639	0.037	0.034	3,321	0.049	0.047	*<0.001*	*<0.001*
LOSS	4,742	0.108	0.000	3,755	0.095	0.000	*0.061*	*0.061*
MB	4,626	1.889	1.387	3,584	2.706	2.045	*<0.001*	*<0.001*
EXPORT	4,730	0.446	0.000	3,727	0.500	1.000	*<0.001*	*<0.001*
M&A	4,742	0.280	0.000	3,755	0.324	0.000	*<0.001*	*<0.001*
FOREIGNSHR	4,742	0.005	0.000	3,755	0.023	0.000	*<0.001*	*<0.001*
BIG10	4,741	0.463	0.000	3,755	0.490	0.000	*0.013*	*0.013*
NEWIPO	4,742	0.120	0.000	3,755	0.382	0.000	*<0.001*	*<0.001*
MBAMPA	4,737	10.070	7.000	3,750	9.767	8.000	*0.099*	*0.002*
MARKETIZATION	4,742	7.579	6.530	3,755	8.211	7.510	*<0.001*	*<0.001*
EXCHENGE	4,742	0.398	0.000	3,755	0.642	1.000	*<0.001*	*<0.001*
PAYRATIO	4,628	4.186	3.085	3,669	4.542	3.654	*<0.001*	*<0.001*
MGMTSHR	4,391	0.003	0.000	3,554	0.136	0.001	*<0.001*	*<0.001*
ATO	4,632	0.784	0.657	3,300	0.712	0.602	*<0.001*	*<0.001*
EISSUE	4,638	0.114	0.004	3,321	0.210	0.009	*<0.001*	*<0.001*
TOP1SHR	4,742	0.391	0.388	3,755	0.330	0.300	*<0.001*	*<0.001*
TOP2to5RATIO	4,742	0.461	0.266	3,755	0.722	0.592	*<0.001*	*<0.001*
INVCOMP	4,742	0.350	0.345	3,755	0.341	0.333	*0.011*	*0.0127*
BOARD	4,742	0.572	0.573	3,755	0.578	0.582	*<0.001*	*<0.001*
CEOCHAIR	4,742	0.093	0.000	3,755	0.283	0.000	*<0.001*	*<0.001*
LEV	4,740	0.537	0.541	3,754	0.487	0.445	*<0.001*	*<0.001*
GROWTH	4,626	0.262	0.151	3,297	0.301	0.153	0.043	0.643
MGMTCHANGE	4,685	5.483	2.000	3,729	5.393	2.000	*0.575*	*0.279*
CFF	4,740	0.026	0.002	3,754	0.072	0.013	*<0.001*	*<0.001*
CASHCOVER	3,853	6.840	0.869	2,755	5.625	0.608	*0.071*	*<0.001*

Total Assets and *Sales Revenues* are reported in millions of Chinese Yuan.
p-values reported in parentheses are based on two-tailed mean and median tests.

Table 2, Continued
Panel C: Mean *ICFRS* and Corruption Measures by Industry

Industry	ICFRS		PRIVATE		EXPOSED		OTHREC		RELATEDLOAN	
	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean
Agriculture, forestry and fishing	205	0.489	100	0.021	205	0.010	205	0.032	205	0.012
Mining	179	0.573	79	0.011	179	0.240	179	0.014	179	0.007
Manufacturing	5,123	0.537	2,414	0.025	5,123	0.029	5,120	0.020	5,120	0.006
Utilities	327	0.530	121	0.013	327	0.083	327	0.013	327	0.005
Construction	190	0.572	96	0.009	190	0.074	190	0.049	190	0.005
Transportation and warehousing	330	0.546	113	0.024	330	0.118	330	0.017	330	0.008
Information technology	566	0.532	240	0.046	566	0.032	566	0.035	566	0.013
Distribution and retail	500	0.522	227	0.021	500	0.038	500	0.031	500	0.014
Real estate	411	0.525	136	0.025	411	0.039	411	0.028	411	0.011
Service	252	0.540	78	0.029	252	0.012	252	0.029	252	0.006
Communication and mass media	71	0.520	30	0.060	71	0.000	71	0.030	71	0.009
Other Industries	343	0.492	109	0.054	343	0.015	342	0.043	343	0.021
Total	8,497	0.534	3,743	0.026	8,497	0.040	8,493	0.024	8,494	0.008

*The number of observations varies for each variable due to differences in data availability. *N* refers to the number of observations corresponding to *ICFRS*.

Panel D: Mean *ICFRS* and Corruption Measures by Year

Year	ICFRS	PRIVATE	EXPOSED	OTHREC	RELATEDLOAN
2007	0.442	0.032	0.049	0.032	0.013
2008	0.500	0.027	0.048	0.027	0.010
2009	0.543	0.026	0.045	0.022	0.007
2010	0.565	0.024	0.032	0.020	0.006
2011	0.590	0.022	0.029	0.018	0.006
Total	0.534	0.026	0.040	0.024	0.008

Table 2, Continued
Panel E: Pearson (Spearman) Correlation

	ICFR	PRIVATE	EXPOSED	OTHREC	RELATEDLOAN	ASSETS	BIG10	BOARD
ICFR	1.00	-0.14[a]	0.02	-0.20[a]	-0.14[a]	0.22[a]	0.11[a]	0.19[a]
PRIVATE	-0.08[a]	1.00	-0.02	0.23[a]	0.13[a]	-0.31[a]	-0.06[a]	-0.01
EXPOSED	0.01	-0.05[b]	1.00	0.01	-0.01	0.17[a]	-0.02	0.01
OTHREC	-0.16 [a]	0.22[a]	0.02	1.00	0.39[a]	-0.22[a]	-0.06[a]	-0.02
RELATEDLOAN	-0.12 [a]	0.06[a]	0.03[b]	0.35[a]	1.00	-0.15[a]	-0.02	-0.04[a]
ASSETS	0.17 [a]	-0.36[a]	0.13[a]	-0.14[a]	0.09[a]	1.00	0.02	0.02
BIG10	0.11 [a]	-0.02	-0.02	-0.07[a]	-0.02	0.02	1.00	0.04[a]
BOARD	0.16 [a]	-0.02	0.01	-0.01	-0.05[a]	0.00	0.04[a]	1.00

All variables are described in Appendix. Pearson correlations are reported above the diagonal, and Spearman correlations are reported in the off diagonal. All continuous variables are winsorized at 1% and 99% to mitigate outliers. [a], [b], indicate statistical significance at the 0.01, 0.05 level, respectively.

Table 3: Internal Control and Private Consumption: 2SLS

Panel A: Dependent variable= *PRIVATE* (Tests of H1 and H2)

	Predicted Sign	Full Sample	SOEs	Non-SOEs
Intercept	?	0.206***	0.150***	0.311***
		(<0.001)	(<0.001)	(<0.001)
$\widehat{ICFRS}$	–	-0.096***	-0.040*	-0.158**
		(0.009)	(0.098)	(0.017)
SOE	?	-0.003		
		(0.286)		
PAYRATIO	–	0.0002	0.0001	0.001
		(0.781)	(0.659)	(0.925)
MGMTSHR	–	0.001	0.044	0.008
		(0.525)	(0.671)	(0.709)
ASSETS	–	-0.007***	-0.005***	-0.011***
		(<0.001)	(<0.001)	(<0.001)
ATO	–	-0.015***	-0.014***	-0.016***
		(<0.001)	(<0.001)	(<0.001)
ROA	?	-0.013	-0.016	0.003
		(0.259)	(0.234)	(0.530)
EISSUE	+	0.001	0.002	0.003
		(0.323)	(0.193)	(0.166)
TOP1SHR	–	-0.012*	-0.010	-0.016*
		(0.047)	(0.111)	(0.094)
INVCOMP	–	0.008	-0.001	0.019
		(0.881)	(0.428)	(0.943)
BOARD	–	0.016	0.012	0.024
		(0.721)	(0.630)	(0.709)
CEOCHAIR	+	0.004	0.002	0.006
		(0.107)	(0.346)	(0.136)
MARKETIZATION	–	-0.0002	0.0002	-0.0005*
		(0.253)	(0.737)	(0.078)
Year effects		*Included*	*Included*	*Included*
Industry effects		*Included*	*Included*	*Included*
No. of Obs.		2,752	1,550	1,202
Adjusted R^2		0.136	0.077	0.192

Test of coefficient difference

	SOE vs. Non-SOE		
	Coefficient Diff.	Z-statistic	p-value
$\widehat{ICFRS}$	0.118*	1.464	0.071

All variables are defined in Appendix C. All continuous variables are winsorized at 1% and 99% to mitigate outliers. ***, **, * indicate statistical significance at the 0.01, 0.05, 0.10 level, respectively. P-values reported in parentheses are based on one-tailed tests for variables with predicted signs and two-tailed tests for variables without predicted signs. Standard errors are clustered by firm.

Table 3: Internal Control and Private Consumption: 2SLS, Continued

Panel B: Dependent variable= *PRIVATE* (Test of H3)

	Predicted Sign	Non-SOEs
Intercept	?	0.264***
		(<0.001)
$\widehat{ICFRS}$	–	-0.109**
		(0.044)
$\widehat{ICFRS} \times TOP2to5IND$	–	-0.107**
		(0.017)
TOP2to5IND	–	0.065
		(0.984)
PAYRATIO	–	0.001
		(0.934)
MGMTSHR	–	0.008
		(0.697)
ASSETS	–	-0.010***
		(<0.001)
ATO	–	-0.016***
		(<0.001)
ROA	?	0.005
		(0.886)
EISSUE	+	0.002
		(0.206)
TOP1SHR	–	-0.008
		(0.279)
INVCOMP	–	0.017
		(0.934)
BOARD	–	0.030
		(0.757)
CEOCHAIR	+	0.005
		(0.146)
MARKETIZATION	–	-0.001*
		(0.064)
Year effects		*Included*
Industry effects		*Included*
No. of Obs.		1,202
Adjusted R^2		0.199
$\widehat{ICFRS}+\widehat{ICFRS} \times TOP2to5IND$	–	-0.216***
(p-value from F-test)		（0.009）
$\widehat{ICFRS} \times TOP2to5IND + TOP2to5IND$	–	-0.042**
(p-value from F-test)		(0.019)

All variables are defined in Appendix C. All continuous variables are winsorized at 1% and 99% to mitigate outliers. ***, **, * indicate statistical significance at the 0.01, 0.05, and 0.10 level, respectively. P-values reported in parentheses are based on one-tailed tests for variables with predicted signs and two-tailed tests for variables without predicted signs. Standard errors are clustered by firm.

Table 4: Internal Control and Exposed Corruption Cases: 2SLS

Panel A: Dependent variable=*EXPOSED* (Test of H1 and H2)

	Predicted Sign	Full	SOE	Non-SOE
Intercept	?	-12.500***	-13.025***	-1.566
		(<0.001)	(<0.001)	(0.826)
IĈFRS	–	-1.503	-1.798	-10.357**
		(0.285)	(0.265)	(0.040)
SOE	?	0.960***		
		(0.002)		
PAYRATIO	–	-0.029	-0.014	-0.146
		(0.163)	(0.325)	(0.119)
MGMTSHR	–	-1.138	5.885	-3.177*
		(0.235)	(0.922)	(0.059)
ASSETS	+	0.210**	0.255**	-0.477
		(0.035)	(0.016)	(0.916)
ROA	–	-2.647*	-1.872	-2.150
		(0.094)	(0.205)	(0.284)
EISSUE	+	-0.544	-0.729	0.379
		(0.962)	(0.984)	(0.289)
LEV	+	1.068*	1.726**	-1.455
		(0.081)	(0.013)	(0.785)
GROWTH	+	0.037	0.049	-0.131
		(0.346)	(0.317)	(0.747)
M&A	+	0.316**	0.264*	0.924**
		(0.028)	(0.073)	(0.018)
MGMTCHANGE	+	0.005	-0.003	0.052**
		(0.303)	(0.627)	(0.020)
TOP1SHR	–	2.367	2.520	3.351
		(0.999)	(0.999)	(0.986)
INVCOMP	–	-0.403	-0.610	-0.264
		(0.253)	(0.179)	(0.436)
BOARD	–	4.095	5.040	-2.702
		(0.932)	(0.966)	(0.345)
CEOCHAIR	+	0.579**	0.053	1.721***
		(0.024)	(0.444)	(0.001)
MARKETIZATION	–	0.004	0.006	-0.021
		(0.607)	(0.666)	(0.293)
Year effects		*Included*	*Included*	*Included*
Industry effects		*Included*	*Included*	*Included*
No. of Obs.		4,655	2,770	1,885
Pseudo R^2		0.150	0.126	0.218

Test of coefficient difference

	SOEs vs. Non-SOEs		
	Coefficient Diff.	Z-statistic	p-value
IĈFRS	8.558*	1.302	0.096

All variables are defined in Appendix C. All continuous variables are winsorized at 1% and 99% to mitigate outliers. ***, **, * indicate statistical significance at the 0.01, 0.05, and 0.10 level, respectively. P-values reported in parentheses are based on one-tailed tests for variables with predicted signs and two-tailed tests for variables without predicted signs. Standard errors are clustered by firm.

Table 4: Internal Control and Exposed Corruption Cases: 2SLS, Continued

Panel B: Dependent variable=*EXPOSED* (Test of H3)

	Predicted Sign	Non-SOE
Intercept	?	-3.737
		(0.628)
$\widehat{ICFRS}$	−	1.086
		(0.561)
$\widehat{ICFRS}$×*TOP2to5IND*	−	-20.748***
		(0.003)
TOP2to5IND	−	10.245
		(0.998)
PAYRATIO	−	-0.109
		(0.176)
MGMTSHR	−	-2.867*
		(0.081)
ASSETS	+	-0.554
		(0.917)
ROA	−	-2.832
		(0.252)
EISSUE	+	0.041
		(0.525)
LEV	+	-1.556
		(0.811)
GROWTH	+	-0.090
		(0.670)
M&A	+	1.012**
		(0.014)
MGMTCHANGE	+	0.052**
		(0.016)
TOP1SHR	−	1.283
		(0.757)
INVCOMP	−	-0.418
		(0.404)
BOARD	−	-3.430
		(0.284)
CEOCHAIR	+	1.719***
		(0.001)
MARKETIZATION	−	-0.032
		(0.207)
Year effects		*Included*
Industry effects		*Included*
No. of Obs.		1,885
Pseudo R²		0.283
$\widehat{ICFRS}$+$\widehat{ICFRS}$×*TOP2to5IND*	−	-19.662***
(p-value from F-test)		(0.007)
$\widehat{ICFRS}$×*TOP2to5IND*+ *TOP2to5IND*	−	-10.503***
(p-value from F-test)		(0.003)

All variables are defined in Appendix C. All continuous variables are winsorized at 1% and 99% to mitigate outliers. ***, **, * indicate statistical significance at the 0.01, 0.05, and 0.10 level, respectively. P-values reported in parentheses are based on one-tailed tests for variables with predicted signs and two-tailed tests for variables without predicted signs. Standard errors are clustered by firm.

Table 5: Internal Control and Tunneling: 2SLS

Panel A: Full Sample (Test of H1)

	Predicted Sign	Dep. Var.= OTHREC	Dep. Var.= RELATEDLOAN
Intercept	?	0.074***	0.025*
		(<0.001)	(0.054)
ICFRS	–	-0.092***	-0.045***
		(<0.001)	(0.003)
SOE	?	-0.007***	-0.002*
		(<0.001)	(0.080)
ASSETS	–	-0.001	-0.0004
		(0.176)	(0.194)
ROA	–	-0.043***	-0.025**
		(<0.001)	(0.019)
CFF	–	-0.015***	-0.003
		(<0.001)	(0.132)
CASHCOVER	+	-0.00002*	-0.00001
		(0.075)	(0.139)
TOP1SHR	–	-0.014***	-0.003
		(<0.001)	(0.174)
INVCOMP	–	-0.010***	-0.002
		(0.005)	(0.222)
BOARD	–	0.050	0.026
		(0.999)	(0.984)
CEOCHAIR	+	-0.002	-0.001
		(0.863)	(0.733)
MARKETIZATION	–	-0.0002**	0.0002
		(0.038)	(0.928)
EXCHANGE	?	0.002	0.002
		(0.300)	(0.234)
Year effects		*Included*	*Included*
Industry effects		*Included*	*Included*
No. of Obs.		5,418	5,418
Adjusted R²		0.142	0.037

All variables are defined in Appendix C. All continuous variables are winsorized at 1% and 99% to mitigate outliers. ***, **, * indicate statistical significance at the 0.01, 0.05, and 0.10 level, respectively. P-values reported in parentheses are based on one-tailed tests for variables with predicted signs and two-tailed tests for variables without predicted signs. Standard errors are clustered by firm.

Table 5: Internal Control and Tunneling: 2SLS, Continued

Panel B: SOEs versus Non-SOEs (Test of H2)

Dep. Var.		OTHREC		RELATEDLOAN	
	Predicted Sign	SOEs	Non-SOEs	SOEs	Non-SOEs
Intercept	?	0.069***	0.110***	0.016	0.065*
		(<0.001)	(0.008)	(0.168)	(0.057)
$\widehat{ICFRS}$	–	0.0002	-0.206***	-0.008	-0.069**
		(0.503)	(<0.001)	(0.329)	(0.011)
ASSETS	–	-0.002**	-0.001	-0.0003	-0.003**
		(0.023)	(0.210)	(0.224)	(0.033)
ROA	–	-0.057***	-0.024*	-0.031**	-0.016
		(<0.001)	(0.096)	(0.008)	(0.213)
CFF	–	-0.018***	-0.008	-0.005*	0.002
		(0.002)	(0.104)	(0.075)	(0.696)
CASHCOVER	+	-0.0002	-0.0001	-0.00001	-0.00001
		(0.112)	(0.235)	(0.291)	(0.302)
TOP1SHR	–	-0.018***	-0.008	-0.004	-0.003
		(<0.001)	(0.143)	(0.126)	(0.326)
INVCOMP	–	-0.009**	-0.012**	-0.001	-0.005
		(0.022)	(0.030)	(0.359)	(0.180)
BOARD	–	0.031	0.072	0.003	0.062
		(0.960)	(0.983)	(0.604)	(0.995)
CEOCHAIR	+	0.0002	-0.003	0.001	-0.001
		(0.233)	(0.545)	(0.165)	(0.569)
MARKETIZATION	–	-0.00004	-0.0005**	0.0002	0.0003
		(0.373)	(0.019)	(0.934)	(0.916)
EXCHANGE	?	-0.003	0.011**	0.002	-0.001
		(0.237)	(0.030)	(0.280)	(0.796)
Year effects		Included	Included	Included	Included
Industry effects		Included	Included	Included	Included
No. of Obs.		3,232	2,186	3,232	2,186
Adjusted R^2		0.146	0.148	0.030	0.058

Test of differences between coefficients for *OTHREC*

	SOEs vs. non-SOEs		
	Coefficient Diff.	Z-statistic	p-value
$\widehat{ICFRS}$	0.206***	3.816	<0.001

Test of differences between coefficients for *RELATEDLOAN*

	SOEs vs. non-SOEs		
	Coefficient Diff.	Z-statistic	p-value
$\widehat{ICFRS}$	0.061**	1.775	0.038

All variables are defined in Appendix C. All continuous variables are winsorized at 1% and 99% to mitigate outliers. ***, **, * indicate statistical significance at the 0.01, 0.05, 0.10 level, respectively. P-values reported in parentheses are based on one-tailed tests for variables with predicted signs and two-tailed tests for variables without predicted signs. Standard errors are clustered by firm.

Table 5: Internal Control and Tunneling: 2SLS, Continued

Panel C: Balance of Power among the Top Shareholders of Non-SOEs (Test of H3)

	Predicted Sign	Dep. Var.= OTHREC	Dep. Var.= RELATEDLOAN
Intercept	?	0.091**	0.061*
		(0.031)	(0.065)
$\widehat{ICFRS}$	–	-0.167***	-0.050*
		(<0.001)	(0.080)
$\widehat{ICFRS}\times TOP2to5IND$	–	-0.038*	-0.025*
		(0.061)	(0.097)
TOP2to5IND	–	0.022	0.012
		(0.943)	(0.859)
ASSETS	–	-0.001	-0.003**
		(0.178)	(0.023)
ROA	–	-0.030**	-0.013
		(0.041)	(0.735)
CFF	–	-0.007	0.002
		(0.109)	(0.651)
CASHCOVER	+	-0.0003	-0.000004
		(0.101)	(0.392)
TOP1SHR	–	-0.008	-0.007
		(0.211)	(0.233)
INVCOMP	–	-0.012**	-0.004
		(0.026)	(0.229)
BOARD	–	0.079	0.064
		(0.989)	(0.995)
CEOCHAIR	+	-0.003	-0.001
		(0.910)	(0.853)
MARKETIZATION	–	-0.0004***	0.0003
		(0.009)	(0.937)
EXCHANGE	?	0.010*	-0.002
		(0.059)	(0.627)
Year effects		*Included*	*Included*
Industry effects		*Included*	*Included*
No. of Obs.		2,186	2,186
Adjusted R^2		0.157	0.058
$\widehat{ICFRS}+\widehat{ICFRS}\times TOP2to5IND$	–	-0.205***	-0.075**
(p-value from F-test)		(<0.001)	(0.019)
$\widehat{ICFRS}\times TOP2to5IND+ TOP2to5IND$	–	-0.016*	-0.013*
(p-value from F-test)		(0.055)	(0.063)

All variables are defined in Appendix C. All continuous variables are winsorized at 1% and 99% to mitigate outliers. ***, **, * indicate statistical significance at the 0.01, 0.05, 0.10 level, respectively. P-values reported in parentheses are based on one-tailed tests for variables with predicted signs and two-tailed tests for variables without predicted signs. Standard errors are clustered by firm.

Table 6: Resource extraction and Future Operating Performance

Dep. Var.		OI_{t+1}				OI_{t+2}			
	Predicted Sign	Column A	Column B	Column C	Column D	Column E	Column F	Column G	Column H
Intercept	?	-0.191***	-0.106***	-0.216***	-0.224***	-0.085***	-0.009	-0.079***	-0.100***
		(<0.001)	(<0.001)	(<0.001)	(<0.001)	(0.003)	(0.573)	(<0.001)	(<0.001)
PRIVATE	−	-0.182***				-0.101**			
		(0.005)				(0.031)			
EXPOSED	−		-0.008*				-0.007*		
			(0.088)				(0.055)		
OTHREC	−			-0.186***				-0.295***	
				(<0.001)				(<0.001)	
RELATEDLOAN	−				-0.217***				-0.214***
					(0.007)				(<0.001)
PPE	?	-0.001	-0.002	-0.003	-0.002	-0.007***	-0.004***	-0.006***	-0.005***
		(0.751)	(0.237)	(0.103)	(0.145)	(<0.001)	(0.001)	(<0.001)	(<0.001)
GROWTH	?	-0.037***	-0.024***	-0.035***	-0.035***	0.018***	0.013***	0.018***	0.018***
		(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)
SEGMENTS	?	0.001	-0.003	0.003	0.003	0.004	0.001	0.005**	0.004
		(0.852)	(0.241)	(0.168)	(0.287)	(0.185)	(0.700)	(0.019)	(0.112)
EXPORT	?	0.001	-0.002	0.002	0.003	-0.003	-0.005***	-0.002	-0.001
		(0.731)	(0.439)	(0.336)	(0.217)	(0.434)	(0.009)	(0.477)	(0.815)
AGE	?	-0.002***	-0.002***	-0.002***	-0.002***	-0.001***	-0.000	-0.001***	-0.001***
		(<0.001)	(<0.001)	(<0.001)	(<0.001)	(0.008)	(0.107)	(<0.001)	(<0.001)
BIG10	?	-0.005	-0.000	0.002	0.002	0.003	0.002	0.002	0.002
		(0.128)	(0.786)	(0.397)	(0.362)	(0.172)	(0.260)	(0.326)	(0.278)
OI	?	0.691***	0.624***	0.667***	0.673***	0.325***	0.322***	0.299***	0.307***
		(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)
ASSETS	?	0.011***	0.007***	0.014***	0.014***	0.010***	0.004***	0.010***	0.010***
		(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(0.001)	(<0.001)	(<0.001)
TOP1SHR	?	0.007	0.012*	0.001	0.003	0.011	0.011*	0.011*	0.016**
		(0.521)	(0.100)	(0.877)	(0.654)	(0.316)	(0.068)	(0.090)	(0.017)
Year effects		Included	Included	Included	Included	Included	Included	Included	Included
Industry effects		Included	Included	Included	Included	Included	Included	Included	Included

		3,117	5,154	7,020	7,020	3,117	5,154	7,020	7,020
# Obs.		3,117	5,154	7,020	7,020	3,117	5,154	7,020	7,020
AdjustedR^2		0.405	0.358	0.367	0.367	0.296	0.283	0.306	0.297

PPE is the natural logarithm of gross property, plant and equipment at the end of year t. *GROWTH* is annual percentage sales growth in year t. *AGE* is the natural logarithm of the number of years that a company is publicly traded. All other variables are defined in Appendix C. All continuous variables are winsorized at 1% and 99% to mitigate outliers. ***, **, * indicate statistical significance at the 0.01, 0.05, and 0.10 level, respectively. P-values reported in parentheses are based on one-tailed tests for variables with predicted signs and two-tailed tests for variables without predicted signs. Standard errors are clustered by firm.

Table 7: Internal Control and CEO Promotions for SOEs

Dependent variable=*PROMOTION*

	Predicted Sign	All[a]	Turnover Only[b]
ICFRS	+	1.048**	1.824**
		(0.014)	(0.028)
ASSETS	?	0.065	0.125
		(0.123)	(0.149)
OCF	?	0.019	0.025
		(0.976)	(0.983)
ROA	+	-0.212	-0.879
		(0.582)	(0.720)
LEV	?	-0.668***	-0.883**
		(0.004)	(0.039)
GROWTH	?	-0.029	-0.120
		(0.676)	(0.278)
CEOAGE	?	-0.302**	-0.444*
		(0.046)	(0.086)
EDUCATION	+	-0.024	0.018
		(0.735)	(0.447)
TENURE	+	0.025	0.082*
		(0.109)	(0.052)
TOP1SHR	?	0.499	1.118*
		(0.112)	(0.095)
MARKETIZATION	+	0.011	0.022*
		(0.137)	(0.079)
Constant1	?	-0.201	
		(0.813)	
Constant 2	?	5.178***	
		(0.000)	
Constant	?		-4.850***
			(0.006)
Year effects		*Included*	*Included*
Industry effects		*Included*	*Included*
No. of Obs.		3,955	548
Pseudo R²		0.020	0.108

[a]: Includes all firm-years; the dependent variable equals 2 if the CEO is promoted in the following year, 1 if there is no CEO turnover, and 0 if the CEO is demoted in the following year.

[b]: Includes only firm-years of CEO turnover; the dependent variable equals 1 if the CEO gets promoted in the following year, and 0 otherwise.

We collect the CEO turnover data from 2008-2011 and eliminate cases where the CEO left office due to retirement or health reason, and cases where we cannot identify her next appointment. We consider the CEO as have been promoted if in the following year she left the CEO position and became (1) the chairman of the board at the same company (2) the CEO or the chairman of the board in the parent company, (3) the CEO at a larger public company, where the assets of the new company are at least 20% larger than the former company, or (4) a high-ranking government official. OCF is the operating cash flows divided by end-of-year total assets. *EDUCATION* is a categorical variable measuring the highest degree of education the CEO holds; *EDUCATION* equals 4 if the CEO's highest degree is a doctorate, 3 if it is a master's degree, 2 if it is a college degrees, 1 if it is a 3-year college or other. *TENURE* measures the number of years that the CEO has assumed the position. *CEOAGE* is an indicator variable that equals to one if the CEO is 55 years old or older, and zero otherwise. All other variables are defined in Appendix C. All continuous variables are winsorized at 1% and 99% to mitigate outliers. ***, **, * indicate statistical significance at the 0.01, 0.05, 0.10 level, respectively. P-values reported in parentheses are based on one-tailed tests for variables with predicted signs and two-tailed tests for variables without predicted signs. Standard errors are clustered by firm.

Table 8: Internal Control and Resource Extraction: OLS

Panel A: Full Sample

	Predicted sign	PRIVATE	EXPOSED	OTHREC	RELATEDLOAN
ICFRS	−	-0.017*	0.740	-0.019***	-0.014**
		(0.049)	(0.833)	(<0.001)	(0.013)
Control variables		Included	Included	Included	Included
# Obs.		3,165	5,251	6,214	6,214
Adjusted (Pseudo)R²		0.150	0.152	0.140	0.036

Panel B: SOEs versus Non-SOEs

	PRIVATE		EXPOSED		OTHREC		RELATEDLOAN	
	SOEs	Non-SOEs	SOEs	Non-SOEs	SOEs	Non-SOEs	SOEs	Non-SOEs
ICFRS	-0.003	-0.037**	0.825	-3.620*	-0.007	-0.044***	0.002	-0.039***
	(0.411)	(0.025)	(0.841)	(0.032)	(0.115)	(<0.001)	(0.646)	(0.001)
Control variables	Included	Included	Included	Included	Included	Included	Included	Included
# Obs.	1,817	1,348	3,172	2,079	3,772	2,442	3,772	2,442
Adjusted (Pseudo)R²	0.094	0.210	0.128	0.196	0.139	0.146	0.031	0.066

Test of coefficient difference

	PRIVATE		EXPOSED		OTHREC		RELATEDLOAN	
	SOEs vs. Non-SOEs		SOEs vs. Non-SOEs		SOEs vs. Non-SOEs		SOEs vs. Non-SOEs	
	Coefficient Diff.	p-value	Coefficient Diff.	p-value	Coefficient Diff.	p-value	Coefficient Diff.	p-value
ICFRS	0.034*	0.062	4.445**	0.018	0.037***	0.001	0.042***	0.001

All other variables are defined in Appendix C. All continuous variables are winsorized at 1% and 99% to mitigate outliers. ***, **, * indicate statistical significance at the 0.01, 0.05, 0.10 level, respectively, under one-tailed tests for variables with predicted signs and two-tailed tests for variables without predicted signs. Standard errors are clustered by firm.

Table 8: Internal Control and Resource Extraction: OLS, Continued

Panel C: Balance of Power among the Top Shareholders of Non-SOEs

	Predicted sign	PRIVATE	EXPOSED	OTHREC	RELATEDLOAN
ICFRS	−	-0.016	-2.275	-0.017	-0.023**
		(0.191)	(0.127)	(0.101)	(0.050)
ICFRS* TOP2to5IND	−	-0.044*	-3.088	-0.050***	-0.031**
		(0.074)	(0.155)	(0.003)	(0.032)
TOP2to5IND	−	0.029	1.139	0.028	0.016
		(0.940)	(0.767)	(0.994)	(0.932)
Control variables		Included	Included	Included	Included
# Obs.		1,348	2,079	2,442	2,442
Adjusted (Pseudo)R^2		0.212	0.201	0.174	0.084
ICFRS+ ICFRS* TOP2to5IND	−	-0.060**	-5.363**	-0.067***	-0.054***
(p-value from F-test)		(0.020)	(0.044)	(<0.001)	(<0.001)
$\widehat{ICFRS}$×TOP2to5IND+ TOP2to5IND	−	-0.015	-1.949	-0.022***	-0.015***
(p-value from F-test)		(0.115)	(0.115)	(0.002)	(0.009)

All other variables are defined in Appendix C. All continuous variables are winsorized at 1% and 99% to mitigate outliers. ***, **, * indicate statistical significance at the 0.01, 0.05, 0.10 level, respectively, under one-tailed tests for variables with predicted signs and two-tailed tests for variables without predicted signs. Standard errors are clustered by firm.