Cheating in China: Corporate Fraud and the Role of Financial Markets[1]

Minwen Li, Tanakorn Makaew, and Andrew Winton [2]

Abstract

We find that financial misreporting in China is less likely if a firm's province is more financially developed, if its largest shareholder holds more shares, or if the firm is in a government-supported industry, and more likely if the firm is connected to the market regulator. Many conventional Western governance mechanisms do not affect the incidence of misreporting. Natural experiments using two recent reforms support causal effects of financial development and blockholdings on misreporting. We also find that financial development reduces the frequency of tunneling and insider trading, but ownership structure has differing effects on these two types of fraud.

Keywords: corporate securities fraud, misreporting, tunneling, insider trading, China, financial development.

[1]We thank Cindy Alexander, Allen N. Berger, Tara Bhandari, Natasha Burns, Chao Chen, Jeffrey Coles, Joseph Fan, Anzhela Knyazeva, Christian Leuz, Vojislav Maksimovic, Randall Morck, Mattias Nilsson, Laura Stark, T.J. Wong, Jun Yang, David Yermack, Bernard Yeung, Fang Yu, and seminar participants at the Securities and Exchange Commission, the University of South Carolina, and the University of Minnesota, and conference participants at the International Corporate Governance Conference at Tsinghua University, the 2014 China International Conference in Finance, and the International Young Scholar Corporate Finance and Governance Symposium (2015) for helpful comments and suggestions. All remaining errors are our responsibility.

[2]Minwen Li is from Tsinghua University and can be reached at liminwen@sem.tsinghua.edu.cn. Tanakorn Makaew is from the U.S. Securities and Exchange Commission and can be reached at makaewt@sec.gov. Andrew Winton is from University of Minnesota and can be reached at winto003@umn.edu. Minwen Li acknowledges support from Project 71402078 of National Science Foundation of China and Project 2013WKZD004 of Social Science Foundation of Tsinghua University.

1. Introduction

Understanding the determinants of corporate fraud is a critical issue for researchers, practitioners, and policy makers as corporate fraud can impose significant costs on fraudulent firms' shareholders (Karpoff, Lee, and Martin, 2008), reduce stock market participation (Giannetti and Wang, forthcoming), and harm the overall economy. While the vast majority of fraud literature focuses on the U.S. or other developed countries, this paper analyzes the determinants of financial misreporting and other major types of corporate fraud in China. Studying fraud in China has several key advantages. First, because the Chinese financial system is largely segmented at the provincial level and provinces vary greatly in their levels of financial development, we can investigate the effect of financial development on financial misreporting without encountering the problems of varying legal systems and culture that plague cross-country comparisons. Second, we are able to exploit detailed data on state and private ownership and on political connections in a way that leads to new insights about how these factors jointly affect the commission and detection of financial misreporting. Third, using two recent reforms in China as natural experiments, we find strong evidence that the effects of financial development and ownership structure on misreporting are in fact causal.

We use the China Securities Regulatory Commission (CSRC) enforcement actions related to fraudulent activity during the period of 1990 to 2010 for companies listed on Shanghai and Shenzhen Stock Exchanges. We find that financial misreporting fraud is much less prevalent for firms headquartered in financially developed provinces. We also find that larger private or state share ownership reduces the prevalence of financial misreporting fraud, but conventional governance mechanisms such as board independence, board size, audit committee independence, number of board meetings, supervisory board size, CEO duality, CEO ownership, and the presence of foreign auditors have no effect on fraud. The ineffectiveness of these governance mechanisms in China further highlights the importance of monitoring by block shareholders. Finally, as in the U.S., fraud is less prevalent for firms that are less levered, more profitable, or have higher sales growth.

Because we only observe fraud that the CSRC has detected, we adopt the bivariate probit approach of Wang, Winton, and Yu (2010) and Wang (2013) to estimate the extent to which these effects are due to changes in fraud commitment or changes in the detection of committed fraud. We find that provincial financial development and block ownership both decrease fraud commitment and increase fraud detection; however, all else equal, greater state ownership reduces fraud detection, which is consistent with political connections helping to shield such firms from enforcement actions. Larger size, greater profitability, or lower leverage also decreases fraud commitment and increases fraud detection, but although higher sales growth decreases fraud commitment, it has no significant effect on fraud detection.

Although these results suggest that shareholder monitoring and financial development reduce misreporting fraud, reverse causality or spurious correlation offers alternative explanations. For example, blockholders may choose to invest only in firms that are less likely to engage in fraudulent activities, and prevalence of fraud may itself hinder financial development. Also, a firm's ownership structure and financial development may be correlated with omitted variables, such as unobserved growth opportunities, that also affect the prevalence of fraud. We address these endogeneity issues for blockholdings and financial development through two natural experiments: the 2005 Split Share Structure Reform and the staggered introduction of financial liberalization following China's accession to the WTO in 2001.

The 2005 Split Share Structure Reform eliminated the dual-class share structure and increased monitoring incentives for key shareholders (Li et al., 2011; Chen et al., 2012; Liao, Liu, and Wang, 2014). Moreover, the CSRC implemented the reform sequentially for groups of firms that it chose exogenously. This reform-driven exogenous and staggered change in shareholder monitoring incentives gives us a well-identified test of the hypothesis that shareholder monitoring reduces fraud. We find that companies that undergo the Split Share Structure Reform have significantly lower levels of fraudulent activity. Moreover, the negative effect of Split Share Structure Reform is greater among firms with greater potential conflicts of interest between management and shareholders as proxied by a higher amount of loans granted to related parties and by a higher percentage of non-tradable shares prior to the reform.

We use financial liberalization as a shock to financial development. Foreign banks tend to have better incentives and capabilities to monitor the borrowers than Chinese banks (Bailey, Huang, and Yang, 2012; Qian, Strahan, and Yang, 2015). In addition, entry of foreign banks may improve monitoring of local banks through competitive pressure and technological spillover. Following China's accession to the WTO in December 2001, foreign banks were allowed to conduct local-currency transactions. Again, this liberalization was staggered across cities in a relatively exogenous fashion, giving us a well-identified test of the hypothesis that greater financial development reduces the prevalence of fraud. Our analysis shows that, compared with firms located in adjacent non-liberalized cities with similar levels of ex ante financial and economic development, firms located in cities that allow foreign bank entry are subsequently significantly less likely to commit fraud.

Our main results are robust to the inclusion of various political connection measures. We find that firms located in the incumbent CSRC chairperson or vice chairperson's birth city and firms that operate in government-supported industries according to China's Five-Year Plans for National Economic and Social Development are less likely to be subject to CSRC's enforcement actions. Bivariate probit analysis shows that the connection to the CSRC chairperson or vice chairperson's birth city actually increases fraud commitment, but this is more than offset by a reduction in fraud detection, leading to the net decline in CSRC enforcement actions. By contrast, being in a government-supported industry significantly reduces fraud commitment but has no effect on fraud detection, consistent with the notion that these firms have little need to commit fraud to maintain access to funding. In all cases, the coefficients on ownership structure and financial development remain highly significant, suggesting that the effects of financial market monitoring are not due to spurious correlation with political connections.

We extend our analysis of financial misreporting to two other major types of CSRC enforcement actions—tunneling (expropriation of minority shareholders through illegal related-party transactions) and insider trading. When we compare the determinants of these two types of fraud with financial misreporting, several interesting patterns emerge. First, financial misreporting and tunneling are highly correlated, which suggests companies that steal from shareholders also

tend to manipulate financial statements, perhaps to cover up their expropriation. Second, financial development plays an even more economically significant role in preventing tunneling and insider trading than financial misreporting. Third, the effects of ownership structure on misreporting differ from its effects on tunneling and insider trading. Larger blockholdings do reduce insider trading just as they reduce misreporting, but they have no effect on tunneling. By contrast, greater state ownership reduces tunneling even more than misreporting, but it has no effect on insider trading. Finally, although greater managerial ownership has no effect on misreporting, it greatly reduces tunneling and greatly increases insider trading.

Our paper is closely related to the literature on financial development, which argues that financial development can alleviate agency and asymmetric information problems and promote firm growth (e.g., Demirguc-Kunt and Maksimovic, 1998; Rajan and Zingales, 1998; Beck, Demirguc-Kunt, and Maksimovic, 2005, 2008; Ayyagari, Demirguc-Kunt, and Maksimovic, 2010). While these papers focus on firm growth and patterns of financing activities, we focus on corporate fraud, which is a direct consequence of agency and asymmetric information problems. Since the prevalence of fraud increases the cost of capital and restricts the availability of external financing (e.g., Murphy, Shrieves, and Tibbs, 2005; Karpoff, Lee, and Martin, 2008), our paper provides a new insight into the mechanisms in which financial development affects firm growth.

We also contribute to the thriving literature on governance and fraud by showing how the determinants of misreporting differ in an emerging market such as China. A number of papers on fraud in the U.S. document the importance of CEO and board characteristics. For example, fraud commitment is shown to be more likely among firms with fewer outside directors (Beasley, 1996; Dechow, Sloan, and Sweeney,1996), firms whose CEOs also serve as chairpersons of the boards (Efendi, Srivastava, and Swanson, 2007), and firms with smaller boards or boards who meet less frequently (Khanna, Kim, and Lu, 2015). We, however, do not find these CEO and board characteristics affect fraudulent activity in China. We instead find strong and robust evidence that

blockholders play crucial roles in preventing corporate fraud. In addition, we identify a new variable, regional financial development, as a powerful determinant of fraud in China.[3]

2. Background information on China's financial system

2.1 Financial development across provinces

Unlike cross-country studies where countries differ on both financial development and legal systems, China uses a single nationwide investor protection law; however, financial development varies substantially across various provinces. In comparison to developed countries, cross-region bank lending is rare, and the People's Bank of China (the central bank) enforces a loan quota system in which the ceiling of total credits in each province is determined annually, resulting in severely segmented banking markets. A location-based stock market listing quota system was also in place during 1993 to 2001, when the annual total amount of shares to be issued was determined by the central bank and then allocated to each province by CSRC. Since many companies selected under the quota system were placed on a waiting list, the composition of stock markets only begun to change in 2004 (Pistor and Xu, 2005). The distribution of Chinese listed firms, therefore, is dispersed across provinces due to the explicit and implicit location-based listing quota. As a result, even firms from the least financially developed areas are well-represented in our sample.

The location of Chinese firms is also less endogenous than many developed economies due to the red tape for firm registration and approval and labor market segmentation brought by the Hukou system. Specifically, the Hukou system in China links an individual's social benefits, education, and employment opportunities to his/her residence, which is only allowed to change

[3] The only other study we know of that focuses on fraud in China is Chen, Firth, Gao, and Rui (2006). Our paper goes beyond this earlier paper in several ways. First, we have a longer and more recent sample that allows us to use the two reforms mentioned above as natural experiments to establish causality. Second, we are able to identify major channels of political connections that attribute to fraud propensity. Third, rather than using all CSRC enforcement actions as cases of fraud, we investigate misreporting, tunneling, and insider trading separately, and find that blockholdings and ownership play different roles in these different types of fraud. Finally, Chen et al. (2006)'s empirical specifications have some weaknesses. This is especially true for their bivariate probit analysis, where they arbitrarily assign some ex ante variables to the commitment equation and others to the detection equation, and they make no use of the ex post variables that are critical for identification, as discussed in Wang, Winton, and Yu (2010) and Wang (2010).

through government approval under very limited circumstances such as a marriage or an application filed by a prestigious state-owned employer immediately after college graduation. Overall, the segmentation of Chinese banking, equity, and labor markets leads to the unique nature of differences in financial development across provinces in China.

2.2. The legal framework for securities markets

China has three state laws that constitute the highest legal authority among security-related statutes: the Securities Law, which regulates issuing and trading securities, the Company Law, which regulates the organization and behavior of public and private companies, and the Securities Investment Fund Law, which regulates public and private securities investment fund activities. Article 7 of the Securities Law gives the CSRC the responsibility for exercising centralized and unified regulation over the nationwide securities markets.[4]

Since civil litigation systems in China are relatively immature, CSRC enforcement actions are the main legal mechanism for disciplining Chinese listed firms and their management. The current CSRC enforcement system separates hearings from case investigations to enhance the efficiency and fairness of enforcement action. The Enforcement Bureau (Chief Enforcement Office), Enforcement Contingent, and the enforcement departments of CSRC regional offices work together in case filing, investigation and implementation of administrative sanctions, while the Administrative Sanction Committee is mainly responsible for hearings and proposing administrative sanction opinions.

In relation to violations of securities laws, CSRC may impose administrative sanctions or ban

[4] Article 179 of the Securities Law mandates that CSRC shall perform the following regulatory duties for the securities market: (1) to formulate regulations and rules for the regulation of the securities markets and exercise the authority of approval and authorization pursuant to applicable laws; (2) to regulate the issuance, listing, trading, registration, depository and clearance of securities; (3) to regulate securities-related business of issuers, listed companies, securities companies, securities investment fund management companies, securities service institutions, stock exchanges and securities registrar and clearance institutions; (5) to supervise and inspect information disclosure concerning the issuance, listing and trading of securities; (6) to investigate and penalize violations of laws or administrative regulations governing the securities markets; (7) other duties as applied by applicable laws and administrative regulations.

market entry on the liable entity or individual. CSRC administrative sanctions include the following types of penalties: orders to rectify illegal conduct, warning, fine, and confiscation of illegal income. According to CSRC annual report, in 2013, CSRC received 611 case leads, and probed into 350 cases, among which 41 suspected criminal cases were referred to the judicial authority, and 86 cases were closed within the same year. These cases involve financial misreporting, insider trading, tunneling, and others. Based on investigation of these cases, the CSRC made 79 decisions on administrative sanctions, and made 21 decisions to bar market entries of 38 individuals, including permanent bars on 25 individuals.

3. Data sources and descriptive statistics

3.1. Data sources

Our initial sample consists of firms listed on Mainland China's two stock exchanges (i.e., Shanghai Stock Exchange and Shenzhen Stock Exchange) from 1990 to 2010. The sample begins in 1990, when the two stock exchanges were first established. We retrieve the following information from the CSMAR database (China Stock Market and Accounting Research database): (1) fraud characteristics such as information on the detection of different types of fraud; (2) firm characteristics, for example, firm size and leverage; (3) ownership structure and shareholder monitoring variables; (4) other governance variables, such as CEO compensation and board characteristics; (5) variables used in the natural experiment regressions, such as information on the Split Share Structure Reform and related party transactions.

In order to measure the financial development of different provinces in China, we collect province-level macroeconomic information from China National and Provincial Bureau of Statistics. We construct a set of political connection variables by collecting the biographies of past and incumbent CEOs from firms' annual reports and then manually identifying whether a specific CEO has worked for the government or military, a state-owned company, or other government agencies such as the NPC (National People's Congress). In addition, we collect the birthplaces of past and incumbent CSRC Chairmen to examine whether a firm's headquarters are located at the

incumbent CSRC chairperson's birth city (i.e., *CSRC Chair Connected*). We also collect China's Five-Year Plans for National Economic and Social Development during our sample period from the government's website to determine whether a firm operates in a government-supported industry (i.e., *Government-Supported Industries*). The number of observations varies across regressions due to data availability of the required variables.

3.2. Variable construction

The key dependent variable of this study is *Fraud Indicator,* an indicator variable that equals one if a firm is subject to a CSRC enforcement action due to financial misreporting in a specific year, and zero otherwise. We construct this key dependent variable from the CSRC enforcement action dataset compiled by the CSMAR database. We also examine the determinants of two other major types of fraud, tunneling and insider trading, in Section 8.

The following serve as the main explanatory variables in our study. We provide detailed definitions of all variables in Appendix A.

(1) *Financial Development* is the simple average of two normalized measures: stock market capitalization/GDP and total credit/GDP at the province level. Following Rajan and Zingales (1998), we use the relative size of local capital market to regional GDP to proxy for financial development of different provinces in China.

(2) Shareholding monitoring: *Largest Shareholder* is measured as the percentage of outstanding shares held by the largest shareholder, and *Foreign/State/Managerial Ownership* are measured as the percentage of outstanding shares held by foreigners/the state/firm executives.

(3) Other governance mechanisms: *CEO Ownership* is measured as the percentage of shares held by the CEO; *CEO Compensation* is CEO annual compensation; *CEO Duality* is an indicator variable that equals one if the CEO is also the chairman of the board; *Independent Board* is measured as percentage of independent directors on the board; *Board Size* is the total number of directors on the board; and *Foreign Auditor* is an indicator variable that equals one if a firm hires a foreign auditing firm.

(4) Firm characteristics: *Size* is measured as the logged value of total assets; *Leverage* is measured as total liabilities divided by total assets; *Return on Assets (ROA)* is measured as earnings before interest and tax (EBIT) divided by total assets; *Sales Growth* is the percentage change in net sales from last year; *Stock Return* is annual stock return; and *Stock Turnover* is measured as annual trading value divided by market capitalization.

3.3. Descriptive statistics

Table 1 Panel A presents the distribution of fraudulent (misreporting) firms by year. Since the CSRC was established in 1992, a relatively small number of firms was subject to the CSRC enforcement actions during the 1990s; from 1990 to 1998, the CSRC detected fraud in less than 1% of all firms. Over the entire sample period, the probability of a firm being subject to a CSRC enforcement action due to financial misreporting was 3.26%—a rate that is at least as great as in the U.S.[5] We include year fixed effects in our main regressions to control for the observed time trend of CSRC enforcement actions.[6]

Insert Table 1 here

Table 1 Panel B presents the distribution of fraudulent firms by region and province. In order to compare fraud propensity by financial development, we group the provinces in China into three regions: the most developed eastern and coastal region, the less developed central region, and the least developed western region. We find that fraud tends to be less prevalent in financially developed provinces. For example, the percentage of firms investigated for fraudulent activity is 2.65% for provinces in the eastern and coastal region (e.g., Shandong, Zhejiang, Guangdong), 3.77% in the central region (e.g., Hubei, Heilongjiang, and Hunan), and 4.73% in the western region (e.g., Gansu and Ningxia).[7]

[5] In a sample of 15,117 observations of U.S. firms, Wang (2013) documents 406 cases of corporate fraud, or 2.7%. However, Wang's sample includes private securities class action lawsuits as well as SEC enforcement actions, which are only roughly one-third of fraud cases in her sample.

[6] Note: the majority of our analysis focuses on the period of 2000-2010 since ownership data in CSMAR is only available after 2000.

[7] Existing literature finds that firms located close to a regulator are less likely to commit fraud (Kedia and Rajgopal, 2011). We note that our financial development measure is not highly correlated with the distance from the headquarters

Table 2 Panel A presents summary statistics for our main variables. We winsorize all of our variables at the 1% and 99% level to mitigate the effects of outliers. An average firm in our sample has the total assets of 1,909 million RMBs, leverage of 53.61%, ROA of 4.46%, sales growth of 2.73%, stock return of 34.46%, and stock turnover of 2.51. These sample characteristics are in accord with recent studies of Chinese firms, such as Chen et al. (2012).

Insert Table 2 here

Next, we turn to shareholder ownership and other governance features. On average, the single largest shareholder holds 38.21% of the company, and foreign, state, and managerial owners hold 1.32%, 26.87%, and 1.14% of the shares, respectively. The average CEO owns 0.98% of the company's shares and receives 347,000 RMB in compensation. 16% of CEOs in our sample have dual positions. The average board in our sample has 9.38 directors, 28.57% of whom are independent, and 8% of the firms in our sample hire foreign auditors.

In Panel B, we compare the characteristics of fraudulent versus non-fraudulent firms one year before fraud detection, and carry out two-tailed *t*-tests for testing differences in sample means. Fraudulent firms are more likely to be headquartered in a less developed province. They are significantly smaller, are more highly levered, and have lower sales growth. We do not find a significant difference in stock returns between fraudulent and non-fraudulent firms, although fraudulent firms do have significantly higher turnover prior to fraud detection than non-fraudulent firms do. Fraudulent firms have significantly smaller block, state, foreign, and managerial shareholdings. They are also more likely to have lower-paid CEOs with fewer shares, and smaller boards with a higher percentage of independent directors, all of which is consistent with the fact that fraudulent firms are significantly smaller. In fact, once we control for other firm characteristics in the next section, the significant univariate differences in CEO and board characteristics in the last part of Panel B disappear.

---

of CSRC in Beijing. Financially developed provinces are generally scattered along the coastlines or navigable waters. For example, financially developed Guangdong province is further from Beijing than less developed Henan province. We also control for the distance from Beijing in the baseline regression and find that our financial development results are robust.

4. Baseline results on financial development, ownership structure, and misreporting

In this section, we examine how provincial financial development and firm-level characteristics, shareholder monitoring, and other governance mechanisms affect fraud propensity. We estimate the following probit regression:

$$\text{Probability (Fraud Indicator}_{i,t}=1) = b_0 + b_1 \text{ Financial Development}_{i,t-1} + B_2 \text{ Firm Characteristics}_{i,t-1} + B_3 \text{ Ownership Structure}_{i,t-1} + B_4 \text{ Other Governance Mechanisms}_{i,t-1} + B_5 \text{ Industry and Year Dummies} + e_{i,t} \quad (1)$$

where the capitalized Bs reflect vectors of coefficients. We measure our main dependent variable, *Fraud Indicator*, at the detection year and explanatory variables at one year before the detection. The specification of model (1) is based on the timing of fraud detection because each CSRC enforcement action report has precise information on the detection year, but may not include a clear statement on the commission year for each fraudulent activity. Furthermore, the median detection period between fraud commission and detection in our sample is one year—shorter than the average three-year detection period documented by Wang (2013) based on the U.S. data.[8] For robustness checks, we obtain similar results when using two alternative specifications: (1) measuring *Fraud indicator* still at the detection year but explanatory variables at two years before the detection, and (2) measuring *Fraud indicator* at the first year of fraud commitment and explanatory variables at one year before fraud commitment.[9] We adopt the same empirical strategy regarding the time window of dependent and independent variables throughout the paper.

Insert Table 3 here

Table 3 displays the results of these regressions. First, we find that fraud is less likely to occur when firms are located in provinces with well-developed financial markets: the coefficients on the

[8] We describe our sample by detection period in Table 1 of the online appendix. Wang (2013) documents an average three-year detection period of U.S. listed companies in SEC's AAERs (Accounting and Auditing Enforcement Releases) and private securities class action lawsuits database. Our statistics suggest that it generally takes much less time for fraudulent activities to be detected in China.

[9] We report these robustness results using alternative specifications in Table 8e of the online appendix.

financial development indicator are negative and statistically significant in all columns. This negative relation persists when we examine the impact of stock market size and banking market size separately, and when we use alternative financial development measures.[10]

Financial development may affect fraud through various channels. For example, firms in financially developed provinces might be subject to scrutiny by more competent bank loan officers. Consistent with this notion, Qian, Strahan, and Yang (2015) find that local bank loan officers in China play an important role in information use and production. In addition, province-level financial development may affect the monitoring of listed companies due to home bias in equity investing. Seasholes, Tai, and Yang (2011) find that Chinese investors exhibit a strong preference for locally headquartered firms. Financially developed provinces are also more likely to have a critical mass of lawyers, accountants, and financial regulators. In unreported analysis, we verify that broader measures of institutional development, such as per capita lawyers, per capita accountants, and per capita college graduates, have a significant impact on the incidence of fraud.

In the second column, we control for firm characteristics and find that corporate fraud prevails among small firms with lower profitability and higher leverage. The coefficients on leverage are positive and significant, consistent with the view that firms are likely to manage earnings to avoid violating debt covenants (Healy and Wahlen, 1999). Our measure of profitability yields negative and significant coefficients, consistent with U.S. evidence that firms are more likely to engage in fraudulent activities when they suffer operating troubles (e.g., Arlen and Carney, 1992; Alexander

[10] We report the robustness results using four alternative measures of financial development in Table 8a of the online appendix. (1) We examine the effects of stock market capitalization/GDP and total credit/GDP separately since the impact of stock market and banking sector development may differ. (2) We compute the average of percentage of deposits held by non-state banks and percentage of credits allocated to non-state firms to proxy for banking market quality because loan and deposit contracts involving government entities might be less efficient. (3) Besides stock market capitalization/GDP, we also use stock trading volume/GDP as an alternative measure of financial development. (4) Following Lu, Pan and Zhang (2013), we use a dummy variable indicating whether a province includes a leased territory or a treaty port to foreign countries during the Opium War as a proxy for better institutional development to address the reverse causality concern. Establishment of the leased territories or treaty ports is likely to have a positive effect on local institution and financial development due to the introduction of Western culture and legal and financial systems. However, it is unlikely that these establishments are affected by corporate fraud today. Our results show that size and quality of the banking sector play particularly crucial roles in deterring fraud as compared with the impact of stock markets, although all four measures are statistically significant.

and Cohen, 1999; Chidambaran, Kedia, and Prabhala, 2012). We also find that firm size is negatively and significantly related to the occurrence of fraud, which is contrary to findings from the U.S.; we return to this contrast in the next section when we discuss the results of our bivariate probit analysis.

Turning to firm stock market characteristics, however, we find that neither stock return nor stock turnover is statistically significant. It may be that the price and trading volume of Chinese stocks are driven by factors that are unrelated to a firm's fundamentals, such as behavioral noise trading. The disparity between market price and fundamentals in China may also be explained by various capital market imperfections and government regulations, such as short-sale restrictions.

Next, we study the effects of ownership structure on financial misreporting, using the four different measures of ownership structure described in the previous section. The impact of large blockholders on the frequency of fraud is not obvious. On the one hand, such blockholders have the capacity and incentive to monitor management and prevent fraud. On the other hand, they may be prone to collude with management in expropriating minority shareholders.

The results are given in Column (3). Note that the number of observations in this column drops to 8,310 from 12,815 in Column (2) since ownership data is only available after year 2000. We find that fraud is significantly less frequent when the largest shareholder's block or state ownership is higher. The coefficients on foreign and managerial ownership are also negative but they are not statistically significant.[11]

Although we focus on the fractions of shares held by the largest shareholder, state shareholders, foreign shareholders, and managerial shareholders, our main results are robust to the use of alternative block holding measures. Examples include using the fraction of shares held by the largest three, five, or ten shareholders, and using dummy variables that equal one if there exists a shareholder with more than 10%, 25%, 50% or 60% of the outstanding shares. Our main results

[11] In an unreported regression that includes ownership structure variables without controlling for other firm characteristics, we find that the coefficient on foreign ownership is statistically significant at the 1% level. This suggests that any effect of foreign ownership on fraud might be driven by the underlying characteristics of the firms foreign investors choose for their portfolios. In addition, foreign investors may be subject to government restrictions on what types of firms in which they can invest.

also hold after accounting for the nonlinearity of ownership effects and controlling for institutional ownership.[12]

We study the effects of corporate governance in Column (4). U.S. evidence suggests that corporate governance mechanisms such as a well-designed CEO compensation plan, an effective board of directors, and use of external auditors may alleviate agency problems and help prevent fraud. Accordingly, we examine the CEO's stock ownership and compensation. Note that, unlike the U.S., CEO stock ownership and CEO compensation are not directly linked in China; in our sample of listed firms in CSMAR, less than one fourth (22%) offer equity-based compensation to incumbent CEOs. In addition, more than 90% of the CEOs in our sample hold less than 0.05% of outstanding shares. We also analyze CEO duality, where the CEO also serves as chair of the board; with dual roles, a CEO can easily assert control over the board, making it more difficult for shareholders to monitor and discipline management.

We also analyze the impact of board size and independence, because prior studies find significant correlations between these board characteristics and corporate fraud in the U.S. (e.g., Dechow, Sloan, and Sweeney, 1996; Khanna, Kim, and Lu, 2015). We control for the presence of a foreign auditor to see if foreign auditors are more effective monitors than domestic auditors. We examine additional governance mechanisms such as independence of the audit committee and number of board meetings and alternative CEO characteristics in our online appendix.[13]

As shown in Column (4), all the measures of governance are insignificant, but the financial development coefficient remains negative and significant. Our results suggest that, in contrast to the U.S., conventional proxies for corporate governance, including board size, board independence, and separating the CEO and chair roles, are not effective deterrents of fraud in China. (For U.S.

[12] We report the robustness results using alternative measures of block ownership in Table 8b of our online appendix. Table 2 of the online appendix presents probit regression results after accounting for the nonlinear relation between ownership and fraud. Our results are also robust to controlling for institution ownership. We do not, however, include institution ownership in the main specification since the data on institution ownership are only available after 2004 due to the disclosure requirement by CSRC

[13] Table 8c of our online appendix reports the probit estimation results on the role of alternative governance mechanisms (e.g., supervisory board size, independence of the audit committee, and number of board meetings) and alternative CEO characteristics including CEO age, education, and gender. All these variables, except CEO age, have insignificant effects on fraud in our sample.

studies that find these governance features reduce fraud, see Beasly (1996), Dechow, Sloan, and Sweeney (1996), Efendi, Srivastava, and Swanson (2007), Khanna, Kim, and Lu (2015)).[14]

Our regression results reinforce earlier work on the ineffectiveness of conventional corporate governance in China. Allen, Qian, and Qian (2005) suggest that a weak auditing profession and inefficient board monitoring are partially responsible for the relatively sluggish growth of China's listed sector. Allen, Qian, Shan, and Zhu (2014) indicate that the governance issue related to self-dealing (i.e., tunneling) is one of the main contributors of the poor performance of China's stock market despite high economic growth. By documenting the severity of tunneling activities of Chinese listed companies through inter-corporate loans, Jiang, Lee, and Yue (2010) conclude that institutional ownership, auditors, and other governance mechanisms are inadequate in mitigating this tunneling practice. Our paper provides evidence that the role of auditors, boards, and CEO compensation in preventing financial misreporting is also limited.[15]

In the last column, we retain all variables that are statistically significant in the previous regressions: *Financial Development, Leverage, ROA, Sales Growth, Size, Largest Shareholders*, and *State Ownership*. We will use these variables in the following probit regression, which serves as our baseline throughout the remainder of the paper:

$$\text{Probability (Fraud Indicator}_{i,t}=1) = b_0 + b_1 \text{ Financial Development}_{i,t-1} + b_2\text{Leverage}_{i,t-1} + b_3\text{ROA}_{i,t-1} + b_4\text{Sales Growth}_{i,t-1} + b_5\text{Size}_{i,t-1} + b_6\text{Largest Shareholders}_{i,t-1} + b_7 \text{ State Ownership}_{i,t-1} + B_8 \text{ Industry and Year Dummies} + e_{i,t} \quad (2)$$

We examine the economic significance of key explanatory variables in Table 4. Columns (1) and (2) report the probit regression coefficient estimates and marginal effects estimated at the means of covariates in Model (2). Sample means and standard deviations of the explanatory

[14] Our results, however, are consistent with Agrawal and Chadha (2005), who find that the independence of boards and audit committees is unrelated to the probability of a company restating earnings in the U.S.

[15] Existing papers show that certain conventional governance measures are important determinants of the outcome of Chinese firms. For example, Giannetti, Liao, and Yu (2015) find that board characteristics affect firm performance in China. Our finding that conventional governance measures do not affect fraud highlights the fact that the role of conventional governance mechanisms in China is context specific.

variables are reported in Columns (3) and (4). We present absolute and percentage changes in predicted probability if we increase one explanatory variable from its mean by one standard deviation while keeping other determinants at the mean in Columns (7) and (8), respectively.

Insert Table 4 here

It is immediate that these key variables have effects on fraud that are economically as well as statistically significant. In absolute magnitude, the smallest impact of a one standard deviation increase occurs for state ownership, which decreases fraud by 0.32 percentage points, which is a still sizeable 10.16% decrease in relative terms. The largest absolute impact is for return on assets, which decreases fraud by 1.16 percentage points, or 37.84% in relative terms. These results suggest that ownership structure and provincial financial development have a very large impact on corporate fraud in China.[16]

5. Fraud commitment and fraud detection

Fraud commitment is not directly observable as we only observe fraud after it is detected. Therefore, our dependent variable in previous sections is the product of the probability fraud is committed and the probability that committed fraud is detected. Following recent literature on corporate fraud (e.g., Wang, Winton, and Yu, 2010; Wang, 2013; Wang and Winton, 2014; Khanna, Kim, and Lu, 2015), we use the following bivariate probit model to separate the determinants of fraud commitment and detection in this section.

The bivariate probit jointly estimates two equations: ex ante fraud commitment and ex post fraud detection.

Ex ante fraud commitment regression:

[16] We further show that financial development and firm-level monitoring have independent effects on fraud in Table 4 of the online appendix. We include the interactions between financial development and firm ownership structure variables to test whether these two governance mechanisms are complements or substitutes. Our results show that the interaction terms are not statistically significant, suggesting that blockholder monitoring plays a uniform role across provinces.

Probability (Fraud Commitment $_{i,t}$ =1) = b_0 + b_1Financial Development $_{i,t-1}$ + b_2Leverage $_{i,t-1}$ + b_3ROA $_{i,t-1}$ + b_4Sales Growth $_{i,t-1}$ + b_5Size $_{i,t-1}$ + b_6Largest Shareholders $_{i,t-1}$ + b_7 State Ownership$_{i,t-1}$ + B_8 Industry and Year Dummies + $e_{i,t}$ (3.1)

Ex post fraud detection regression:

Probability (Detection $_{i,t}$ =1 | Fraud Commitment $_{i,t}$ = 1) = b'_0 + b'_1 Financial Development $_{i,t-1}$ + b'_2Leverage $_{i,t-1}$ + b'_3ROA $_{i,t-1}$ + b'_4Sales Growth $_{i,t-1}$ + b'_5 Size $_{i,t-1}$ + b'_6 Largest Shareholders $_{i,t-1}$ + b'_7 State Ownership $_{i,t-1}$ + b'_8 Abnormal Industry Litigation $_{i,t-1}$ + b'_9 Disastrous Stock Return $_{i,t-1}$ + b'_{10} Abnormal Return Volatility $_{i,t-1}$ + b'_{11} Abnormal Stock Turnover $_{i,t-1}$ + B'_{12} Industry and Year Dummies + e'_i (3.2)

Equation (3.1) uses ex ante factors that affect the probability of fraud commitment. The dependent variable is a latent dummy variable that takes the value of one if fraud is committed. Equation (3.2) includes all of these ex ante factors as well as ex post factors that affect fraud detection conditional on fraud being committed. The dependent variable is a dummy variable that takes the value of one if fraud is detected conditional on fraud being committed. The two equations can be jointly estimated using the maximum likelihood method.

The explanatory variables in the fraud commitment equation are from our baseline probit regressions (i.e., Model (2)). These variables are also included in the fraud detection equation; intuitively, a would-be detector of fraud knows all the ex ante variables that influence fraud commitment. Following Wang (2013) and Wang and Winton (2014), we increase the identification power of our model by considering a series of unexpected ex post fraud detection factors (i.e., *Abnormal Industry Litigation*, *Disastrous Stock Return*, *Abnormal Return Volatility*, and *Abnormal Stock Turnover*). Because these ex post factors cannot be anticipated at the time fraud is committed, they only appear in the detection equation. Unexpectedly high industry litigation intensity may increase litigation risk. Similarly, unexpectedly poor stock performance or unexpectedly high return volatility or stock turnover may trigger investigation. In all cases, these ex post shocks may increase external scrutiny and thus the likelihood that fraud is detected.

We construct the unexpected ex post detection variables as follows. We define *Industry*

Litigation as the logarithm of the total market value of litigated firms in a specific industry and year. *Abnormal Industry Litigation* is the yearly deviation from the average value of *Industry Litigation* in an industry. *Disastrous Stock Return* is an indicator variable that equals one if annual stock return is in the bottom decile of the sample distribution (i.e., < −45%), and zero otherwise. *Abnormal Return Volatility* (*Stock Turnover*) is defined as the deviation from the average stock return volatility (stock turnover) for a specific firm.

A potential concern is that the ex-post factors might not be completely exogenous to the likelihood of detection if the time lag between commission and detection is short. To address this concern, we conduct a sub-sample analysis of cases where the time lag between commission and detection spans multiple years. (When the detection lag is longer, it is less likely that managers can anticipate the ex-post factors at the time of initial fraud commission.) Our main results still hold in such sub-sample.

Table 5 reports the bivariate probit results. For purposes of comparison, Column 1 gives the baseline simple probit results (the same as Column 5 of Table 3); Column 2 is the commitment equation, and Column 3 is the detection equation.

Insert Table 5 here

Firms in financially developed provinces are significantly less likely to commit fraud and significantly more likely to be detected if they do commit fraud. This is consistent with the idea that, because financially developed provinces tend to have more competent lawyers, accountants, and financial market participants, any fraud is more likely to be detected, and that, knowing this, managers are less likely to commit fraud in the first place. By contrast, an alternative explanation of our simple probit results—firms in financially developed provinces are less likely to be detected for fraud because they have more financial resources to bribe regulators—is not supported by our bivariate probit results.

Similarly, we find that firms with larger block ownership are significantly less likely to commit fraud and significantly more likely to be detected if they do commit fraud. This is consistent with larger shareholders monitoring more intensively, increasing the odds of fraud detection, which in turn discourages fraud in the first place. By contrast, larger state ownership

actually *decreases* the probability that fraud is detected, though it has no significant effect on the probability fraud is committed. Thus, the negative effect of state ownership on fraud in the simple probit is entirely due to diminished detection rather than any reduction in fraud commitment, which likely reflects the stronger political connection of such a firm. (Note that this result is "all else equal"; the effect of state ownership on detection is more than offset by the impact of the largest shareholder on detection, so that if the state is the largest owner of a firm, increases in its stake do not make fraud less likely to be detected.)

Turning to the four firm characteristics that we study (leverage, return on assets, sales growth, and size), we find that all but sales growth have opposite effects on fraud commitment and detection: that is, lower leverage, higher profitability, and larger size all decrease fraud commitment and increase fraud detection, and all lead to a net decrease in detected fraud. By contrast, higher sales growth reduces fraud commitment but has an insignificant effect on fraud detection.

The biggest contrast between these results and those from the U.S. concerns the impact of firm size on fraud. Studies of U.S. firms show that larger firms are associated with more fraud (e.g., Wang, 2013; Chidambaran, Kedia, and Prabhala, 2012), because they are both more likely to commit fraud ex ante (Wang and Winton, 2014) and more likely to be detected once they commit fraud (Khanna, Kim, and Lu, 2015). Our analysis, however, shows that larger firms in China are associated with *less* fraud overall: although, as for U.S. firms, fraud is more likely to be detected at larger firms in China, these firms are *less* likely to commit fraud, and thus the net effect on overall fraud is negative. This may reflect the fact that larger firms in China are less constrained relative to smaller firms in China than is the case for large versus small firms in the U.S. Relative to small firms, this gives the larger firms much lower incentives to commit fraud to lower cost of external finance. Indeed, we find that smaller firms with high leverage and lower profitability are associated with a higher probability of fraud commitment, and smaller firms with lower profitability and higher leverage tend to be financially constrained; thus, our results are consistent with the well-known finding that external financing needs increase fraud propensity (see Teoh, Welch, and Wong, 1998; Wang, 2013).

Another difference from U.S. studies such as Wang (2013) and Khanna, Kim, and Lu (2015) is that, although unexpected industry litigation intensity has a strong positive link to fraud detection in the U.S., in China it has no significant effect on fraud detection. This probably reflects the relative lack of private civil lawsuits in China. As in the U.S., fraud detection is more likely for firms with disastrous stock returns or abnormally high return volatility.

In sum, our bivariate probit estimation suggests that Chinese firms with large block ownership in financially developed provinces are less likely to commit fraud, and any committed fraud is more likely to be detected. Both are consistent with the positive impact of greater financial development and shareholder monitoring incentives on misbehavior by management. By contrast, state ownership reduces fraud detection, all else equal

6. Natural experiment tests of the role of financial markets

Our results thus far show that blockholdings and financial development are strongly associated with lower incidence of fraud. Although these findings are consistent with the theory that monitoring by financial market participants reduces fraud, they are not conclusive. As noted before, blockholders may choose to invest only in firms that are less likely to engage in fraudulent activities, and prevalence of fraud may itself hinder financial development. Also, firm ownership structure and financial development may be correlated with omitted variables that also affect the prevalence of fraud. For example, province-level stock market capitalization may reflect quality of local firms. In this section, we address these concerns using natural experiments.

6.1. Split Share Structure Reform as a natural experiment on shareholder monitoring

In this section, we use the 2005 Split Share Structure Reform to test the effects of shareholder monitoring on corporate fraud. Following the establishment of stock markets in 1990, equities in China's major exchanges had a dual-class structure (i.e., non-tradable and tradable shares) with otherwise identical rights. Around two-thirds of all shares were non-tradable, consisting of state-owned shares and legal person shares issued before IPOs; moreover, central or local governments

ultimately controlled a majority of the non-tradable shares. Non-tradable shares could be transferred only through negotiations between designated parties under strict government control.[17] Institutional and individual investors generally acquired their tradable shares through IPOs, seasoned cash offerings, rights offerings, or stock splits.

The dual-class structure probably created governance problems for Chinese listed firms. Because they could not sell their shares to realize capital gains, holders of non-tradable shares may have been less concerned about the firm's market value, using their control of the firm to engage in corporate fraud and activities that gave them private benefits at the expense of other shareholders.[18] At the same time, although the holders of tradable shares would have been interested in their firm's market value, their minority status gave them few levers of control and thus less reason to monitor the firm's management.

In 2005, the CSRC introduced the Split Share Structure Reform to eliminate the dual class structure and convert all non-tradable shares into tradable shares. We hypothesize that this reform realigned the interest of the two groups of shareholders and thus gave them more incentive to monitor firm management. Prior studies find that Split Share Structure Reform plays a significant role in other contexts such as risk sharing among shareholders (Li et al., 2011), corporate cash holdings (Chen et al., 2012), and output and profitability (Liao, Liu, and Wang, 2014). To our knowledge, our paper is the first study using this reform to test the effect of shareholder monitoring on corporate fraud.

Participation in the Split Share Structure Reform was not voluntary, and firms were made subject to the reform in batches chosen by the CSRC. Therefore, it provides a quasi-natural experiment. On May 9, 2005, four pilot firms started the reform. On June 20, 2005, 42 other

[17] The dual-class ownership structure was designed to privatize SOEs while maintaining government control. "State-owned shares" are shares owned by the central government, local government, or a wholly government-owned enterprise. Non-tradable state-owned shares could be transferred to other domestic institutions in special circumstances, subject to approval from relevant government agencies. "Legal person shares" were shares sold before the IPO by government agencies or affiliated enterprises to non-SOE financial institutions. Legal person shares were also not tradable but could be transferred between legal persons, subject to the agreement of the stock exchange.

[18] An alternative hypothesis is that non-tradable shareholders have no option to sell and may put more monitoring effort to maximize future dividends. This hypothesis implies that the Split Share Structure Reform would worsen the governance problems. Our results as well as others' (such as Chen et al., 2012) reject this alternative hypothesis.

companies were added to the pilot program. At the end of 2005, 434 companies (37% of total market capitalization) completed the reform. At the end of 2007, almost all listed companies (97% of total market capitalization) completed the reform. Moreover, the composition of the pilot firms was largely exogenous: because the pilot program was deliberately designed for experimentation, the CSRC sequentially chose a diverse set of companies based on their SOE/private status and geographical locations. For example, the 46 pilot firms in 2005 were located in 17 different provinces, and they were roughly half SOEs and half private firms.[19]

We begin by adding a dummy variable, *Split Share Structure Reform*, to the baseline probit regression given in Equation (2). This dummy variable takes the value of one if a firm has completed the Split Share Structure Reform by the end of that year, and zero otherwise. We report our results in the first column of Table 6. The coefficient on *Split Share Structure Reform* is estimated at −0.188 and significant at the 1% level, while the coefficients on the other variables are in line with our previous results. This suggests that firms that underwent the Split Share Structure Reform subsequently had significantly lower levels of fraud.

Insert Table 6 here

To increase the power of our identification strategy, we explore how fraud propensity differed both before and after the reform across firms with varying degrees of agency problems. We hypothesize that the effects of the Split Share Structure Reform are greater among firms with severe agency problems prior to the reform. We adopt two measures of potential agency problems: *Loans to Related Parties* as a proxy for agency conflicts between controlling and minority shareholders, and *% Non-Tradable Shares* as a proxy for agency conflicts between holders of non-tradable and tradable shares. These two proxies of agency problems are measured prior to the reform as opposed to after the reform since the actual changes in loans to related parties and non-

[19] While participation in the reform and the time at which a firm started the reform process were unlikely to be endogenous, one could argue that the amount of time it took to convert non-tradable into tradable shares varied endogenously across firms. If so, firms that took longer to complete the conversion process may have had fundamentals that were correlated with fraud. In Table 5 of our online appendix, we show that 71.88% of our observations are related to companies that completed the reform within the same year they became subject to it, and 97% of our observations are related to companies that completed the reform within the next year. Therefore, it is unlikely that the duration of the conversion process would affect our results.

tradable shares could be endogenous. For example, the decision to sell shares after the reform might be correlated with firm fundamentals related to fraud. In addition, monitoring incentives improve immediately after the non-tradable shareholders have the option to sell, regardless of whether they exercise this option during our sample period or not.

Firms with large amounts of business transactions with related parties such as major shareholders, executives, directors, and family members of these individuals are more likely to suffer from agency problems. Existing literature has also documented that the amount of related-party transactions, particularly inter-corporate loans, is negatively associated with firm value (see, for example, Cheung, Rau, and Stouraitis, 2006; Fan, Jin and Zheng, 2009; Fisman and Wang, 2010; Jiang, Lee, and Yue, 2010). We define *Loans to Related Parties* as the total value of loans to related parties scaled by total assets as of the year before the reform. As an alternative measure of agency concerns, we use the percentage of shares that were non-tradable shares as of the year before the reform (*% Non-Tradable Shares*). We argue that tradable shareholders have more incentive to increase firm value, so before the Split Share Structure Reform, firms with higher percentage of non-tradable shares should suffer more from agency problems.

Given these two proxies for agency problems, we estimate a probit for the probability of fraud that augments our baseline specification from Equation (2) by adding our *Split Share Structure Reform* dummy, one of the two agency problem proxies, and their interaction.[20] We report the results in Columns (2) and (3) of Table 6.

In Column (2), the proxy for agency problem is *% Non-Tradable Shares*. The estimated coefficient on the interaction between *Split Share Structure Reform* and *% Non-Tradable Shares* is −0.969, while the estimated coefficient on *% Non-Tradable Shares* is 0.558; they are statistically significant at the 5% and 1% levels, respectively. The negative interaction-term coefficient implies that the reform's negative effect on the incidence of fraud is stronger among firms that had more non-tradable shares (more conflicts of interest) before the reform. The coefficient on *% Non-Tradable Shares* is positive and significant, implying that, all else equal, the incidence of fraud is

[20] To address the concern about the interaction effects in non-linear models, we also perform sub-sample analysis (severe versus non-severe agency problems) instead of using the interaction terms. The main results still hold.

higher for firms that had more non-tradable shares before the reform was effected. The coefficients on the other variables are in line with those from our previous tables and from Column (1) of this table.

In Column (3), the proxy for agency problem is *Loans to Related Parties*. The estimated coefficient on the interaction between *Split Share Structure Reform* and *Loans to Related Parties* is −3.060, while the estimated coefficient on *Loans to Related Parties* itself is 2.360; both are statistically significant at the 1% level. The negative interaction coefficient implies that the reform's negative effect on the incidence of fraud is stronger among firms with more related-party loans.[21] The coefficient on *Loans to Related Parties* is positive and significant, implying that, all else equal, the incidence of fraud is higher for firms that had more loans to related parties before the reform. Again, the coefficients on the other variables are in line with those in our previous results.

6.2. Financial liberalization as a natural experiment on financial development

Again, although the link we have found between financial development and fraud is consistent with development improving monitoring that prevents fraud, this is not conclusive. Both development and fraud may be driven by one or more omitted variables; alternatively, prevalent corporate fraud might inhibit regional financial development. In this section, we focus on the variation in financial development caused by an exogenous bank liberalization reform. This liberalization experiment helps us exclude these alternative stories in favor of the causal impact of financial development on fraud.

After joining the WTO in December 2001, the Chinese government implemented a series of policies to fulfill its commitments on banking sector liberalization. At the end of 2001, qualified foreign banks registered in one of four pilot cities (Shanghai, Shenzhen, Tianjin, and Dalian) were

[21] Related party transactions can also be arm's length transactions or transactions that benefit the firm due to synergies drawn among the related parties. In unreported regressions, we examine two other common types of related party transactions: loan guarantees issued to related parties and transactions of goods and services involving related parties. We find that the negative interaction effect with Split Share Reform only exists for loans and loan guarantees issued to related parties, probably because these transactions are more likely to be tunneling activities that destroy firm value.

allowed to conduct RMB transactions in that city. This process continued with five more cities in December 2002, four more in December 2003, five more in December 2004, and seven more in December 2005.[22] Finally, in December 2006, all remaining geographic and clientele restrictions on foreign banks' RMB business were eliminated. Due to the gradual nature of this liberalization process, exposure to foreign banks varied across cities and across time. The pilot cities in each batch were geographically diverse (drawn across coastal, central, and western regions) and were chosen by the central government, making this liberalization a suitable framework for our quasi-natural experiment.

Existing literature has shown that foreign banks tend to be more profit-oriented than Chinese state-owned banks; therefore, they may have better incentives to monitor listed companies. (See Bailey, Huang and Yang (2012) and Qian, Strahan, and Yang (2015) for a description of incentive problems associated with Chinese state-owned banks.) Furthermore, research has shown foreign bank entry is associated with an increase in banking system competition and efficiency, a higher degree of financial development, technological spillover to domestic banks, and improved access to credit for loan customers (e.g., Xu, 2011; Lin, 2011; Qian, Strahan, and Yang, 2015). The entry of foreign banks in China, therefore, should increase monitoring by foreign banks as well as improve monitoring incentives and capabilities of Chinese banks through competitive pressure and technological spillover.

As in the previous subsection, we begin by adding a dummy variable, *Financial Liberalization*, to the baseline probit regression given in Equation (2). This dummy variable equals one if a firm is located in a city that allows foreign banks to conduct RMB business in a specific year, and zero otherwise. We report these results in Column (1) of Table 7. Because provincial factors other than financial development (such as income and education level) may also affect the probability of fraud, in Column (2) of Table 7 we replace financial development with provincial fixed effects. In both columns, the estimated coefficient of *Financial Liberalization* is negative and significant at

[22] In order, the specific cities were Guangzhou, Zhuhai, Qingdao, Nanjing, and Wuhan in December 2002, Jinan, Fuzhou, Chengdu, and Chongqing in 2003, Kunming, Beijing, Xiamen, Xian, and Shenyang in 2004, and Shantou, Ningbo, Haerbin, Changchun, Lanzhou, Yinchuan, and Nanning in 2005.

the 1% level, which is consistent with the hypothesis that a firm is associated with less fraud if it is located in a city that allows foreign bank entry.

Insert Table 7 here

Nevertheless, it is possible that liberalized cities were more developed than non-liberalized cities before the reform, in which case the difference in fraud propensity might be caused by this pre-reform difference rather than the reform itself. To mitigate this concern, we adopt a control-firm approach by restricting our sample to two groups of firms: firms located in liberalized cities (the treatment group) and *comparable* firms located in non-liberalized cities (the control group).

In Column (3), we use firms located in non-liberalized cities in the same province as the control group. In order to do so, we restrict our sample to provinces with both liberalized and non-liberalized cities in a specific year. In other words, for each province, we drop years when either none of its cities were liberalized or all of its cities were liberalized. (Thus, by construction, the restricted sample covers the transitional period from 2002 to 2006). By comparing firms in liberalized cities with firms in the non-liberalized cities of the same province at the same time, we control for any province-level effects. Note that for firms located in the non-provincial special districts (e.g., Shanghai), we use adjacent provinces or special districts with a similar level of financial development as the comparison group (e.g., Zhejiang and Jiangsu provinces for Shanghai and Sichuan province for Chengdu).

One may still argue that the liberalized cities are more developed than are the other areas of the same province. In Column (4), instead of using other cities in the same province as the control group, we construct a sample with *matched* cities. For each liberalized city, we select the matched non-liberalized cities based on two criteria: (1) the matched cities must share a border with the liberalized city; (2) the difference in annual GDP between the liberalized city and each matched city must be less than one standard deviation of the full sample GDP distribution.[23] By doing so,

[23] As a robustness test, we define matched cities according to the urban agglomeration development plan by the central or provincial Chinese government. For example, according to the Yangzi River Delta Region Development Plan approved by the State Council, this urban agglomeration consists of Shanghai (central city), Nanjing, Suzhou, Hangzhou and 12 other adjacent cities. Our main results still hold when we adopt this matching criterion.

we ensure that our matched listed companies are located in nearby cities with similar levels of ex ante financial and economic development. Companies in matched cities are also likely to be in the same product markets and share suppliers and customers. In addition, the matched-city approach should help isolate the direct effects of financial liberalization from other confounding factors. For example, a concern is that the liberalization of bank activities increased the firms' growth opportunities and decreased the firms' incentives to commit fraud. Our research design should address this concern since liberalization-induced positive demand shocks that may affect firms' growth opportunities should affect the nearby firms across the city border alike.

Regardless of which control approach we use, the effect of financial liberalization on fraud is statistically significant at the 1% level. We can also show that the economic impact of financial liberalization is quite large.[24] Using the same techniques as in Table 4, one can show that liberalization results in a relative decline in the incidence of fraud that ranges from 44.9% to 51.2%, depending on the specification that is used.

The results in this subsection confirm that the component of financial development caused by financial liberalization has a causal impact in reducing corporate fraud.[25] In an unreported robustness test, we use a standard OLS regression with firm fixed effects to control for any time-invariant firm-level factors. Our qualitative results are unchanged.

7. Political connections and corporate fraud

We now turn to the role of political connections in corporate fraud.[26] Political connections might affect both a firm's incentives to commit fraud and the likelihood that the government will investigate fraud. On the one hand, politically connected firms might already be very profitable so that management does not have incentive to manipulate accounting statements; on the other hand,

[24] Table 6 of our online appendix presents our analysis of the economic significance of financial liberalization using the coefficient estimates of the probit regressions in Table 7.
[25] Our finding that bank liberalization reduces fraud does not contradict our earlier finding that high leverage increases fraud; bank liberalization improves banks' incentives to monitor for any amount of debt they hold, but having too much debt in total is well-known to increase the agency costs of debt, including fraud and risk-shifting.
[26] A large literature shows that such connections have positive value for firms; for example, see Fisman (2001), Faccio (2006), Calomiris, Fisman and Wang (2010), and Piotroski and Zhang (2014).

fraud committed by politically connected firms is perhaps less likely to be detected, or less likely to draw severe penalties, both of which may encourage fraud commission. Indeed, Yu and Yu (2011) find that U.S. firms that lobby have a significantly lower hazard rate of being detected for fraud.

We investigate three main types of political connections: (1) whether a firm's past and incumbent CEOs are politically connected during a specific year, (2) whether a firm is connected to the incumbent CSRC chairperson or vice chairperson[27], and (3) whether a firm operates in a government-supported industry. Within (1), we examine four specific political connections that CEOs may have: (a) whether the CEO has worked for a state-owned company, (b) whether the CEO has worked as a central or local government official or has been in the military, (c) whether the CEO has been a deputy in the Chinese People's Political Consultative Conference (CPPCC), and (d) whether the CEO has been a deputy in the National People's Congress (NPC).[28] For (2), we use a dummy variable that indicates whether a firm's headquarters are located at the incumbent CSRC chairperson's or vice chairperson's birth city. Finally, for (3), we use a dummy variable that indicates whether the company operates in government-supported industries based on China's Five-Year Plans for National Economic and Social Development.

Insert Table 8 here

Table 8 reports our results. None of the coefficient estimates on our CEO political connection proxies is statistically significant at the conventional level. However, firms that are located in the incumbent CSRC chairperson or vice chairperson's birth city and firms that operate in government-supported industries are less likely to be the subject of CSRC enforcement actions for financial misreporting.

The coefficients on financial development, largest shareholding, and state ownership all remain highly negative and significant after the inclusion of political connections. Coefficients on

[27] We note that even though firms in China rarely relocate, this variable exhibits significant time variation due to the turnovers of CSRC executives.

[28] We examine additional measures of CEO political connections (for example, *Central SOE CEO, CSRC CEO, Military CEO, Provincial Level CPPCC CEO*) in Appendix 8d of our online appendix. We show that our main findings are robust to inclusion of these alternative CEO political connection variables as well.

other firm characteristics are also in line with our previous results. Overall, these results ensure that our previous findings are not due to omitted political connections.

Although these results suggest that some political connections (headquarters in the CSRC chairperson or vice chairperson's birth city or membership in a government-supported industry) result in a lower incidence of fraud, they do not distinguish between the hypothesis that connections reduce the incentive to commit fraud and the hypothesis that connections make it easier to evade fraud detection. We now address this issue by applying the bivariate probit approach while including indicators of these two types of connections.

Columns (7) and (8) of Table 8 report bivariate probit results for the specification given in model (3), augmented by our dummy variable for whether a firm is headquartered in the CSRC chairperson or vice chairperson's birth city. It is immediate that the decline in fraud that this connection is associated with is due to a big decrease in fraud detection that is significant at the 1% level. Indeed, it is also associated with an *increase* in fraud commitment that is significant at the 5% level. This suggests that such a connection makes it easier to avoid fraud detection by the CSRC, which in turn actually increases incentives to commit fraud.

In contrast to this finding, when we repeat our bivariate probit estimation including our dummy variable for whether the firm is in a government-supported industry, the other hypothesis holds. These results are reported in Columns (9) and (10) of Table 8. Being in a government-supported industry is associated with a large and highly significant decline in fraud commitment, with no significant effect on fraud detection. This is consistent with the notion that strong government support means that the firm needs not worry about access to external funding, reducing a key incentive for committing fraud.

The upshot is that not all political connections affect financial misreporting, and even those that do matter can have varying effects on the commission and detection of such misreporting. We now turn to our final topic, looking at determinants of other types of fraud.

8. Different types of fraud

Thus far, we have focused on financial misreporting, which is the most common type of CSRC enforcement actions. In this section, we compare and contrast the determinants of financial misreporting with those of other types of fraud.

Table 9 Panel A describes the sample distribution by different types of fraud. We classify CSRC enforcement actions into four major types: financial misreporting, which we have already discussed, tunneling, insider trading, and other violations. We define tunneling as fraud in which controlling shareholders expropriate minority shareholders through channels such as taking firm properties and funds for the use of related parties and making the company issue loans or loan guarantees to related parties. We define insider trading as security law violations in which corporate insiders, including firm management, directors, and other related parties trade the listed company stock illegally, sometimes even through outright stock market manipulation. We classify any fraud case that does not fall into one of these three types as other violations.

Insert Table 9 here

As noted earlier, financial misreporting is the most common fraud type: among the 727 cases of CSRC enforcement actions in our sample, 76.62% (557 cases) involve false financial statement (e.g., inflating assets or profits) or neglecting key information in disclosure. 16.78% of enforcement actions (122 cases) involve tunneling. 21.46% of enforcement actions (156 cases) involve insider trading. Finally, 1.24% of enforcement actions (nine cases) are other types of fraud, including violations of corporate governance regulation (e.g., board composition requirements) and corporate charters, failure to submit relevant record materials to regulatory bodies, and violations of non-security laws.

These numbers add up to more than 100% of our sample because many firms are found to commit more than one type of fraud at the same time. In particular, the correlation coefficient between financial misreporting and tunneling is 42%, which is positively significant at the 1% level.[29] This positive correlation suggests that controlling shareholders may manipulate the firm's financial statements to help to obscure their expropriation of minority shareholders.

[29] See online appendix Table 7. The correlation coefficient between insider trading and financial misreporting (tunneling) is 6.21% (1.38%), also significant at the 1% level.

Next, we apply our simple probit analysis of fraud to the cases of tunneling and insider trading. In Panel B, Column (1) repeats our baseline specification results for the determinants of financial misreporting with the addition of indicators for political connections (government supported industry and CSRC chairperson connection). Column (2) augments this by including managerial ownership. Although we already found that this variable does not have significant effects on misreporting (see Table 3), we include it here for purposes of comparison. Note that adding this variable has little effect on the coefficients of our other control variables.

Our new results are contained in Columns (3) and (4) of Table 9, Panel B. Column (3) conducts probit analysis on a dummy variable that takes the value of one if the firm suffers a CSRC enforcement action for tunneling and zero otherwise. Being in a government-supported industry or headquartered in the CSRC chairperson's birth city reduces this type of fraud significantly. Financial development is strongly associated with less tunneling: it has a negative and statistically significant coefficient that is four times as large as that in the misreporting specification.

Among the firm variables, profitability has a significant negative impact on fraud that is somewhat larger than its coefficient in Column (2). By contrast, leverage, sales growth, and size are all now statistically and economically insignificant. Although this may suggest that controlling shareholders are less likely to tunnel if their firm is more profitable, it may also be the case that tunneling reduces profitability. In any event, it is clear that firm characteristics matter less for tunneling than for misreporting.

Next, we turn to the impact of ownership structure on tunneling. Results on this are very different from those for misreporting. The size of the largest shareholder's block has no significant impact on the likelihood of tunneling; the estimated coefficient, while negative, is little more than one-fifth the size of the same coefficient in the misreporting specification. Given that tunneling is usually on behalf of the largest shareholder, it seems reasonable that their shareholdings have limited effect on their incentive to prevent it.

State ownership has a negative and significant coefficient that is almost double that in the misreporting specification. Although this may indicate that state ownership discourages tunneling, it may also be the case that greater state ownership lowers the odds that tunneling is subject to

CSRC enforcement. Unfortunately, the relatively small number of tunneling cases makes it impossible for us to repeat our bivariate probit analysis so as to disentangle these competing hypotheses.

Finally, although managerial ownership has no significant impact on financial misreporting, it has a very strong negative association with tunneling. This may occur because managers have more incentive to prevent (or at least not collude with) the exploitation of minority shareholders like themselves when shareholdings are a larger part of their personal portfolio.

Column (4) repeats this analysis for the case where the dependent variable is a dummy that equals one if the firm was subject to CSRC enforcement for insider trading and zero otherwise. Firms in government-supported industries and firms in more financially developed provinces are both less likely to be the subject of insider trading enforcement, with both coefficients significant at the 1% level and several times as large as those in the financial misreporting specification. Among firm characteristics, now only size is significant, with a negative effect that is roughly the same magnitude as that found in the misreporting specification. This may reflect the fact that smaller firms have less transparent markets for their shares, increasing insiders' informational advantage over other market participants and making insider trading more profitable. This finding is consistent with previous studies based on U.S. data. For example, Lakonishok and Lee (2001) show that insider trades at small firms predict future returns better than insider trades at large firms.

In contrast to tunneling, largest shareholder ownership has a strong negative impact on the prevalence of insider trading which is roughly the same size as that from the financial misreporting specification. This suggests that larger shareholders are either less likely to tolerate such behavior from managers, or else have less incentive to trade for themselves, perhaps because it is harder to trade a significant fraction of a very large shareholding without tipping off other market participants and regulators. The opposite is true for managerial shareholdings: their coefficient is strongly positive and significant. This probably reflects the fact that managers (whose mean shareholdings are almost 40 times less than those of the largest shareholder) are more able to engage in insider trading without detection than large shareholders, and have more incentive to do so as these shares become a more significant portion of their wealth. Finally, state ownership has

no significant impact on the prevalence of insider trading, which may indicate that state bodies do not view insider trading as a significant form of managerial misbehavior.

In unreported regressions, we include additional ownership and governance variables such as *Foreign Ownership* and board and CEO characteristics from Table 3. All of these fail to produce significant effects on tunneling and insider trading.

In sum, financial development seems to deter all three types of fraud that we study. Greater block ownership plays a significant role in reducing the incidence of financial misreporting and insider trading, but an insignificant role in deterring tunneling. Greater state ownership reduces both misreporting and tunneling, but again, this may simply reflect lower probabilities that such behavior is detected. Finally, greater managerial ownership decreases the incidence of tunneling but increases the incentive to engage in insider trading.

9. Conclusion

Our paper presents new evidence on the determinants of corporate fraud in China. Using the sample of enforcement actions related to financial misreporting by the China Securities Regulatory Commission from 1990 to 2010, our empirical analysis yields several key findings.

First, fraudulent activities vary greatly across locations. Fraud is less prevalent in financially developed provinces. Firms whose headquarters are located in financially developed provinces have a lower tendency to commit fraud and a higher tendency to be detected if fraud is committed. Across firms, fraud is more prevalent among smaller and less profitable firms with higher leverage.

Second, firms with greater block equity ownership have a lower tendency to commit fraud and a higher probability of ex post fraud detection. However, all else equal, greater blockholdings by state entities reduce the probability that any committed fraud is detected.

We use two recent financial market reforms to address the endogeneity of shareholder monitoring and financial development: (1) the Split Share Structure Reform, started in 2005, that eliminates the dual-class structure and increases shareholder monitoring incentives, and (2) the financial liberalization from December 2001 to December 2006 that gradually allows different

cities to permit foreign bank entry upon China's accession to WTO. These natural experiments support the hypothesis that financial market monitoring has a causal role in limiting fraud.

Third, although many conventional governance mechanisms involving CEO compensation and roles, board structure, and choice of auditor are not significant determinants of fraud, we find evidence that certain political connections do in fact matter. In particular, being headquartered in the CSRC chairperson or vice chairperson's hometown or being part of a government-supported industry reduce the likelihood of detected fraud. However, the mechanisms differ: having a link to the CSRC chairperson or vice chairperson reduces the likelihood that committed fraud is detected, whereas being in a government-supported industry reduces the need to commit fraud in the first place.

Fourth, we briefly analyze the determinants of two other common types of corporate fraud: tunneling and insider trading. As with misreporting, both are less likely if the firm's province is more financially developed. However, ownership structure affects these other types of fraud very differently. Block ownership per se has no significant impact on detected tunneling, but both greater state ownership and greater managerial ownership reduce it. By contrast, greater block ownership reduces detected insider trading, whereas greater managerial ownership increases it.

Our paper has important policy implications for the Chinese economy, now the world's second largest. Although some determinants of fraud mirror those in the U.S., others do not, reflecting different institutional features. To the extent that these features are representative of emerging markets in general, our results have implications more broadly.

References

Agrawal, Anup, and Sahiba Chadha, 2005, Corporate governance and accounting scandals, *Journal of Law and Economics* 48, 371–406.

Alexander, Cindy R., and Mark A. Cohen, 1999, Why do corporations become criminals? Ownership, hidden actions, and crime as an agency cost, *Journal of Corporate Finance* 5, 1–34.

Allen, Franklin, Jun Qian, and Meijun Qian, 2005, Law, finance, and economic growth in China, *Journal of Financial Economics* 77, 57–60.

Allen, Franklin, Jun Qian, Chenyu Shan, and Lei Zhu, 2014, The best performing economy with the worst performing market: Explaining the poor performance of the Chinese stock market, Working Paper, Shanghai Advanced Institute of Finance.

Arlen, Jennifer H., and William J. Carney, 1992, Vicarious liability for fraud on security markets: Theory and evidence, *University of Illinois Law Review*, 691-740.

Ayyagari, M., Asli Demirguc-Kunt, and Vojislav Maksimovic, 2010, Formal versus informal finance: evidence from China, *Review of Financial Studies* 23, 3048–97.

Bailey, W., W. Huang, and Z. Yang, 2012, Bank Loans with Chinese Characteristics: Some Evidence on Inside Debt in a State-Controlled Banking System, *Journal of Financial and Quantitative Analysis* 46, 1795-1830.

Beasley, Mark S., 1996, An empirical analysis of the relation between the board of director composition and financial statement fraud, *The Accounting Review* 71, 443–65.

Beck, Thorsten, Asli Demirguc-Kunt, and Vojislav Maksimovic, 2005, Financial and legal constraints to firm growth: Does firm size matter? *Journal of Finance* 60, 137–77.

Beck, Thorsten, Asli Demirguc-Kunt, and Vojislav Maksimovic, 2008, Financing patterns around the world: The role of institutions, *Journal of Financial Economics* 89, 467–87.

Calomiris, Charles W., Raymond Fisman, Yongxiang Wang, 2010, Profiting from government stakes in a command economy: Evidence from Chinese asset sales, *Journal of Financial Economics* 96, 399–412.

Chen, Gongmeng, Michael Firth, Daniel N. Gao, and Oliver M. Rui, 2006, Ownership structure, corporate governance, and fraud: evidence from China, *Journal of Corporate Finance* 12, 424–448.

Chen, Qi, Xiao Chen, Katherine Schipper, Yongxin Xu, and Jian Xue, 2012, The sensitivity of corporate cash holdings to corporate governance, *Review of Financial Studies* 25, 3610–44.

Cheung, Yan-Leung, P. Raghavendra Rau, and Aris Stouraitis, 2006, Tunneling, propping, and expropriation: Evidence from connected party transactions in Hong Kong, *Journal of Financial Economics* 82, 343–86.

Chidambaran, N.K., Simi Kedia, and Nagpurnanand R. Prabhala, 2012, CEO director connections and corporate fraud, Working Paper, University of Maryland.

Dechow, P. M, R. G. Sloan, and A. P. Sweeney, 1996, Causes and consequences of earnings manipulation: An analysis of firms subject to enforcement actions by the SEC, *Contemporary Accounting Research* 13, 1–36.

Demirguc-Kunt, Asli, and Vojislav Maksimovic, 1998, Law, finance, and firm growth, *Journal of Finance* 53, 2107–37.

Efendi, Jap, Anup Srivastava, and Edward Swanson, 2007, Why do corporate managers misstate financial statements? The role of in-the-money options and other incentives, *Journal of Financial Economics* 85, 667–708.

Faccio, Mara, 2006, Politically connected firms, *American Economic Review* 96, 369–86.

Fan, Joseph P. H., Li Jin, and Guojian Zheng, 2009, Intra-Group financing in business groups: mitigating financing constraint versus expropriation, Working Paper, Harvard Business School.

Fisman, Raymond, 2001, Estimating the value of political connections, *American Economic Review* 91, 1095–102.

Fisman, Raymond, and Yongxiang Wang, 2010, Trading favors within Chinese business groups, *American Economic Review* 100, 429–433.

Giannetti M., Liao G., Yu X., 2015, The brain gain of corporate boards: Evidence from China, *Journal of Finance* 70, 1629–82.

Giannetti, M., and Tracy Y. Wang, forthcoming, Corporate scandals and household stock market participation, *Journal of Finance*.

Healy, P. M., and J. M. Wahlen., 1999, A review of the earnings management literature and its implications for standard setting, *Accounting Horizons* 13, 365–83.

Jiang, Guohua, Charles M.C. Lee, and Heng Yue, 2010, Tunneling through intercorporate loans: The China experience, *Journal of Financial Economics* 98, 1–20.

Karpoff, Jonathan, D. Scott Lee, and Gerald Martin, 2008, The cost to firms of cooking the books, *Journal of Financial and Quantitative Analysis* 43, 581–612.

Kedia, S., and S. Rajgopal, 2011, Do the SEC's enforcement preferences affect corporate misconduct? *Journal of Accounting and Economics* 51, 257-278.

Khanna, Vikramaditya, E. Han Kim, and Yao Lu, 2015, CEO connectedness and corporate frauds, *Journal of Finance* 70, 1203–52.

Lakonishok, J., and I. Lee., 2001, Are insiders' trades informative? *Review of Financial Studies* 14, 79–111.

Li, Kai, Tan Wang, Yan - Leung Cheung, and Ping Jiang, 2011, Privatization and risk sharing: evidence from the split share structure reform in China, *Review of Financial Studies* 24, 2499–525.

Liao, Li, Bibo Liu, and Hao Wang, 2014, China's Secondary Privatization: Perspectives from the Split-Share Structure Reform, *Journal of Financial Economics* 113, 500–18.

Lin, Huidan, 2011, Foreign bank entry and firms' access to bank credit: Evidence from China, *Journal of Banking and Finance* 35, 1000–10.

Lu, Haitian, Hongbo Pan, and Chenying Zhang, 2011, Political Connections and Judicial Bias: Evidence from Chinese Corporate Litigations, Working Paper, University of Pennsylvania.

Murphy, Deborah, Ronald Shrieves, and Samual Tibbs, 2009, Understanding the penalties associated with corporate misconduct: An empirical examination of earnings and risk, *Journal of Financial and Quantitative Analysis* 44, 55–83.

Piotroski, Joseph D., and Tianyu Zhang, 2014, Politicians and the IPO decision: The impact of impending political promotions on IPO activity in China, *Journal of Financial Economics* 111, 111–26.

Pistor, Katharina, and Chenggang Xu, 2005, Governing stock markets in transition economies: Lessons from China, *American Law And Economics Review* 7, 184–210.

Qian Jun "QJ", Philip E. Strahan, and Zhishu Yang, 2015, The Impact of Incentives and Communication Costs on Information Production and Use: Evidence from Bank Lending, *Journal of Finance* 70, 1457–93.

Rajan, Raghuram G., and Luigi Zingales, 1998, Financial dependence and growth, *American Economic Review* 88, 559–86.

Seasholes, M.S., Tai, M., Yang, Z., 2010, Individual Investors and Portfolios Choice, Working Paper, Hong Kong University of Science & Technology.

Teoh, S. H., Welch, I., and Wong, T. J., 1998, Earnings management and the underperformance of seasoned equity offerings. *Journal of Financial Economics* 50, 66–99.

Wang, Tracy Yue, 2013, Corporate securities fraud: Insights from a new empirical framework, *Journal of Law, Economics and Organization* 29, 535–68.

Wang, Tracy Yue, and Andrew Winton, 2014, Product market interactions and corporate fraud, Working Paper, University of Minnesota.

Wang, Tracy Yue, Andrew Winton, and Xiaoyun Yu, 2010, Business conditions and corporate securities fraud: Evidence from IPOs, *Journal of Finance* 65, 2255–92.

Xu, Ying, 2011, Towards a more accurate measure of foreign bank entry and its impact on domestic banking performance: The case of China, *Journal of Banking and Finance* 35, 886–901.

Yu, Frank, and Xiaoyun Yu, Corporate Lobbying and Fraud Detection, *Journal of Financial and Quantitative Analysis* 46, 1865–91.

Appendix A. Variable definitions

Variable	Definition
Fraud Variables	
Fraud Indicator	an indicator variable that equals one if a firm is detected committing financial misreporting by Chinese Securities Regulatory Commission (CSRC) in a specific year, and zero otherwise
Detection Period	the time difference between the beginning year of fraud and the year of CSRC enforcement action
Firm Characteristics Variables	
Size	logged value of total assets
Leverage	total liabilities/ total assets
ROA	earnings before interest and tax (EBIT)/total assets
Sales Growth	percentage change in net sales from last year
Stock Return	one-year stock return
Stock Turnover	annual trading value/ market capitalization
Shareholder Monitoring Variables	
Largest Shareholder	number of shares held by the largest shareholder/total number of shares outstanding
Foreign Ownership	number of shares held by foreigners/total number of shares outstanding
State Ownership	number of shares held by the State/total number of shares outstanding
Managerial Ownership	number of shares held by top executives /total number of shares outstanding
Other Governance Variables	
CEO Ownership	number of shares held by the CEO/total number of shares outstanding
CEO Compensation	CEO annual compensation (in 1,000 RMB)
CEO Duality	An indicator variable that equals one if the CEO is also the chairman of the board, and zero otherwise
Independent Board	number of independent directors/total number of directors on the board
Board Size	total number of directors on the board
Foreign Auditor	an indicator variable that equals one if a firm hires a foreign auditing firm
CEO Age	CEO age
CEO Education	a categorical variable that equals one (two/three/four/five) if the highest degree a CEO obtains is a high school (associate / Bachelor's/Master's/PhD degree
CEO Gender	an indicator that equals one if the CEO is a male, and zero otherwise
Independent Audit Comm.	percentage of audit committee members that are independent directors
No. of Board Meeting	number of board meeting
Supervisory Board Size	number of supervisors in the Board of Supervisors.

Natural Experiments and Instrument Variables	
Split Share Structure Reform	an indicator variable that equals one if a firm has completed the Split Share Restructure Reform in a specific year, and zero otherwise
% Tradable Shares	percentage of tradable shares right before the beginning year of the Split Share Structure Reform
Loans to Related Parties	the total value of loans (in 1,000 RMB) issued by the listed company to related parties divided by total assets, as disclosed in its annual report right before the beginning year of the reform.
Financial Liberalization	an indicator variable that equals one if a firm is located in a city that allow foreign banks to conduct local currency-related business in a specific year (i.e. foreign bank entry), and zero otherwise
Bivariate Probit Model Variables	
P (F)	probability of fraud commitment
P (D|F)	probability of fraud detection conditional on fraud commitment
Abnormal Ind. Litigation	yearly deviation from the average value of industry litigation in an industry
Disastrous Stock Return	an indicator variable that equals one if annual stock return is below the bottom 10% of the sample distribution (i.e., <-45%), and zero otherwise.
Abnormal Return Volatility	deviation from the average stock return volatility for a specific firm
Abnormal Stock Turnover	deviation from the average stock turnover for a specific firm
Provincial Development Variables	
Financial Development	the simple average of two normalized measures: stock market capitalization/GDP and total credit/GDP at the province level
Stock Market Capitalization/GDP	normalized provincial measure of stock market development, defined as stock market capitalization of listed firms whose headquarters are located within a
Total Credit/GDP	normalized provincial measure of banking sector development, defined as total loan credit divided by GDP.
Marketization of Banking Industry	the simple average of two measures: % of deposits held by non-state banks and % of credits allocated to non-state firms
Treaty	an indicator variable that equals one if the province was opened as a leased territory or treaty ports to foreign countries during the Opium War

Political Connections	
SOE CEO	an indicator variable that equals one if a firm's past or incumbent CEO has worked for a state-owned enterprise, and zero otherwise
Central SOE CEO	a indicator variable that equals one if a firm's past or incumbent CEO has worked for the 160 central state-owned enterprises listed by SASAC (State-
Gov. CEO	an indicator variable that equals one if a firm's past or incumbent CEO has worked as a central or local government officer or has been in the military, and zero otherwise
Military CEO	a indicator variable that equals one if a firm's past or incumbent CEO has been in the military, and zero otherwise
CSRC CEO	a indicator variable that equals one if a firm's past or incumbent CEO has worked for the CSRC, and zero otherwise
CPPCC CEO	an indicator variable that equals one if a firm's past or incumbent CEO has been a deputy to Chinese People's Political Consultative Conference (CPPCC), and zero otherwise
CPPCC_P CEO	an indicator variable that equals one if a firm's past or incumbent CEO has been a deputy to the provincial level of Chinese People's Political Consultative Conference (CPPCC), and zero otherwise
NPC CEO	an indicator variable that equals one if a firm's past or incumbent CEO has been a deputy to National People's Congress (NPC), and zero otherwise
NPC_P CEO	an indicator variable that equals one if a firm's past or incumbent CEO has been a deputy to the provincial level of National People's Congress (NPC), and zero otherwise
CSRC Chair Connected	an indicator variable that equals one if a firm's headquarter is located at the incumbent CSRC chair or vice chairperson's birth city, and zero otherwise
Government Supported Industry	an indicator variable that equals one if a firm is operating in government supported industries according to the Communist party's Five-Year Plans, and zero otherwise.

Table 1

Distribution of fraud by year and province.

This table summarizes the distribution of fraud by the calendar year of fraud detection and the provinces in which firms' headquarters are located in Panels A and B, respectively. The sample consists of firms listed on Mainland China's stock exchanges during the period 1990 to 2010. Fraud firms refer to firms that were detected committing financial misreporting by CSRC in a specific year. Column (2) reports the total number of firms in the sample; Columns (3), (4), and (5) report the number of fraud firms, the number of non-fraud firms, and the percentage of fraud firms, respectively.

Panel A: **Distribution of fraud by year**

(1) Year	(2) Total firms	(3) Fraud firms	(4) Non-Fraud firms	(5) % Fraud Firms
1990	9	0	9	0.00%
1991	12	0	12	0.00%
1992	54	0	54	0.00%
1993	176	0	176	0.00%
1994	222	1	221	0.45%
1995	232	0	232	0.00%
1996	392	1	391	0.26%
1997	585	4	581	0.68%
1998	691	6	685	0.87%
1999	788	10	778	1.27%
2000	925	11	914	1.19%
2001	1,006	60	946	5.96%
2002	1,070	38	1,032	3.55%
2003	1,131	29	1,102	2.56%
2004	1,191	36	1,155	3.02%
2005	1,190	78	1,112	6.55%
2006	1,253	61	1,192	4.87%
2007	1,355	59	1,296	4.35%
2008	1,405	45	1,360	3.20%
2009	1,541	64	1,477	4.15%
2010	1,864	54	1,810	2.90%
Total	17,092	557	16,535	3.26%

Panel B: Distribution of fraud by province

(1) Province	(2) Total Firms	(3) Fraud Firms	(4) Non-Fraud Firms	(5) % Fraud Firms
Panel A Eastern and Coastal Provinces				
Beijing	974	23	951	2.36%
Fujian	595	23	572	3.87%
Guangdong	2,532	81	2,451	3.20%
Hainan	272	13	259	4.78%
Hebei	362	12	350	3.31%
Jiangsu	1,070	15	1,055	1.40%
Liaoning	688	23	665	3.34%
Shandong	898	23	875	2.56%
Shanghai	1,801	38	1,763	2.11%
Tianjin	264	8	256	3.03%
Zhejiang	1,045	19	1,026	1.82%
Total	10,501	278	10,223	2.65%
Panel B Central Provinces				
Anhui	497	15	482	3.02%
Heilongjiang	318	21	297	6.60%
Henan	391	10	381	2.56%
Hubei	745	28	717	3.76%
Hunan	509	26	483	5.11%
Jiangxi	288	9	279	3.13%
Jilin	423	15	408	3.55%
Shanxi	248	5	243	2.02%
Total	3,419	129	3,290	3.77%
Panel C Western Provinces				
Chongqing	366	20	346	5.46%
Gansu	231	18	213	7.79%
Guangxi	284	14	270	4.93%
Guizhou	166	7	159	4.22%
Neimenggu	183	5	178	2.73%
Ningxia	129	11	118	8.53%
Qinghai	95	4	91	4.21%
Shaanxi	329	11	318	3.34%
Sichuan	762	38	724	4.99%
Tibet	78	3	75	3.85%
Xinjiang	320	11	309	3.44%
Yunnan	229	8	221	3.49%
Total	3,172	150	3,022	4.73%
Full Sample	17,092	557	16,535	3.26%

Table 2
Summary Statistics.

This table reports the summary statistics of main variables in Panel A, and compares the mean of these variables between fraud and non-fraud firms one year before fraud detection in Panel B. The sample consists of firms listed on Mainland China's stock exchanges during the period 1990 to 2010. Fraud firms refer to firms that were detected committing financial misreporting by CSRC in a specific year. In Panel B, Columns (2) and (3) report the mean values of different characteristics for the fraud and non-fraud firms one year before fraud detection, while Columns (4) and (5) report the differences in means and the *t*-statistics for the two-tailed *t*- tests. The *t*-statistics marked with *, **, and *** indicate significance at the 0.1, 0.05, and 0.01 levels, respectively. All variables are winsorized at the 1% and 99% level. Definitions of all variables are provided in Appendix A.

Panel A: Summary statistics of main variables

(1) Variable	(2) Obs.	(3) Mean	(4) Std. Dev.	(5) Median	(6) 25%	(7) 75%
Provincial Characteristics						
Financial Development	17,018	0.00	0.98	-0.20	-0.40	0.04
Firm Characteristics						
Size	17,089	21.37	1.10	21.02	20.40	21.77
Leverage	17,089	53.61%	26.26%	47.49%	33.10%	61.49%
ROA	16,871	4.46%	8.19%	5.77%	3.07%	8.77%
Sales Growth	15,064	2.73%	53.91%	12.22%	-3.47%	25.45%
Stock Return	14,955	34.46%	89.98%	2.65%	-25.69%	70.50%
Stock Turnover	16,783	2.51	2.23	1.71	0.91	3.43
Shareholder Monitoring						
Largest Shareholder	10,775	38.21%	15.89%	35.73%	25.17%	50.16%
Foreign Ownership	16,876	1.32%	5.68%	0.00%	0.00%	0.00%
State Ownership	16,876	26.87%	25.95%	26.13%	0.00%	51.05%
Managerial Ownership	16,876	1.14%	6.28%	0.00%	0.00%	0.00%
Other Governance Mechanisms						
CEO Ownership	14,234	0.98%	4.55%	0.00%	0.00%	0.00%
CEO Compensation (1,000 RMB)	9,327	347.00	376.55	240.00	110.59	441.70
CEO Duality	14,585	0.16	0.37	0.00	0.00	0.00
Independent Board	14,533	28.57%	13.80%	33.33%	27.27%	36.36%
Board Size	14,549	9.38	2.16	9.00	8.00	11.00
Foreign Auditor	17,092	0.08	0.27	0.00	0.00	0.00

Panel B: Characteristics of fraud versus non-fraud firms

(1) Characteristics	(2) Fraud firms	(3) Non-Fraud firms	(4) Difference	(5) *t*-statistics
Provincial Characteristics				
Financial Development	-0.12	0.01	-0.13	-3.22***
Firm Characteristics				
Size	20.68	21.15	-0.47	-9.83***
Leverage	74.73%	48.35%	26.38%	23.68***
ROA	-2.06%	5.50%	-7.56%	-21.70***
Sales Growth	-26.55%	3.71%	-30.26%	-12.81***
Stock Return	28.86%	34.67%	-5.81%	-1.47
Stock Turnover	3.07	2.49	0.58	5.94***
Shareholder Monitoring				
Largest Shareholder	32.00%	39.04%	-7.04%	-7.71***
Foreign Ownership	0.79%	1.34%	-0.55%	-2.23**
State Ownership	20.50%	27.79%	-7.29%	-6.50***
Managerial Ownership	0.29%	1.17%	-0.88%	-3.23***
Other Governance Mechanisms				
CEO Ownership	0.29%	1.01%	-0.72%	-3.55***
CEO Compensation (1,000 RMB)	208.72	352.78	-144.06	-7.29***
CEO Duality	0.17	0.16	0.01	0.43
Independent Board	30.20%	28.51%	1.69%	2.78***
Board Size	8.85	9.40	-0.55	-5.84***
Foreign Auditor	0.06	0.08	-0.02	-1.62

Table 3

The probit model of corporate fraud.

This table reports the results from probit regression analyses of corporate fraud. The sample consists of firms listed on Mainland China's stock exchanges during the period 1990 to 2010. The dependent variable is one if a firm is detected committing financial misreporting in a specific year by CSRC, and zero otherwise. The key explanatory variable, *Financial Development*, is the simple average of two normalized measures: stock market capitalization/GDP and total credit/GDP at the province level. Other explanatory variables are defined in Appendix A. All regressions include industry and year dummies. Robust standard errors are clustered at the industry and province level with *t*-statistics reported in parentheses. Coefficients marked with *, **, and *** are significant at the 0.1, 0.05, and 0.01 level, respectively.

	Dependent variable: whether a firm is detected committing fraud				
Explanatory variables	(1)	(2)	(3)	(4)	(5)
Financial Development	-5.042***	-2.665**	-2.563**	-2.558**	-2.662***
	(-3.67)	(-2.48)	(-2.23)	(-2.42)	(-2.68)
Leverage		0.391***	0.334***	0.419***	0.312***
		(4.85)	(4.37)	(3.25)	(4.62)
ROA		-2.406***	-2.450***	-1.952***	-2.483***
		(-13.37)	(-12.29)	(-10.43)	(-9.91)
Sales Growth		-0.109***	-0.090***	-0.169***	-0.095***
		(-3.60)	(-2.52)	(-5.05)	(-2.33)
Stock Return		-0.007	-0.038	-0.035	
		(-0.20)	(-0.80)	(-0.60)	
Stock Turnover		0.0135	-0.005	0.008	
		(0.70)	(-0.24)	(0.55)	
Size		-0.108***	-0.126***	-0.169***	-0.124***
		(-6.39)	(-3.78)	(-5.83)	(-3.81)
Largest Shareholder			-0.736***		-0.755***
			(-5.71)		(-4.95)
State Ownership			-0.221**		-0.182**
			(-2.31)		(-2.33)
Foreign Ownership			-0.214		
			(-0.57)		
Managerial Ownership			-0.147		
			(-0.23)		
CEO Duality				-0.026	
				(-0.40)	
CEO Ownership				0.732	
				(1.52)	
CEO Compensation				-0.007	
				(-0.68)	
Independent Board				0.243	
				(0.47)	
Board Size				0.005	
				(0.55)	
Foreign Auditor				0.048	
				(0.43)	
Industry Dummies	Y	Y	Y	Y	Y
Year Dummies	Y	Y	Y	Y	Y
N	14,548	12,815	8,310	6,756	8,405
Pseudo R-sq	0.037	0.121	0.132	0.117	0.105

Table 4

Economic significance.

This table illustrates the economic significance of the determinants of corporate fraud based on the probit model in column (5) of table 3. The sample consists of firms listed on Mainland China's stock exchanges during the period 1990 to 2010. Fraud firms refer to firms that were detected committing financial misreporting by CSRC in a specific year. Columns (1) and (2) report the probit regression coefficient estimates and marginal effects estimated at the means of covariates in the model. Sample means and standard deviations of the explanatory variables are reported in Columns (3) and (4), respectively. The predicated fraud probabilities if we vary one explanatory variable from its mean to its mean plus one standard deviation, while holding other determinants at the means, are reported in Columns (5) and (6), respectively. We present absolute and percentage changes in predicted fraud probabilities in Columns (7) and (8). The explanatory variables are defined in Appendix A.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Explanatory variables	Probit coefficient estimate	Marginal effects	Mean	Std. Dev.	Prob (Mean)	Prob (Mean +Std.)	Absolute change in predicted probability	% change in predicted probability
Financial Development	-2.662	-0.188	0.000	0.840	3.13%	2.67%	-0.46%	-14.81%
Leverage	0.312	2.20%	53.61%	26.26%	3.13%	3.75%	0.62%	19.90%
ROA	-2.483	-17.50%	4.46%	8.19%	3.13%	1.95%	-1.18%	-37.84%
Sales Growth	-0.095	-0.67%	2.73%	53.91%	3.13%	2.79%	-0.34%	-10.99%
Size	-0.124	-0.009	21.371	1.102	3.13%	2.28%	-0.85%	-27.13%
Largest Shareholder	-0.755	-5.33%	38.21%	15.89%	3.13%	2.38%	-0.76%	-24.16%
State Ownership	-0.182	-1.28%	26.87%	25.95%	3.13%	2.81%	-0.32%	-10.16%

Table 5

Fraud commitment versus detection.

This table reports the estimation results from the bivariate probit model of fraud commitment versus detection. Column (1) presents the standard probit estimation results in model (5) of Table 3, for comparison with the bivariate probit estimation results in Columns (2)–(3). Columns (2) and (3) report the estimation results of fraud commitment and fraud detection conditional on fraud commitment, respectively. The sample consists of firms listed on Mainland China's stock exchanges during the period 1990 to 2010. Fraud firms refer to firms that were detected committing financial misreporting by CSRC in a specific year. The explanatory variables are defined in Appendix A. All regressions include year and industry dummies. Robust standard errors are clustered at the industry and province level with *t*-statistics reported in parentheses. Coefficients marked with *, **, and *** are significant at the 0.1, 0.05, and 0.01 level, respectively.

	Probit	Bivariate Probit	
		Fraud	Detect|Fraud
Explanatory variables	(1)	(2)	(3)
Financial Development	-2.662***	-5.671**	5.876**
	(-2.68)	(-2.21)	(2.06)
Leverage	0.312***	0.600*	-0.545***
	(4.62)	(1.65)	(-3.69)
ROA	-2.483***	-2.663***	1.639**
	(-9.91)	(-5.35)	(2.07)
Sales Growth	-0.095***	-0.142**	0.0333
	(-2.33)	(-2.10)	(0.33)
Size	-0.124***	-0.275***	0.349***
	(-3.81)	(-4.95)	(3.94)
Largest Shareholder	-0.755***	-3.865***	2.913***
	(-4.95)	(-3.69)	(3.54)
State Ownership	-0.182**	0.153	-0.863***
	(-2.33)	(0.79)	(-2.65)
Abnormal Ind. Litigation			0.001
			(0.19)
Disastrous Stock Return			0.143**
			(2.22)
Abnormal Return Vol.			7.425***
			(4.69)
Abnormal Stock Turnover			-0.002
			(-0.18)
Industry Dummies	Y	Y	Y
Year Dummies	Y	Y	Y
N	8,405	8,063	8,063
Log Likelihood	-1346.0	-1571.3	-1571.3

Table 6

Shareholder monitoring and fraud: before and after the Split Share Structure Reform.

This table compares the impact of shareholder monitoring on corporate fraud before and after the Split Share Structure Reform. We use *% Non-tradable Shares* in Columns (2) and *Loans to Related Parties* in Columns (3) as the proxies for agency conflicts. We measure *% Non-tradable shares* and *Loans to Related Parties*, respectively, as the percentage of non-tradable shares and the total value of loans issued by the listed company to related parties divided by total assets right before the beginning year of the reform. The sample consists of firms listed on Mainland China's stock exchanges during the period 1990 to 2010. The dependent variable is one if a firm is detected committing financial misreporting in a specific year by CSRC, and zero otherwise. *Split Share Structure Reform* is an indicator variable that equals one if a firm has completed the Split Share Structure Reform in a specific year, and zero otherwise. Other explanatory variables are defined in Appendix A. All regressions include industry and year dummies. Robust standard errors are clustered at the industry and province level with *t*-statistics reported in parentheses. Coefficients marked with *, **, and *** are significant at the 0.1, 0.05, and 0.01 level, respectively.

	Dependent variable: whether a firm is detected committing fraud		
		Agency	
		% Non-tradable Shares	Loans to Related Parties
Explanatory variables	(1)	(2)	(3)
Split Share Structure Reform	-0.188***	0.503**	-0.187***
	(-2.74)	(2.36)	(-2.73)
Split Share Structure Reform x Agency		-0.969**	-3.060***
		(-2.55)	(-3.19)
Agency		0.558***	2.360***
		(2.77)	(4.32)
Financial Development	-2.484***	-2.278**	-2.442**
	(-2.69)	(-2.48)	(-2.58)
Leverage	0.295***	0.270***	0.299***
	(4.40)	(3.45)	(4.49)
ROA	-2.528***	-2.486***	-2.505***
	(-10.43)	(-10.85)	(-10.01)
Sales Growth	-0.0967**	-0.0880**	-0.0973**
	(-2.34)	(-2.10)	(-2.34)
Size	-0.114***	-0.113***	-0.113***
	(-3.51)	(-3.47)	(-3.48)
Largest Shareholder	-0.791***	-0.829***	-0.801***
	(-5.99)	(-5.56)	(-6.18)
State Ownership	-0.185**	-0.163**	-0.190**
	(-2.01)	(-1.96)	(-2.06)
Industry Dummies	Y	Y	Y
Year Dummies	Y	Y	Y
N	8,405	8,405	8,405
Pseudo R-sq	0.13	0.14	0.13

Table 7

Financial development and fraud: the liberalization of the financial sector after WTO.

This table examines the impact of the liberalization of the financial sector after WTO on corporate fraud. The dependent variable is one if a firm is detected committing financial misreporting in a specific year by CSRC, and zero otherwise. *Financial Liberalization* is an indicator variable that equals one if a firm is located in a city that allow foreign banks to conduct local currency-related business in a specific year (i.e. foreign bank entry), and zero otherwise. The sample consists of firms listed on Mainland China's stock exchanges during the period 1990 to 2010. The probit regression results based on the full sample are reported in Columns (1)–(2). Probit regression results in Column (3) are based on the subsample of listed companies in provinces with both cities that allow foreign bank entry and cities that do *not* allow so in a specific year (note, by construction, such subsample only covers the transitional period from 2002 to 2006). Regression results in Column (4) are based on the subsample of listed companies located in either *treated* cities that allow foreign bank entry or *control cities* that satisfy the following criteria: (1) they must share a border with the treated city; (2) the difference in annual GDP between the treated city and each control city must be less than one standard deviation of the full sample GDP distribution; (3) they do *not* allow foreign bank entry. Robust standard errors are clustered at the industry and province level with *t*-statistics reported in parentheses. Coefficients marked with *, **, and *** are significant at the 0.1, 0.05, and 0.01 level, respectively.

	Dependent variable: whether a firm is detected committing fraud			
	Full sample		Sub-sample	
Explanatory variables	(1)	(2)	(3)	(4)
Financial Liberalization	-0.268***	-0.263***	-0.296***	-0.285***
	(-2.73)	(-3.04)	(-2.96)	(-2.59)
Financial Development	-1.433*		-3.866*	-3.708
	(-1.78)		(-1.78)	(-1.39)
Leverage	0.331***	0.320***	0.225	0.234
	(5.53)	(5.81)	(1.08)	(1.12)
ROA	-2.435***	-2.355***	-3.617***	-3.307***
	(-9.73)	(-8.82)	(-5.47)	(-5.09)
Sales Growth	-0.102**	-0.113**	-0.145***	-0.178***
	(-2.30)	(-2.50)	(-2.83)	(-3.57)
Size	-0.130***	-0.117***	0.034	0.063
	(-4.72)	(-4.08)	(0.53)	(0.82)
Largest Shareholder	-0.732***	-0.669***	-0.616**	-0.812***
	(-5.23)	(-5.34)	(-2.08)	(-2.60)
State Ownership	-0.178*	-0.258***	-0.494***	-0.426*
	(-1.87)	(-3.23)	(-2.80)	(-1.76)
Industry Dummies	Y	Y	Y	Y
Year Dummies	Y	Y	Y	Y
Province Dummies	N	Y	N	N
N	8,405	8,435	2,319	1,930
Pseudo R-sq	0.137	0.153	0.246	0.223

Table 8

Political connections and fraud.

This table reports regression results of analyzing the effect of political connections on corporate fraud. The sample consists of firms listed on Mainland China's stock exchanges during the period 1990 to 2010. Columns (1)–(6) report standard probit regression results where the dependent variable is one if a firm is detected committing financial misreporting in a specific year by CSRC; Columns (7)–(10) report bivariate probit regression results of fraud commitment versus detection. The key independent variable is *Political Connection*, as measured by *SOE CEO* (Column 1),*Gov. CEO* (Column 2), *CPPCC CEO* (Column 3), *NPC CEO* (Column 4), *CSRC Chair Connected* (Columns 5 and 7–8), and *Gov. Supported Industry* (Columns 6 and 9–10). The complete set of explanatory variables is defined in Appendix A. All regressions include industry and year dummies. Robust standard errors are clustered at the industry and province level with *t*-statistics reported in parentheses. Coefficients marked with *, **, and *** are significant at the 0.1, 0.05, and 0.01 level, respectively.

	Probit						Bivariate Probit			
	SOE CEO	Gov. CEO	CPPCC CEO	NPC CEO	CSRC Chair Connected	Gov. Supported Industry	CSRC Chair Connected		Gov. Supported Industry	
Explanatory variables							Fraud	Detect|Fraud	Fraud	Detect|Fraud
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Political Connection	0.0112	0.0197	0.134	0.00159	-0.712***	-0.107**	0.752**	-2.755***	-2.656***	-0.635
	(0.13)	(0.46)	(0.55)	(0.01)	(-11.80)	(-1.99)	(-1.98)	(-4.96)	(5.04)	(-1.02)
Financial Development	-2.686***	-2.645**	-2.646**	-2.662**	-2.864**	-2.794**	-5.669***	10.510**	-8.388***	7.882**
	(-3.05)	(-2.17)	(-2.11)	(-2.13)	(-2.32)	(-2.25)	(-2.93)	(2.13)	(-2.82)	(2.11)
Leverage	0.312***	0.312***	0.313***	0.312***	0.321***	0.315***	0.600*	-0.464***	0.950***	-0.580**
	(4.65)	(4.62)	(4.66)	(4.60)	(4.88)	(4.71)	(1.65)	(4.31)	(3.73)	(-1.96)
ROA	-2.481***	-2.483***	-2.481***	-2.483***	-2.484***	-2.466***	-2.556***	2.526**	-2.663***	1.639**
	(-9.66)	(-9.84)	(-9.77)	(-9.95)	(-9.84)	(-9.59)	(-7.82)	(2.40)	(-5.35)	(2.07)
Sales Growth	-0.0951**	-0.0949**	-0.0950**	-0.0949**	-0.0949**	-0.0971**	-0.173***	0.0528	-0.142**	0.0333
	(-2.29)	(-2.33)	(-2.33)	(-2.32)	(-2.33)	(-2.30)	(-3.62)	(0.43)	(-2.10)	(0.33)
Size	-0.124***	-0.124***	-0.125***	-0.124***	-0.126***	-0.124***	-0.155***	0.946***	-0.275***	0.349***
	(-3.80)	(-3.83)	(-3.80)	(-3.81)	(-3.78)	(-3.80)	(-4.98)	(3.55)	(-4.95)	(3.94)
Largest Shareholder	-0.755***	-0.754***	-0.752***	-0.755***	-0.756***	-0.755***	-1.865***	2.913***	-2.380***	2.665***
	(-4.95)	(-4.94)	(-4.80)	(-4.96)	(-5.04)	(-4.92)	(-3.69)	(3.54)	(-3.85)	(3.63)
State Ownership	-0.183**	-0.182**	-0.182**	-0.182**	-0.179***	-0.168**	1.252***	-1.553***	0.067	-1.110***
	(-1.99)	(-1.98)	(-1.98)	(-1.98)	(-2.23)	(-1.97)	(2.71)	(-2.80)	(0.20)	(-2.81)
Abnormal Ind. Litigation								-0.004		0.0204
								(-0.82)		(0.92)
Disastrous Stock Return								0.027***		0.122***
								(3.37)		(3.35)
Abnormal Return Vol.								2.984**		-13.25
								(2.11)		(-1.04)
Abnormal Stock Turnover								-0.003		0.122**
								(-0.26)		(2.09)
Industry Dummies	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Year Dummies	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
N	8,118	8,137	8,137	8,137	8,405	8,405	8,405	8,405	8,405	8,405
Log likelihood	-1294.4	-1294.3	-1294.3	-1294.4	-1344.4	-1344.6	-1533.2	-1533.2	-1533.7	-1533.7

Table 9
Different types of fraud.

This table reports the sample distribution of fraud types in Panel A, and probit regression results of determinants of different fraud types in Panel B. Panel A presents the total number and percentage of fraud cases and examples of major violations for each fraud type in Columns (2)–(4), respectively. The dependent variable in Panel B is one if a firm is detected committing financial misreporting (Columns 1–2), tunneling (Column 3), and insider trading (Column 4) in a specific year by CSRC, and zero otherwise. Main variables are defined in Appendix A. Robust standard errors are clustered at the industry and province level with *t*-statistics reported in parentheses. Coefficients marked with *, **, and *** are significant at the 0.1, 0.05, and 0.01 level, respectively.

Panel A: Distribution of fraud types

(1) Fraud Type	(2) Freq.	(3) Percent	(4) Examples of major violations
1 Financial Misreporting	557	76.62%	false financial statement and neglecting key information in disclosure.
2 Tunneling	122	16.78%	controlling shareholder taking firm assets and funds for the use of related parites, and violations when issuing loans and loan guarantees for related parties.
3 Insider Trading	156	21.46%	illegal trading by corporate insiders amd related parties, and stock market manipulation.
4 Others	9	1.24%	violations of corporate governance regulation and corporate charter, failure to submit relevant record materials to regulatory bodies, and violations of non-security laws.
5 missing fraud type	16	2.20%	N/A
Total	727		

Panel B: Determinants of different fraud types

	Dependent variable: whether a firm is detected committing fraud			
	Financial Misreporting		Tunneling	Insider Trading
Explanatory variables	(1)	(2)	(3)	(4)
Gov. Supported Industry	-0.107**	-0.105*	- 0.107**	-0.219***
	(-1.99)	(-1.82)	(-2.07)	(-10.87)
CSRC Chair Connected	-0.658***	-0.657***	-0.308***	-0.333***
	(-7.90)	(-8.04)	(-5.96)	(-10.28)
Financial Development	-2.794**	-2.391**	-9.246**	-7.820***
	(-2.25)	(-2.67)	(-2.26)	(-3.38)
Leverage	0.315***	0.338***	0.027	-0.037
	(4.71)	(5.63)	(0.22)	(-0.46)
ROA	-2.466***	-2.438***	-3.420***	0.321
	(-9.59)	(-9.38)	(-5.93)	(0.88)
Sales Growth	-0.0971**	-0.0981**	0.002	0.001
	(-2.30)	(-2.09)	(0.01)	(0.01)
Size	-0.124***	-0.132***	0.001	-0.111***
	(-3.80)	(-5.07)	(0.11)	(-8.61)
Largest Shareholders	-0.755***	-0.716***	-0.155	-0.681**
	(-4.92)	(-5.29)	(-0.54)	(-2.31)
State Ownership	-0.168**	-0.169*	-0.321*	0.028
	(-1.97)	(-1.75)	(-1.83)	(0.19)
Managerial Ownership		-0.142	-4.40**	2.85***
		(-0.22)	(-2.21)	(3.89)
Industry Dummies	Y	Y	Y	Y
Year Dummies	Y	Y	Y	Y
N	8,405	8,405	8,405	8,405
Pseudo R-sq	0.135	0.135	0.173	0.114

Internet Appendix for

"Cheating in China: Corporate Fraud and the Role of Financial Markets"

Minwen Li, Tanakorn Makaew, and Andrew Winton

Table 1

Distribution of fraud by detection period.

This table summarizes the distribution of fraud by detection period. The sample consists of firms listed on Mainland China's stock exchanges during the period 1990 to 2010. Fraud firms refer to firms that were detected committing financial misreporting by CSRC in a specific year. *Detection Period* is defined as the time difference between the beginning year of the fraud and the year of CSRC enforcement action.

Detection Period (Year)	Freq.	Percent
0	144	25.85%
1	154	27.65%
2	97	17.41%
3	43	7.72%
4	40	7.18%
5	30	5.39%
6	17	3.05%
7	17	3.05%
8	6	1.08%
9	4	0.72%
10	5	0.90%
Total	557	100%

	Min.	25%	50%	Mean	75%	Max.	Std.
Detection Period	0	0	1	2	3	10	2.42

Table 2

The probit model of corporate fraud after accounting for the nonlinear relation between ownership structure and fraud.

This table reports results from probit regression analyses of corporate fraud after accounting for the nonlinear relation between ownership and fraud. The sample consists of firms listed on Mainland China's stock exchanges during the period 1990 to 2010. The dependent variable is one if a firm is detected committing misreporting in a specific year by CSRC, and zero otherwise. *Financial Development* is the simple average of two normalized measures: stock market capitalization/GDP and total credit /GDP at the province level. The explanatory variables are defined in Appendix A. All regressions include industry and year fixed effects. Robust standard errors are clustered at the industry and province level with *t*-statistics reported in parentheses. We also control for firm characteristic variables as in column (2) of Table 3 in all regressions. Coefficients marked with *, **, and *** are significant at the 0.1, 0.05, and 0.01 level, respectively.

	Dependent variable: whether a firm is detected committing fraud				
Explanatory variables	(1)	(2)	(3)	(4)	(5)
Financial Development	-2.563**	-2.627**	-2.608**	-2.602**	-2.583**
	(-2.23)	(-2.18)	(-2.13)	(-2.10)	(-2.08)
Largest Shareholder	-0.736***	0.472	0.834	0.827	0.833
	(-5.71)	(0.64)	(1.14)	(1.12)	(1.13)
State Ownership	-0.221**	-0.182**	-0.703**	-0.700**	-0.718***
	(-2.31)	(-1.88)	(-2.52)	(-2.54)	(-2.60)
Foreign Ownership	-0.214	-0.303	-0.306	-0.619	-0.631
	(-0.57)	(-0.93)	(-0.96)	(-0.32)	(-0.33)
Managerial Ownership	-0.147	-0.185	-0.234	-0.235	-2.474*
	(-0.23)	(-0.28)	(-0.35)	(-0.36)	(-1.71)
Largest Shareholder^2		-1.609*	-2.270**	-2.264**	-2.282**
		(-1.81)	(-2.48)	(-2.46)	(-2.48)
State Ownership^2			0.995*	0.992*	1.018*
			(1.65)	(1.66)	(1.70)
Foreign Ownership^2				1.12	1.10
				(0.19)	(0.18)
Managerial Ownership^2					6.205**
					(2.32)
Firm Characteristics	Y	Y	Y	Y	Y
Industry Dummies	Y	Y	Y	Y	Y
Year Dummies	Y	Y	Y	Y	Y
N	8,310	8,310	8,310	8,310	8,310
Pseudo R-sq	0.132	0.133	0.134	0.134	0.134

Table 3

Determinants of different types of fraud after accounting for the nonlinear relation between ownership structure and fraud.

This table reports probit regression results of determinants of different fraud types after accounting for the nonlinear relation between ownership structure and fraud. The dependent variable in Panel B is one if a firm is detected tunneling (Columns 1–2), and insider trading (Columns 3–4) in a specific year by CSRC, and zero otherwise. Main variables are defined in Appendix A. Robust standard errors are clustered at the industry and province level with *t*-statistics reported in parentheses. Coefficients marked with *, **, and *** are significant at the 0.1, 0.05, and 0.01 level, respectively.

	Tunneling		Insider Trading	
Explanatory variables	(1)	(2)	(3)	(4)
Financial Development	-9.391**	-8.918**	-7.820**	-8.501**
	(-2.31)	(-2.12)	(-2.38)	(-2.47)
Leverage	0.039	0.047	-0.102	-0.091
	(0.33)	(0.38)	(-1.16)	(-1.02)
ROA	-3.431***	-3.478***	0.400	0.321
	(-6.23)	(-6.56)	(1.10)	(0.86)
Sales Growth	0.003	0.006	0.001	-0.005
	(0.03)	(0.06)	(0.01)	(-0.07)
Size	0.004	0.013	-0.0968***	-0.0955***
	(0.11)	(0.36)	(-5.74)	(-5.91)
Largest Shareholder	-0.146	4.110**	-0.447	-1.675*
	(-0.52)	(2.24)	(-1.46)	(-1.71)
State Ownership	-0.291	-0.949	-0.061	0.224
	(-1.64)	(-1.62)	(-0.43)	(0.67)
Managerial Ownership	-104.2**	311.50	1.717***	7.322***
	(-2.31)	(0.94)	(3.50)	(6.67)
Largest Shareholder^2		-5.716**		1.75
		(-2.35)		(1.16)
State Ownership^2		1.297		-0.478
		(1.09)		(-0.67)
Managerial Ownership^2		-416.10		-15.98***
		(-1.40)		(-3.30)
N	8,269	8,269	7,292	7,292
Pseudo R-sq	0.171	0.178	0.096	0.104

Table 4

Interaction effects of financial development and shareholder monitoring.

This table reports the probit regression results for the interaction of financial development and shareholder monitoring variables on corporate fraud. The sample consists of firms listed on Mainland China's stock exchanges during the period 1990 to 2010. The dependent variable is one if a firm is detected committing financial misreporting in a specific year by CSRC, and zero otherwise. The interaction term of financial development with large shareholder, state ownership, and large shareholder and state ownership together is included in Columns (2) to (4) respectively. The complete set of explanatory variables is defined in Appendix A. All regressions include industry and year fixed effects. Robust standard errors are clustered at the industry and province level with *t*-statistics reported in parentheses. Coefficients marked with *, **, and *** are significant at the 0.1, 0.05, and 0.01 level, respectively.

	Dependent variable: whether a firm is detected committing fraud			
Explanatory variables	(1)	(2)	(3)	(4)
Financial Development	-2.662***	-4.257**	-4.551***	-4.448**
	(-2.68)	(-2.24)	(-4.72)	(-2.29)
Leverage	0.312***	0.312***	0.312***	0.312***
	(4.62)	(4.61)	(4.65)	(4.65)
ROA	-2.483***	-2.484***	-2.481***	-2.481***
	(-9.91)	(-9.97)	(-9.92)	(-10.00)
Sales Growth	-0.0949**	-0.0946**	-0.0949**	-0.0950**
	(-2.33)	(-2.34)	(-2.35)	(-2.34)
Size	-0.124***	-0.124***	-0.125***	-0.125***
	(-3.81)	(-3.81)	(-3.82)	(-3.85)
Largest Shareholder	-0.755***	-0.748***	-0.752***	-0.753***
	(-4.95)	(-4.60)	(-4.88)	(-4.60)
State Ownership	-0.182**	-0.180**	-0.169**	-0.169**
	(-2.33)	(-2.32)	(-2.06)	(-2.08)
Largest Shareholders x		4.289		-0.367
Financial Development		(0.48)		(-0.03)
State Ownership x			6.486	6.601
Financial Development			(1.13)	(0.99)
Industry Dummies	Y	Y	Y	Y
Year Dummies	Y	Y	Y	Y
N	8,405	8,405	8,405	8,405
Pseudo R-Sq	0.130	0.130	0.131	0.131

Table 5

Timing of split share structure reform**.**

This table describes the timing of Split Share Structure Reform in our sample. Panel A tabulates the firm-year observations by the beginning and ending year of the reform. Panel B summarizes the firm-year observations by the duration of the reform. The sample consists of firms listed on Mainland China's stock exchanges during the period 1990 to 2010. *Reform Duration* is the time difference between the beginning and ending year of the Split Share Structure Reform.

Panel A

Distribution by beginning and ending year of the reform

	Ending Year						
Beginning Year	2005	2006	2007	2008	2009	2010	Total
2005	2,280	2,132	0	20	19	0	4,451
2006	0	8,012	1,415	286	127	33	9,873
2007	0	0	14	0	0	0	14
missing	0	0	8	141	95	14	258
Total	2,280	10,144	1,429	306	146	33	14,338

Panel B

Distribution by duration of the reform

Reform Duration (Year)	No. of Obs.	% Obs.
0	10,306	71.88%
1	3,547	24.74%
2	286	1.99%
3	147	1.03%
4	52	0.36%

Table 6

Economic significance of financial liberalization.

This table examines the economic significance of financial liberalization using the coefficient estimates of the probit regressions in Table 7. *Financial Liberalization* is an indicator variable that equals one if a firm is located in a city that allows foreign banks to conduct local currency-related business in a specific year (i.e. foreign bank entry), and zero otherwise. Columns 1 and 2 report the probit regression coefficient estimates and marginal effects estimated at the means of covariates based on probit models 1–4 of Table 7, respectively. Predicated fraud probability if we vary *Financial Liberalization* from zero to one while keeping the level of other determinants in the probit regression unchanged at the mean level are reported in Columns 3 and 4, respectively. We present absolute and percentage changes in predicted fraud probability in Columns 5 and 6.

Model Specification	(1) Probit coefficient estimate	(2) Marginal effects	(3) Prob (Financial Liberalization=0)	(4) Prob(Financial Liberalization=1)	(5) Absolute change in predicted probability	(6) % change in predicted probability
Model 1	-0.268	-0.018	4.34%	2.38%	-1.96%	-45.09%
Model 2	-0.263	-0.016	4.02%	2.21%	-1.80%	-44.90%
Model 3	-0.296	-0.014	2.79%	1.36%	-1.43%	-51.19%
Model 4	-0.285	-0.015	3.22%	1.64%	-1.58%	-49.05%

Table 7

Correlation between different types of fraud.

This table presents pairwise correlation coefficients between different types of fraud. The sample consists of firms listed on Mainland China's stock exchanges during the period 1990 to 2010. Fraud firms refer to firms that were detected committing fraud by CSRC in a specific year. P-values are reported in parentheses. Correlation coefficients marked with *, **, and *** are significant at the 0.1, 0.05, and 0.01 level, respectively.

	1	2	3	4
1 financial misreporting	1			
2 tunneling	0.4189***	1		
	(0.0000)			
3 insider trading	0.0621***	0.0138***	1	
	(0.0000)	(0.0000)		
4 others	0.0317***	-0.0016	-0.0018	1
	(0.0000)	(0.8335)	(0.8141)	

Table 8
Robustness test results.

Table 8a
Alternative measures for financial development.

This table reports results from probit regression analyses of corporate fraud using alternative measures for financial development. The sample consists of firms listed on Mainland China's stock exchanges during the period 1990 to 2010. Financial development is measured by stock market capitalization divided by GDP in Column (1), total credit divided by GDP in Column (2), the average of percentage of deposits held by non-state banks and percentage of credits allocated to non-state firms (*Marketization of Banking Industry*) in Column (3), and whether the province includes treaty ports or leased cities during the Opium War (*Treaty*) in Column (4). The complete set of explanatory variables is defined in Appendix A. All regressions include industry and year fixed effects. Robust standard errors are clustered at the industry and province level with *t*-statistics reported in parentheses. Coefficients marked with *, **, and *** are significant at the 0.1, 0.05, and 0.01 level, respectively.

	Dependent variable: whether a firm is detected committing fraud			
	(1)	(2)	(3)	(4)
Explanatory variables	Stock Market Capitalization/GDP	Total Credit/GDP	Marketization of Banking Industry	Treaty
Financial Development	-1.725*	-7.397***	-0.0620***	-0.160**
	(-1.78)	(-3.19)	(-6.14)	(-2.31)
Leverage	0.316***	0.306***	0.322***	0.313***
	(4.67)	-4.6	-4.74	-4.4
ROA	-2.487***	-2.473***	-2.408***	-2.437***
	(-9.82)	(-9.92)	(-9.09)	(-8.89)
Sales Growth	-0.0946**	-0.0946**	-0.0996**	-0.0995**
	(-2.30)	(-2.37)	(-2.41)	(-2.37)
Size	-0.126***	-0.123***	-0.118***	-0.124***
	(-3.94)	(-3.69)	(-3.58)	(-3.77)
Largest Shareholder	-0.767***	-0.763***	-0.747***	-0.783***
	(-5.01)	(-4.83)	(-4.69)	(-4.87)
State Ownership	-0.181*	-0.186**	-0.248***	-0.223**
	(-1.93)	(-1.96)	(-2.65)	(-2.27)
Industry Dummies	Y	Y	Y	Y
Year Dummies	Y	Y	Y	Y
N	8,405	8,435	8,435	8,435
Pseudo r^2	0.130	0.130	0.135	0.132

Table 8b

Alternative measures for block ownership.

This table reports results from probit regression analyses of corporate fraud using discrete measures for block ownership. Panel A develops indicator variables for different types of block ownership and examines their impact on corporate fraud. Panel B uses different cutoffs for block ownership. *Blockholder* (Column 1of Panel A and B) is an indicator variable that equals one if there exists at least one shareholder who owns more than 10% of the common shares in the firm, and zero otherwise. In Columns 2–5 of Panel A, *Foreign, State, and Managerial Blockholder* are indicator variables that equal one if there exists at least one foreign, state, or managerial shareholder who owns more than 10% of the common shares in the firm, and zero otherwise. In Columns 2–5 of Panel B, *Blockholder* 25%, 35*%, 50%, and 60%* are indicator variables that equal one if there exists at least one shareholder who owns more than 25%, 35%, 50%, or 60% of the common shares in the firm, and zero otherwise. The sample consists of firms listed on Mainland China's stock exchanges during the period 1990 to 2010. The dependent variable is one if a firm is detected committing financial misreporting in a specific year by CSRC, and zero otherwise. All explanatory variables are defined in Appendix A. All regressions include industry and year fixed effects. We also control for firm characteristic variables as in column (2) of Table 3 in all regressions. Robust standard errors are clustered at the industry and province level with *t*-statistics reported in parentheses. Coefficients marked with *, **, and *** are significant at the 0.1, 0.05, and 0.01 level, respectively.

Panel A

Different types of block ownership

	Dependent variable: whether a firm is detected committing fraud				
Explanatory variables	(1)	(2)	(3)	(4)	(5)
Blockholder	0.118				
	(0.51)				
State Blockholder		-0.144***			-0.156***
		(-5.36)			(-5.35)
Foreign Blockholder			-0.009		-0.049
			(-0.13)		(-0.67)
Managerial Blockholder				0.118	0.053
				(0.68)	(0.30)
Financial Development	-3.107**	-2.625**	-2.662**	-2.050**	-2.074**
	(-2.26)	(-2.40)	(-2.47)	(-2.00)	(-1.99)
Firm Characteristics	Y	Y	Y	Y	Y
Industry Dummies	Y	Y	Y	Y	Y
Year Dummies	Y	Y	Y	Y	Y
N	8,310	8,310	8,310	8,310	8,310
Pseudo R-sq	0.124	0.123	0.121	0.118	0.121

Panel B
Different cutoffs of block ownership

	Dependent variable: whether a firm is detected committing fraud				
Explanatory variables	(1)	(2)	(3)	(4)	(5)
Blockholder	0.118				
	(0.51)				
Blockholder 25%		-0.125**			
		(-2.55)			
Blockholder 35%			-0.209***		
			(-6.27)		
Blockholder 50%				-0.270***	
				(-4.68)	
Blockholder 60%					-0.433***
					(-6.05)
Financial Development	-3.107**	-2.881**	-2.862**	-2.678**	-2.847**
	(-2.26)	(-2.07)	(-2.06)	(-2.00)	(-2.14)
Firm Characteristics	Y	Y	Y	Y	Y
Industry Dummies	Y	Y	Y	Y	Y
Year Dummies	Y	Y	Y	Y	Y
N	8,310	8,310	8,310	8,310	8,310
Pseudo R-sq	0.124	0.125	0.128	0.129	0.129

Table 8c

Alternative measures for governance.

This table reports results from probit regression analyses of corporate fraud using alternative measures for governance. The sample consists of firms listed on Mainland China's stock exchanges during the period 1990 to 2010. The dependent variable is one if a firm is detected committing fraud in a specific year by CSRC, and zero otherwise. *Financial Development* is the simple average of two normalized measures: stock market capitalization/GDP and total credit /GDP at the province level. Other explanatory variables are defined in Appendix A. All regressions include industry and year fixed effects. Robust standard errors are clustered at the industry and province level with *t*-statistics reported in parentheses. Coefficients marked with *, **, and *** are significant at the 0.1, 0.05, and 0.01 level, respectively.

	Dependent variable: whether a firm is detected committing fraud					
	(1)	(2)	(3)	(4)	(5)	(6)
Explanatory variables	CEO Age	CEO Edu.	CEO Gender	Independent Audit Comm.	No. of Board Meetings	Supervisory Board Size
Governance	-0.009***	-0.033	-0.253	-0.008	0.021	-0.024
	(-3.38)	(-0.75)	(-1.20)	(-0.42)	(1.32)	(-1.24)
Financial Development	-2.416**	-4.343***	-2.621**	-2.401**	-3.229**	-2.743**
	(-2.27)	(-4.01)	(-2.43)	(-2.04)	(-2.36)	(-2.40)
Leverage	0.310***	0.361***	0.290***	0.250***	0.311***	0.341***
	(4.00)	(5.41)	(3.58)	(3.03)	(4.52)	(4.82)
ROA	-2.512***	-2.669***	-2.563***	-2.591***	-2.445***	-2.477***
	(-10.83)	(-10.56)	(-11.13)	(-10.98)	(-9.74)	(-9.19)
Sales Growth	-0.0940**	-0.101***	-0.0955**	-0.0587	-0.100**	-0.101**
	(-2.20)	(-3.77)	(-2.24)	(-1.12)	(-2.36)	(-2.38)
Size	-0.118***	-0.113***	-0.124***	-0.135***	-0.136***	-0.115***
	(-3.74)	(-3.31)	(-3.97)	(-4.50)	(-4.46)	(-3.60)
Largest Shareholder	-0.753***	-0.708***	-0.787***	-0.727***	-0.736***	-0.761***
	(-5.05)	(-5.48)	(-5.32)	(-3.96)	(-5.12)	(-4.66)
State Ownership	-0.154**	-0.142*	-0.153**	-0.201**	-0.159*	-0.129
	(-1.91)	(-1.72)	(-1.94)	(-2.10)	(-1.66)	(-1.32)
Ind. Dummies	Y	Y	Y	Y	Y	Y
Year Dummies	Y	Y	Y	Y	Y	Y
N	8,284	5,767	8,286	7,478	8,401	8,299
Pseudo R-sq	0.132	0.133	0.133	0.127	0.133	0.131

Table 8d

Alternative measures for political connections.

This table reports probit regression results of corporate fraud using alternative measures for political connections. The sample consists of firms listed on Mainland China's stock exchanges during the period 1990 to 2010. The dependent variable is one if a firm is detected committing financial misreporting in a specific year by CSRC, and zero otherwise. The key independent variable is *Political Connection*, as measured by *Central SOE CEO* (Column (1)), *CSRC CEO* (Column (2)), *Military CEO* (Column (3)), *CPPCC_P CEO* (Column (4)), and *NPC_P CEO* (Column (5)), respectively. The complete set of explanatory variables is defined in Appendix A. All regressions include industry and year fixed effects. Robust standard errors are clustered at the industry and province level with *t*-statistics reported in parentheses. Coefficients marked with *, **, and *** are significant at the 0.1, 0.05, and 0.01 level, respectively.

	Dependent variable: whether a firm is detected committing fraud				
	(1)	(2)	(3)	(4)	(5)
Explanatory variables	Central SOE CEO	CSRC CEO	Military CEO	CPPCC_P CEO	NPC_P CEO
Political Connection	0.0228	1.347	0.133	-0.0561	-0.0104
	(0.24)	(1.59)	(1.49)	(-0.33)	(-0.06)
Financial Development	-2.125**	-2.270**	-2.038**	-2.08**	-2.08*
	(-2.14)	(-2.17)	(-1.92)	(-1.97)	(-1.80)
Leverage	0.317***	0.329***	0.314***	0.317***	0.318***
	(4.68)	(4.81)	(4.58)	(4.67)	(4.64)
ROA	-2.451***	-2.453***	-2.456***	-2.452***	-2.453***
	(-9.38)	(-9.55)	(-9.32)	(-9.56)	(-9.72)
Sales Growth	-0.0977**	-0.0891**	-0.0964**	-0.0979**	-0.0972**
	(-2.38)	(-2.39)	(-2.40)	(-2.53)	(-2.34)
Size	-0.122***	-0.125***	-0.120***	-0.122***	-0.122***
	(-3.93)	(-3.86)	(-3.88)	(-3.92)	(-4.02)
Largest Shareholder	-0.725***	-0.706***	-0.719***	-0.724***	-0.725***
	(-3.93)	(-3.94)	(-3.84)	(-3.95)	(-3.90)
State Ownership	-0.191**	-0.198**	-0.193**	-0.194**	-0.191**
	(-1.97)	(-2.01)	(-2.01)	(-2.06)	(-2.02)
Industry Dummies	Y	Y	Y	Y	Y
Year Dummies	Y	Y	Y	Y	Y
N	8,118	8,118	8,118	8,118	8,118
Pseudo r^2	0.129	0.132	0.129	0.129	0.129

Table 8e

Alternative Specifications.

This table reports probit regression results of corporate fraud using alternative specifications. The sample consists of firms listed on Mainland China's stock exchanges during the period 1990 to 2010. The dependent variable is one if a firm is detected committing financial misreporting in a specific year by CSRC, and zero otherwise. Panel A reports the results using independent variables measured at two years before fraud detection. Panel B report the results using dependent variable measured at the first year of fraud commission as claimed in CSRC enforcement action report, while independent variables measured at one year before fraud commission. *Financial Development* is the simple average of two normalized measures: stock market capitalization/GDP and total credit /GDP at the province level. Other explanatory variables are defined in Appendix A. All regressions include industry and year fixed effects. Robust standard errors are clustered at the industry and province level with *t*-statistics reported in parentheses. Coefficients marked with *, **, and *** are significant at the 0.1, 0.05, and 0.01 level, respectively.

Panel A

Independent variables measured at two years before fraud detection

	Dependent variable: whether a firm is detected committing fraud			
Explanatory variables	(1)	(2)	(3)	(4)
Financial Development	-4.348**	-3.006**	-2.116*	-2.138**
	(-2.33)	(-2.02)	(-1.80)	(-1.88)
Leverage		0.235**	0.193**	0.185*
		(2.43)	(2.02)	(1.93)
ROA		-1.629***	-1.809***	-1.849***
		(-8.91)	(-8.85)	(-9.08)
Sales Growth		-0.108***	-0.0616	-0.0588
		(-3.27)	(-1.44)	(-1.39)
Size		-0.114***	-0.145***	-0.136***
		(-6.15)	(-3.67)	(-3.37)
Largest Shareholders			-0.955***	-0.643***
			(-5.50)	(-3.79)
State Ownership				-0.388***
				(-4.61)
Industry Dummies	Y	Y	Y	Y
Year Dummies	Y	Y	Y	Y
N	13,002	11,720	6,989	6,989
Pseudo R-sq	0.034	0.074	0.090	0.093

Panel B

Dependent variables measured at the commission year of fraud

	Dependent variable: whether a firm is detected committing fraud			
Explanatory variables	(1)	(2)	(3)	(4)
Financial Development	-5.149***	-4.032**	-3.376**	-3.428**
	(-2.84)	(-2.57)	(-2.02)	(-2.67)
Leverage		0.154	0.001	-0.006
		(1.20)	(0.01)	(-0.04)
ROA		-1.440***	-2.178***	-2.197***
		(-5.38)	(-7.14)	(-7.14)
Sales Growth		-0.014	0.004	0.006
		(-0.39)	(0.10)	(0.15)
Size		-0.102***	-0.080**	-0.074*
		(-4.67)	(-1.97)	(-1.74)
Largest Shareholders			-0.804***	-0.584***
			(-6.91)	(-4.05)
State Ownership				-0.276**
				(-2.03)
Industry Dummies	Y	Y	Y	Y
Year Dummies	Y	Y	Y	Y
N	14,990	13,330	8,405	8,405
Pseudo R-sq	0.045	0.069	0.088	0.089