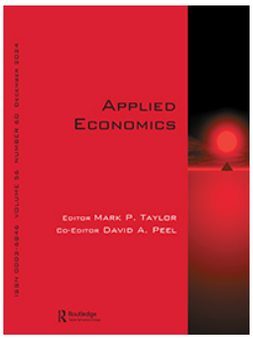

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The bright side of controlling owners in emerging markets: the case of corporate fraud

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ABSTRACT

This paper sheds light on the monitoring effects of controlling ownership on shareholders' fraud activities. Using a sample of Chinese listed firms for 2004–2019, our results indicate that the absence of controlling owners increases corporate fraud activities by non-controlling shareholders, but not by managers. The findings remain consistent when using bivariate probit model that incorporates undetected fraud. To establish causality, we conduct difference-in-difference analyses that rely on the ownership variation generated by the exogenous loss of controlling owners and M&A deregulation shocks, respectively. The 2SLS regression employing the collectivist culture as an instrument for control absence confirms our results. To explore the reasons for the increase in fraud due to the absence of controlling owners, we show that shareholders are not motivated to participate and vote in the general meetings when controlling owners are absent, resulting in lower corporate governance quality. However, analysts and short-sellers act effectively as external control mechanisms to prevent corporate fraud when controlling owners are absent.

KEYWORDS

Controlling owner; corporate fraud; ownership structure; corporate governance; China

JEL CLASSIFICATION

G30; G32; G34; G38

I. Introduction

Existing literature has largely documented the entrench activities of controlling owners in many East Asian and Western European markets, including tunnelling, self-dealing (Cheung, Rau, and Stouraitis 2010; G. Jiang, Lee, and Yue 2010; Khatib 2023; W. Q. Peng, Wei, and Yang 2011), excessive cash-holdings (Q. Chen et al. 2012), manipulation of information disclosure (Chan et al. 2020; Gul, Kim, and Qiu 2010), and the primary agency conflict typically arises between controlling and minority shareholders (Claessens, Djankov, and Lang 2000; Faccio and Lang 2002). However, controlling owners can also positively influence corporate governance under certain circumstances (F. Jiang and Kim 2020). In this paper, we aim to address the question: How do controlling owners affect corporate fraud? We argue that the absence of controlling owners could be a crucial factor that increases corporate fraud, especially corporate fraud committed by non-controlling shareholders.

Several situations highlight the positive impact of controlling shareholders on corporate governance, as summarized by F. Jiang and Kim (2020). First, when controlling shareholders are majority owners, the high level of ownership aligns the interests of controlling shareholders and minority shareholders (Claessens et al. 2002; Jensen and Meckling 1976; Morck, Shleifer, and Vishny 1988; Stulz 1988), resulting in enhanced corporate performance (Jiang and Kim 2020), greater incorporation of firm-specific information into share prices (Gul, Kim, and Qiu 2010), and reduced expropriation (Gul, Kim, and Qiu 2010). Besides, participation in business groups helps mitigate interest conflicts, enabling controlling shareholders to benefit minority shareholders through the sharing of financial resources via credit or related party transactions (He et al. 2013; Jia, Shi, and Wang 2013; Torres, Bertín, and López-Iturriaga 2017). Furthermore, the presence of other blockholders can serve as monitoring mechanisms, further amplifying the positive influence of controlling

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All errors are our own. All authors have contributed equally.

shareholders (Hope, Wu, and Zhao 2017; Laeven and Levine 2008).

We argue that the existence of controlling owners can enhance internal governance through restrictions on managers and non-controlling shareholders (Edmans 2014; Jiang, et al. 2020; Shleifer and Vishny 1997). First, as corporate scandals ultimately translate into damage to controlling values, controlling owners have incentives to monitor other shareholders and managers for value-destroying behaviours. Second, controlling owners bear more detection risks in serious scandals, because controlling owners are under special supervision and heavily regulated, especially in emerging markets such as China. Third, controlling owners are concerned about their own reputation and social capital. To avoid reputation damage and promote inheritance, controlling owners are motivated to behave ethically and monitor other non-controlling shareholders to do so. Altogether, controlling owners have financial, regulatory, and reputational motivations for monitoring non-controlling shareholders' behaviour and improving internal corporate governance.

To explore how controlling owners affect corporate fraud in China, we conducted a series of tests using a sample of Chinese-listed firms for 2004–2019. The China Securities Regulatory Commission (CSRC) sets strict criteria for the identification of controlling owners and special rules for the controlling owners (For example, restrictions during IPO, SEO, M&As, etc. See details in section 2.2), but the special rules do not apply to non-controlling shareholders. Thus, the Chinese setting is uniquely suited for our study and we investigate how the absence of controlling owners would impact shareholders' fraud activities in China, accordingly.

Our baseline results show the absence of controlling owners induces the increase in the probability of non-controlling shareholders' engaging in corporate fraud after controlling for other confounding factors. To address potential biases due to partial observability, we employ a bivariate probit model, a method suggested by Poirier (1980), Wang, Winton, and Yu (2010), and D. Chen et al. (2018), which helps mitigate the influence of undetected frauds. Additionally, we use propensity score matching sample to tackle selection bias following the approach outlined by D. Chen et al. (2018).

To alleviate endogeneity, first, we conduct difference-in-difference (DID) analyses that rely on the ownership variation generated by the exogenous loss of the controller. We extract the reasons for controlling owners' absence from the annual reports and announcement of shareholdings' variations and select the exogenous reasons for controller loss (See details in section 4.1) to conduct DID analyses. The results show that shareholders' fraud increases significantly after the exogenous loss of controlling owners in listed firms.

Second, we use the shock of M&A deregulation in 2014 to perform DID analyses. On 11 July 2014, the CSRC issued the Measures for the Administration of Major Asset Restructuring of Listed Companies and the Measures for the Administration of the Acquisition of Listed Companies. These measures aimed to relax control, strengthen supervision, and simplify the administrative approval process for M&A transactions. Following the deregulation, listed companies are increasingly active in M&A activities, resulting in more controlling ownership fluctuation and a higher likelihood of controlling owner absence. Firms with dispersed ownership structures were particularly susceptible to losing their controlling owners following the deregulation. However, M&A deregulation does not induce firms' fraud activities, as it does not relax the supervision environment. Our findings reveal that firms with more dispersed ownership structures exhibited a higher incidence of shareholder fraud subsequent to the M&A deregulation in 2014.

Third, we utilize regional cultivation of rice, a proxy of collectivist culture, as an instrumental variable for the absence of controlling owners in our two-stage least squares (2SLS) analysis. The rice theory posits that regions with a long history of rice cultivation tend to exhibit more collectivist cultural norms due to the cooperative nature required for intensive irrigation and labour in rice farming (Talhelm et al. 2014). In addition, firm founders with a background of stronger collectivist cultures are more inclined to share the controlling ownership (Fan, Gu, and Yu 2022). Hence, we hypothesize that firms located in regions with stronger collectivist cultures will tend to have

more dispersed ownership structures, consequently increasing the likelihood of the absence of controlling owners. However, the collectivist culture does not have a direct impact on people's ethical behaviours and fraudulent activities. Instrument variable (IV) regressions confirm our findings. Overall, our identification tests support the proposition that the absence of the controlling owners leads to a higher risk of corporate shareholder fraud.

Additional tests reveal that in the absence of controlling owners, shareholders participate less in the general meetings in terms of voting percentage, finally resulting in a fall in corporate governance and a surge in shareholders' fraud. Also, the absence of controlling owners does not significantly exacerbate the conflict of interest between shareholders and management as managerial misconduct does not increase.

We also examine firms' external governance mechanisms. We find that the positive relation between the absence of the controlling owners and corporate non-controlling shareholder fraud is more pronounced for firms with fewer financial analysts covering them, and unrestricted for short-selling. Our analyses substantiate the external monitoring impact of financial analysts (T. Chen, Harford, and Lin 2015; Dyck, Morse, and Zingales 2010) and short-sellers (Fang, Huang, and Karpoff 2016; Karpoff and Lou 2010).

Our study contributes to the literature in three key aspects. First, we enrich the studies on corporate governance in emerging markets, which have been predominantly focused on the negative aspects of controlling ownership. Prior research has extensively documented the detrimental effects of controlling owners, including tunnelling, self-dealing activities (Cheung, Rau, and Stouraitis 2010; G. Jiang, Lee, and Yue 2010; W. Q. Peng, Wei, and Yang 2011), excessive cash-holdings (Q. Chen et al. 2012), and manipulation of information disclosure (Chan et al. 2020; Gul, Kim, and Qiu 2010). In contrast, our findings unveil a previously overlooked positive dimension of controlling owners' impact. We show that the existence of controlling owners can reduce the risk of corporate fraud. This is a key finding – one that shows a positive side of controlling owners' impact – largely ignored by prior literature. In the context of emerging markets like China, where monitoring by controlling owners may be limited, our research reveals that the absence of controlling owners in listed firms correlates with increased fraudulent activities among non-controlling shareholders. Thus, controlling owners serve as a crucial deterrent against corporate fraud, enhancing the supervision and regulation of listed firms.

Second, we contribute to the studies on ownership structure and its consequences, building upon seminal works by La Porta, Lopez-De-Silanes, and Shleifer (1999) and Tirole (2010). While prior research has predominantly focused on ownership concentration and its association with severe tunnelling and self-dealing activities in China (Chan et al. 2020; Q. Chen et al. 2012; Gul, Kim, and Qiu 2010; F. Jiang and Kim 2020; G. Jiang, Lee, and Yue 2010), our study explores the economic implications of a unique ownership structure: the absence of controlling owners, a dimension that has received limited attention in previous studies. By examining the consequences of controlling owners' absence, we fill a crucial gap in the literature and provide empirical evidence demonstrating that the lack of controlling owners significantly increases the likelihood of fraudulent activities among non-controlling shareholders. Moreover, our findings reveal the magnitude of this effect to be economically substantial, evidenced by a remarkable 330% increase in *Ln(1+Fraud_num)* relative to the sample mean. Furthermore, drawing on theoretical insights that higher shareholder protection contributes to elevated asset valuation (La Porta et al. 2002), our results underscore the role of controlling owners in curbing fraudulent behaviour among non-controlling shareholders. This, in turn, not only enhances corporate valuation but also fosters greater efficiency in capital allocation within the economy.

Lastly, our paper contributes to the body of literature examining the antecedents of corporate fraud. Prior studies have identified various internal factors, including executives and board characteristics (Beasley 1996; Bergstresser and Philippon 2006; Burns and Kedia 2006; G. Chen et al. 2006; Conyon and He 2016; Efendi, Srivastava, and Swanson 2007; Khanna, Kim, and Lu 2015), controlling person characteristics (D. Chen et al. 2018), capital structure (Firth, Rui, and Wu 2011), and ownership type (H. Chen et al. 2011; Hou and

Moore 2010), as influencing the likelihood of corporate fraud. Additionally, external factors such as institutional investors (Wu, Johan, and Rui 2014), analyst coverage (J. Chen et al. 2016; Zhang 2018), and firm geographic location (Kedia and Rajgopal 2011) have been found to impact a firm's susceptibility to fraud. In the context of Malaysia, another emerging market in Asia, limited studies have explored the antecedents of corporate governance (Khatib et al. 2022). However, recent literature has begun to employ machine learning techniques to predict corporate fraud (Bao et al. 2020; Brown, Crowley, and Elliott 2020; Xu, Xiong, and An 2023). Our study contributes to this area by demonstrating that the absence of controlling owners is a significant antecedent of corporate fraud, with considerable economic implications – a 330% increase in Ln(1+Fraud_num) relative to the sample mean.

The rest of this paper is structured as follows: Section II outlines the research design. Section III presents the results of the baseline regressions. Section IV discusses endogeneity issues. Section V provides additional tests. Section VI examines the role of external governance. Finally, Section VII concludes the paper.

II. Research design

In this section, we provide details on sample selection, define key variables, present descriptive statistics, and conduct univariate analysis.

Data and sample selection

In this section, we detail our sample selection process and data sources. We initially compile our sample from all Chinese A-share listed firms spanning the period from 2004 to 2019, utilizing data sourced from the China Stock Market and Accounting Research (CSMAR) database. Our dataset encompasses firms' accounting, ownership, governance, and stock trading information. Corporate fraud data are sourced from the Tonghuashun iFind database.

To ensure the robustness of our analysis, we employ specific criteria for sample selection. First, we exclude financial firms from our sample. Second, firms with missing information on variables used in the baseline regressions are dropped from the analysis. Additionally, we apply winsorization to the continuous variables at the 1% and 99% levels to mitigate the influence of outliers.

After applying these selection criteria, our final sample comprises 31,314 firm-year observations corresponding to 3,101 unique firms. Within the final sample, 1.9% of firms lack controlling owners, while 47.4% are state-owned enterprises, and 50.7% are privately-owned enterprises.

Variable definitions

Dependent variable

The primary dependent variable in our analysis is corporate fraud, denoted as *Ln_(1+Fraud_num)*. This variable represents the natural logarithm of one plus the total amount of fraud committed by non-controlling shareholders within listed firms during a given year. Additionally, we create a binary variable called *Fraud Dummy*, which takes a value of one in a specific year if a firm experiences at least one instance of fraud perpetrated by non-controlling shareholders, and zero otherwise.

Independent variable

Our variable of interest, *ControlAbs*, serves as an indicator of whether a firm possesses a controlling owner in a given year, as disclosed in the annual reports. The China Securities Regulatory Commission (CSRC) has established specific regulatory guidelines for controlling owners, distinct from those governing non-controlling shareholders.[1]

To be classified as controlling owners, shareholders must meet at least one of the following criteria: (1) holding more than 50% of the shares, (2) controlling more than 30% of the voting rights, (3) having the authority to elect over half of the board members, or (4) exerting significant

[1]Moreover, the CSRC imposes special regulations on controlling owners pertaining to various aspects such as information disclosure, initial public offerings (IPOs), non-public offerings, mergers and acquisitions (M&As), related party transactions, external guarantees, shares' lock-up period, governance procedures, and potential involvement in criminal investigations. These regulations are designed to ensure transparency, governance integrity, and investor protection within the securities market.

influence over resolutions passed in general meetings of shareholders.

Similarly, Fan and Wong (2002) focuses on the corporate ultimate ownership and define an ultimate owner as a shareholder with determining voting rights in a firm and is not controlled by anyone else. They define firms without an ultimate owner as widely held firms.

Control variables

Following prior literature such as S. A. Johnson, Ryan, and Tian (2009) and D. Chen et al. (2018), we include several control variables to capture their influence on corporate fraud.

First, we include firm size (*SIZE*). Larger firms typically attract greater scrutiny. Second, firm leverage (*LEV*) is related to corporate fraud, because highly leveraged firms more prone to financial distress and therefore more inclined to fraud. Third, firm profitability (*ROE*) is controlled because profitable firms take less incentive to involve in fraudulent activities. Additionally, we consider the firm's growth rate (*SALES_G*), as firms experiencing rapid growth may encounter heightened uncertainties that could influence the likelihood of fraud.

Furthermore, we acknowledge the role of corporate governance in mitigating the probability of corporate fraud (Agrawal and Chadha 2005; G. Chen et al. 2006; Dechow, Sloan, and Sweeney 1996). Therefore, we include two governance-related variables: *Duality*, representing the duality of CEO and board chair positions, and *BOD_size*, indicating the size of the board of directors.

The securities litigation literature such as Jones and Weingram (1996) and M. F. Johnson, Nelson, and Pritchard (2007) indicates a relationship between firm performance, stock return volatility, and a firm's litigation risk. Hence, we include control variables for firm performance, measured by *Tobin's Q*, and Stock return volatility (*VOL*).

Appendix A provides a summary of the definitions of the variables utilized in our analysis.

Descriptive statistics

Table 1 presents the descriptive statistics of the key variables. The mean value of the total non-controlling shareholder fraud amount for firm-year observations in our sample is 0.016, implying that, on average, non-controlling shareholders in listed firms are detected committing fraud approximately 0.016 times in a year. *ControlAbs* exhibits a mean of 0.019, suggesting that 1.9% of our observations are without a controller. All variables fall within a normal range.

Univariate analysis

Table 2 displays the results of univariate tests comparing firms without and with controlling owners. Both the mean and median values of *Ln_(1 +Fraud_num)* are significantly higher for firms without controlling owners compared to those with controlling owners. This suggests that non-controlling shareholders in firms without controlling owners exhibit a greater propensity to commit fraud.

Table 1. Descriptive statistics.

VARIABLES	(1) N	(2) mean	(3) sd	(4) p5	(5) p50	(6) p95
Fraud_num	31,314	0.016	0.143	0	0	0
ControlAbs	31,314	0.019	0.135	0	0	0
SIZE	31,314	21.890	1.291	20.070	21.750	24.300
LEV	31,314	0.468	0.224	0.117	0.465	0.824
ROE	31,314	0.051	0.191	−0.169	0.065	0.221
SALES_G	31,314	0.216	0.566	−0.320	0.124	0.919
Duality	31,314	0.207	0.405	0	0	1
BOD_size	31,314	2.275	0.183	1.946	2.303	2.565
TobinQ	31,329	2.514	1.921	0.998	1.885	6.186
VOL	31,314	0.132	0.061	0.060	0.118	0.251
BOD_meeting	31,314	2.288	0.355	1.792	2.303	2.890
Turnover	31,314	5.092	3.890	0.943	4.006	12.970
Stk_return	31,314	0.199	0.744	−0.552	−0.036	1.776
Analysts	31,314	6.264	8.845	0	2	26
OR	31,314	0.027	0.0513	0	0.010	0.114
Rice	31,314	2.161	1.219	0.209	2.712	3.435

In this table, we report the descriptive statistics of the variables across firm-year observations. The sample period covers the period 2004 to 2019. We exclude financial firms from our sample. The definitions of variables are provided in Appendix.

Table 2. Univariate tests.

	ControlAbs = 1		ControlAbs = 0		Diff	
	mean	median	mean	median	mean	median
Ln_(1+Fraud_num)	0.028	0.000	0.010	0.000	0.018***	0.000***
					(4.98)	(4.56)
SIZE	22.238	22.121	21.881	21.738	0.357***	0.393***
					(6.64)	(6.55)
LEV	0.464	0.470	0.465	0.464	−0.001	0.006
					(−0.08)	(0.18)
ROE	0.052	0.072	0.047	0.065	0.004	0.007**
					(0.37)	(2.33)
SALES_G	0.185	0.113	0.253	0.123	−0.068*	−0.010
					(−1.88)	(−0.53)
Duality	0.223	0.000	0.207	0.000	0.016	0.000
					(0.96)	(0.96)
BOD_size	2.293	2.303	2.275	2.302	0.019**	0.001*
					(2.42)	(1.65)
TobinQ	2.515	1.944	2.515	1.885	−0.001	0.059
					(0.012)	(0.60)
VOL	0.130	0.116	0.132	0.118	−0.002	−0.002
					(0.692)	(−0.22)

This table reports the univariate statistics for the variables in the baseline model. T-statistics and Z-statistics are reported in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Furthermore, firms without controlling owners exhibit larger size and board size compared to firms with controlling owners. However, there is no significant difference in leverage (*LEV*), CEO-board duality (*Duality*), Tobin's Q (*TobinQ*), and stock return volatility (*VOL*) between the two subsamples. The median value of return on equity (*ROE*) for firms without controlling owners is significantly higher than that of firms with controlling owners, although the mean value of *ROE* does not have significant difference. Additionally, the mean value of the firm growth rate (*SALES_G*) for firms without controlling owners is significantly lower than that of firms with controlling owners, while the median value of *SALES_G* does not have significant difference.

III. Controlling owners' absence and corporate shareholder fraud

In this section, we conduct baseline regressions to investigate the impact of the absence of controlling owners on non-controlling shareholders' engagement in fraud, and utilize the bivariate probit model to address partial observability problems.

Baseline regression

We initiate our analysis by presenting panel regressions of *Ln_(1+Fraud_num)* on *ControlAbs*, incorporating control variables and high-dimensional fixed effects. The baseline regression model is specified as follows:

$$Ln\_(1+Fraud\_num)_{i,t} = \alpha + \beta ControlAbs_{i,t-1} + \Phi Controls_{i,t-1} + Fixed\ Effects + \varepsilon_{i,t} \quad (1)$$

The dependent variable is non-controlling shareholders' fraud (*Ln_(1+Fraud_num)*). We also code an indicator, *Fraud Dummy*, for robustness. The key independent variable is an indicator *ControlAbs*. Control variables include *Size*, *LEV*, *ROE*, *SALES_G*, *Duality*, *Board Size*, *TobinQ*, and *VOL*. We include firm fixed effects and year fixed effects. We use robust standard errors.

To further validate our findings, we use a non-state-owned sample to run the baseline regression again, as state-owned enterprises (SOEs) exhibit distinct characteristics from non-SOEs in China (F. Jiang and Kim 2020). Additionally, following the approach outlined by D. Chen et al. (2018), we conduct a 1-to-1 matched sample analysis according to the propensity score of industry and size each year to mitigate potential selection bias.

Table 3 presents the baseline regression results. Across all columns, the coefficients on *ControlAbs* are consistently and significantly positive. These findings suggest that in the absence of controlling owners, non-controlling shareholders are more inclined to commit fraud. Taking Column (1) as

Table 3. Baseline regressions of corporate shareholder fraud on controller absence.

	Full sample		Non-SOE sample		1-1 matched sample	
Variables	FNum (1)	FD (2)	FNum (3)	FD (4)	FNum (5)	FD (6)
ControlAbs	0.033**	0.039***	0.043**	0.047**	0.031**	0.038**
	(2.45)	(2.60)	(2.25)	(2.23)	(2.22)	(2.22)
SIZE	−0.002	−0.002	−0.003	−0.004	−0.009	−0.013
	(−1.48)	(−1.37)	(−1.44)	(−1.23)	(−1.20)	(−1.24)
LEV	0.004	0.007	−0.005	−0.002	−0.001	0.017
	(0.70)	(0.98)	(−0.52)	(−0.16)	(−0.04)	(0.51)
ROE	−0.011**	−0.016**	−0.013*	−0.018*	−0.016	−0.023
	(−2.30)	(−2.34)	(−1.69)	(−1.76)	(−1.05)	(−1.00)
SALES_G	0.000	−0.000	0.001	0.001	0.004	0.006
	(0.05)	(−0.05)	(0.48)	(0.43)	(0.84)	(0.91)
Duality	0.003	0.005*	0.002	0.004	−0.000	0.002
	(1.51)	(1.80)	(0.50)	(0.96)	(−0.03)	(0.12)
BOD_size	0.007	0.009	0.008	0.011	−0.011	−0.009
	(1.17)	(1.27)	(0.81)	(0.90)	(−0.38)	(−0.23)
TobinQ	0.000	0.000	0.001	0.001	0.002	0.001
	(0.74)	(0.43)	(0.84)	(0.67)	(0.64)	(0.34)
VOL	0.045***	0.049***	0.053**	0.059**	0.071	0.079
	(3.11)	(2.78)	(2.42)	(2.19)	(0.91)	(0.75)
Constant	0.030	0.035	0.059	0.061	0.225	0.285
	(0.95)	(0.86)	(1.16)	(0.93)	(1.28)	(1.26)
Year FE	YES	YES	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES	YES	YES
Adj.R^2	0.0382	0.0390	0.0269	0.0317	0.0163	0.0367
Observations	31,314	31,314	16,463	16,463	2,017	2,017

This table presents the results of the association between the control absence and corporate shareholder fraud. The independent variable is *ControlAbs*. In the odd columns, the dependent variable is *Ln_(1+Fraud_num)*. In the even columns, the dependent variable is an indicator *Fraud Dummy*. Columns (1) to (2) report the results of sample covering all A-share listed non-financial firms. Columns (3) to (4) report the results of sub-sample only covering non-state-owned firms. Columns (5) to (6) report the results using matched sample. Robust t-statistics are reported in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

an example, the coefficient on *ControlAbs* indicates that in the absence of controlling owners, non-controlling shareholders engage in fraud to a greater extent than their counterparts by 0.033 units. This increase in shareholder fraud is economically substantial. With the average value of the dependent variable *Ln_(1+Fraud_num)* being 0.01, the absence of controlling owners leads to a remarkable 330% increase (0.033/0.01 = 330%) in *Ln_(1+Fraud_num)* relative to the sample mean.

In summary, our results consistently support the notion that non-controlling shareholders in firms without controlling owners are more prone to engaging in fraud compared to firms with controlling owners.

Undetected fraud – bivariate probit with partial observability

In research on corporate fraud, one common challenge is partial observability, where only detected instances of fraud are observable, while instances of undetected fraud remain unobserved, introducing measurement error into the dependent variable. We focus on the partial observability problem in this section.

Empirical methodology

Following the method proposed by Poirier (1980), Wang, Winton, and Yu (2010), and D. Chen et al. (2018), we employ a bivariate probit model with partial observability. Specifically, for each firm i, we denote latent variables $Fraud_{it}^{*}$ and $Detect_{it}^{*}$ determining firm i's likelihood of non-controlling shareholder's fraud commitment in year t and the probability of detecting it as follows:

$$Fraud_{i,t}^{*} = X_{F,it}\delta + \mu_{i,t} \tag{2}$$

$$Detect_{i,t}^{*} = X_{D,it}\theta + \gamma_{i,t} \tag{3}$$

where $X_{F,i}$ represents a set of variables that affect firms' likelihood of non-controlling shareholder's fraud commitment, and $X_{D,i}$ represents a set of variables that could have impact on the detection of fraud. We use a bivariate normal distribution and it is with a correlation of ρ, to calculate the residual terms.

Subsequently, the two latent variables could be transformed into dummy variables as follows:

$$Fraud_{i,t} = \begin{cases} 1, if\ Fraud^*_{i,t} > 0 \\ 0, if\ Fraud^*_{i,t} \le 0 \end{cases} \quad (4)$$

$$Detect_{i,t} = \begin{cases} 1, if\ Detect^*_{i,t} > 0 \\ 0, if\ Detect^*_{i,t} \le 0 \end{cases} \quad (5)$$

We use the product of $Fraud_{i,t}$ and $Detect_{i,t}$ to proxy for the observable fraud incidence. We use indicator $Observe_{i,t}$ to indicate the observable fraud, $Observe_{i,t} = 1$ only when $Fraud_{i,t} = 1$ and $Detect_{i,t} = 1$. In other words, $Observe_{i,t} = 0$ if non-controlling shareholders in a firm do not engage in fraud or if they have engaged in fraud but are not detected in later period. Based on the define functional form in prior paragraph and also using Φ to indicate the bivariate normal distribution's cumulative distribution probability, the possibility of observable fraudulent activities can be calculated as the following formulas:

$$\begin{aligned} \mathrm{P}\left(Observe_{i,t} = 1\right) &= \mathrm{P}\left(Fraud_{i,t} Detect_{i,t} = 1\right) \\ &= \emptyset\left(X_{F,it}\delta, X_{D,it}\theta, \rho\right) \end{aligned} \quad (6)$$

$$\begin{aligned} \mathrm{P}\left(Observe_{i,t} = 0\right) &= \mathrm{P}\left(Fraud_{i,t} Detect_{i,t} = 0\right) \\ &= 1 - \emptyset\left(X_{F,it}\delta, X_{D,it}\theta, \rho\right) \end{aligned} \quad (7)$$

We combine Eqs. (4a) and (4b) and generate the below function:

$$\begin{aligned} \mathrm{L}(\delta, \theta, \rho) = &\sum \log\left(P\left(Observe_{i,t} = 1\right)\right) \\ &+ \sum \log\left(P\left(Observe_{i,t} = 0\right)\right) \end{aligned} \quad (8)$$

By applying the maximum likelihood approach, we use Eq. (8) to estimate the bivariate probit model with partial observability.

Variables

We augment the determinantal factors of fraud commission and fraud detection following Khanna, Kim, and Lu (2015) and D. Chen et al. (2018), to estimate a bivariate probit model.

Determinants of the fraud commission. First, certain variables may influence both the probability of fraud commission and fraud detection. Therefore, we include them in both equations: firm size (*SIZE*), leverage (*LEV*), return on equity (*ROE*), sales growth rate (*SALES_G*), and Tobin's Q (*TobinQ*).

Firms with larger size, higher growth rates, higher leverage, better profitability, and market value tend to attract more regulatory concern and investor attention, leading to closer monitoring by creditors (Khanna, Kim, and Lu 2015; Wang, Winton, and Yu 2010), thereby increasing the probability of fraud detection. Additionally, firms experiencing more operational difficulties and performance pressure are more inclined to engage in fraud (Alexander and Cohen 1999). Firm size, growth rate, leverage, profitability, and market value can serve as indicators of a firm's operating performance.

In addition to the aforementioned determinants, we control a series of variables concerning internal corporate governance to capture the internal monitoring quality. While corporate governance factors could have a weak impact on fraud commission (Agrawal and Chadha 2005; Dyck, Morse, and Zingales 2010), they are less likely to directly affect fraud detection.

To assess internal monitoring quality, we control for board size, CEO-board duality, audit committee size, the board meetings, and the independent directors' percentage.

Additionally, we control for stock option of executives, *Option*, which influences the fraud involvement inclinations by aligning the CEO's self-interest with stock prices (Efendi, Srivastava, and Swanson 2007; L. Peng and Röell 2008), but it is less likely to directly affect the detection of fraud.

Determinants of the fraud detection. In the fraud detection specification, it's essential to control for factors that could affect the probability of fraud detection. Regulators often perceive litigation risk as a red flag, making firms facing high litigation risk more likely to be investigated. Unexpected performance shocks can increase litigation risk (Dyck, Morse, and Zingales 2010). To capture this, stock return volatility (*VOL*) together with stock turnover (*Turnover*) are included in the fraud detection equation, as both factors are associated with litigation risk according to the litigation literature (Jones and Weingram 1996). Additionally, proxies for performance of stock return are also incorporated into the specification, including stock abnormal returns (*Stk_return*) and risks of stock price crashes (*Crash*).

Results

Table 4 shows the results for bivariate probit model. The first column shows the result for fraud occurrence. After considering the issues of partial observability, our results still exist. The positive association between the absence of controlling owners and non-controlling shareholders' fraud remains significantly positive at the 5% level. Moving on to the second column, which reports the result for fraud detection, the estimated coefficient on *ControlAbs* is negative but not significant. This suggests that the absence of controlling owners does not significantly affect the likelihood of fraud detection. In summary, the results indicate that non-controlling shareholders have more opportunities and incentives to commit fraud in the absence of controlling owners, while the likelihood of being detected remains unchanged.

Table 4. Bivariate probit model with partial observability.

Variables	P(F) (1)	P(D/F) (2)
ControlAbs	1.276**	−0.940
	(2.57)	(−0.89)
SIZE	−0.051	−0.249
	(−0.46)	(−1.05)
LEV	−0.212	1.319***
	(−0.38)	(3.15)
ROE	0.152	−1.105***
	(0.31)	(−2.86)
SALES_G	−0.045	0.121
	(−0.42)	(0.90)
TobinQ	−0.043	0.085
	(−0.59)	(0.95)
Duality	0.062	
	(1.27)	
Board_size	0.257	
	(1.56)	
Auditcomsize	0.042	
	(1.19)	
IndBoard_size	−0.253	
	(−1.10)	
Bod_meetings	0.127	
	(1.61)	
Option	0.117	
	(0.74)	
Stk_return		−0.109
		(−0.92)
Turnover		−0.007
		(−0.65)
VOL		2.536
		(1.17)
Crash		−0.192
		(−1.17)
Constant	−0.580	3.896
	(−0.20)	(0.64)
Year FE	YES	YES
Industry FE	YES	YES
Observations	31,192	31,192

This table presents the results of bivariate probit estimation with partial observability. The dependent variable is an indicator *Fraud Dummy*. The independent variable is *ControlAbs*. P(F) indicates the estimation of fraud propensity. P(D/F) indicates the estimation of fraud detection. Robust z-statistics are reported in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

IV. Discussion of the endogeneity issue

Next, we aim to deal with potential endogeneity issues that may cast doubt on the observed relationship presented in Section III. We employ three methods to test endogeneity. First of all, we conduct DID analyses that rely on the ownership variation generated by the exogenous events that lead to the loss of controllers. Second, we the shock of M&A deregulation in 2014 to perform DID analyses to provide more supporting evidence. Third, we use collectivist cultures measured by regional rice cultivation as an instrumental variable to run 2SLS regressions.

The shock of exogenous loss of controller

First, we conduct DID analyses that rely on the ownership variation generated by the exogenous events that lead to the loss of controllers. Firms need to disclose the reasons why controlling owners are absent in a year. Therefore, we extract the text of reasons for controller absence from the annual reports and announcement of shareholdings' variations. Panel A of Table 5 summarizes the main reasons for controller absence.

Most firms experience a loss of controllers because the original controllers sell their shareholdings autonomously. Some firms lose their controller after M&A or seasoned equity offerings (SEO). The autonomously share selling, M&A, and SEO are all endogenous to shareholders' fraud as we can not distinguish whether shareholders reduce shareholdings to reduce legislation risks when intending to behave unethically (firms covered by Line (1) to (3) in Panel A of Table 5).

However, we do find certain cases where the reasons for controller absence are exogenous to shareholders' fraud to some extent, and these are summarized in Line (5) to (9) in Panel A of Table 5. In detail, 10 firms lose controllers after the change of board of directors while the shareholding structure remains unchanged, 13 firms lose controllers because the unanimous action agreements expire, 7 firms lose controllers because their controllers engaged in lawsuits and are forced to liquidation

or equity auction, 9 firms experience a share-trading reform and firm controllers lose their controlling position after introducing private capital, and 20 firms restate the existence of controllers without the change of ownership structure because they find they misstate the existence of controllers in the past.[2]

We select the exogenous reasons for controller loss as treated group (firms covered by Line (5) to (9) in Panel A of Table 5) to conduct DID analyses. For each treated firm, we match a firm with a controller for the whole sample period with a similar firm size in the same industry as the control group. Our event window is 5 years before and 5 years after the control absence from 2004 to 2019. The regression is as follow:

$$\begin{aligned} Ln(1+Fraud\_num)_{i,t} = {} & \alpha + \beta Treat_{i,t-1} \\ & + \delta Post_{i,t-1} + \gamma Treat_{i,t-1} \\ & \times Post_{i,t-1} \\ & + \Phi Controls_{i,t-1} \\ & + Fixed\ Effects + \varepsilon_{i,t} \end{aligned} \tag{9}$$

Treat equals 1 if firms lose the controller for exogenous reasons, and equals 0 if firms are with the controller for the whole sample period. *Post* equals 1 after the year the treated group loses controller, the same for the control group, and 0 otherwise. The coefficient of interaction term *Treat*×*Post* indicates the change in non-controlling shareholders' fraud after the exogenous loss of controller.

Panel B of Table 5 presents the results using *Ln_(1+Fraud_num)* and *Fraud Dummy* as dependent variables, respectively. The coefficients of the interaction term *Treat*×*Post* are both significant and positive in the two columns. The results show that shareholders' fraud increases significantly after the exogenous events that result in the loss of controlling owners in listed firms.

For the pre-trend test, we examine the dynamics of corporate shareholder fraud around the exogenous loss of controlling owners by replacing *Post* with indicators for each year with the last year in the event window as the base year. Figure 1 shows the estimated coefficients around the exogenous loss of controlling owners. We do not find a significant pre-trend effect. The coefficients of the interaction term *Treat*×*Post* are generally not significant before the shock, but significantly positive after the controller's absence.

The shock of 2014 M&A deregulation

We additionally utilize the deregulation of M&A activities in 2014 as a quasi-exogenous shock to firms' ownership structure and conduct Difference-in-Differences (DID) analyses.

The M&A deregulation in 2014 aimed to relax control and strengthen supervision. Specifically, CSRC substantially simplified administrative approvals for M&A in advance, but meanwhile strengthened the in-process and post-event supervision, and urged intermediaries to return to their posts and perform their duties. We argue that firms' ownership structure will be more likely to change after M&A deregulation in 2014 and even some firms will experience a loss of controlling owners, especially firms with a more dispersed ownership structure. However, M&A deregulation does not induce firms to increase fraud activities, as deregulation does not relax the supervision environment for listed firms.

The regression is as follow:

$$\begin{aligned} Ln(1+Fraud\_num)_{i,t} = {} & \alpha + \beta Treat_{i,t-1} \\ & + \delta Post_{i,t-1} + \gamma Treat_{i,t-1} \\ & \times Post_{i,t-1} \\ & + \Phi Controls_{i,t-1} \\ & + Fixed\ Effects + \varepsilon_{i,t} \end{aligned} \tag{10}$$

We define firms' exposure to M&A deregulation as *Treat* which is measured by the firm's ownership dispersion level. *Treat* is calculated as one minus the value of the Herfindahl-Hirschman Index (*HHI*), the shareholding of firms' top 3 major shareholders. *Post* equals 1 for the year after 2014, and 0 otherwise. The coefficient of *Treat*×*Post* suggests the how non-controlling shareholders' fraud change in the firms with higher ownership dispersion levels relative to firms with lower ownership dispersion levels.

[2]Some firms were without controllers since their IPO, but 6 firms stated that they have a new controller in later years during our sample period. We do not include these firms in the DID analyses in this section in case of the asymmetric effects.

Table 5. PSM-DID: exogenous reasons of control absence.

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Total
Panel A. Reasons of change in control absence																
(1) Sell shares	2				2	3	2	2	2	2		10	8	6	2	41
(2) M&A						2				1	1		1			5
(3) SEO														1		1
(4) No controller since IPO but change later		1			1							1	1		2	6
(5) Change of Board of Directors	1							1		1	2	1	2		2	10
(6) Expiration of unanimous action agreement										3	4	2	1		3	13
(7) Controller's liquidation or equity auction								1		1	1	1	1		2	7
(8) Share reform		1	1	1		1			1		2			1	1	9
(9) Changes in disclosure standards		1				3	1	2	3	3	3		1	2	1	20

Variables	*FNumber* (1)	*FDummy* (2)
Panel B. PSM-DID: The effect of exogenous control absence on shareholder fraud		
*Treat*Post*	0.027**	0.031*
	(2.01)	(1.75)
Post	0.008	0.008
	(0.51)	(0.40)
Control Variables	YES	YES
Year FE	YES	YES
Firm FE	YES	YES
Adj.R^2	0.219	0.197
Observations	519	519

In this table, we report the number of observations that experienced a change of control absence status for different reasons from 2005 to 2019 in Panel A. We collect the reasons for the changes in actual controllers from the firms' annual reports and announcements. Across different reasons of control absence in Panel A, Lines (5) to (9) are exogenous events resulting in the loss of controllers. In Panel B, we conduct PSM-DID regressions based on the exogenous loss of controllers. For each firm that lost a controller for exogenous reasons (Line (5) to (9) in Panel A), we match a firm with a controller for the whole sample period with similar firm size in the same industry as a control group. The event window is 5 years before and 5 years after the control absence from 2004 to 2019. Robust t-statistics are reported in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Table 6 presents the results based on two samples, including the full sample and the matched sample. The coefficients of *Treat*×*Post* are all significantly positive. These findings suggest that firms holding more dispersed ownership structures, indicating a higher likelihood of losing controlling owners, are becoming more inclined to fraud activities after M&A deregulation in 2014.

To test the parallel trend, we examine the dynamics of corporate shareholder fraud around the M&A deregulation by replacing *Post* with indicators for each year in the event window with 2014 as the base year. Figure 2 shows the estimated coefficients around the M&A deregulation. The interaction terms before the shock are not significant, but significantly positive after M&A deregulation in 2014. Therefore, there is no strong time trend effect.

Two-stage instrumental approach

At last, we employ the IV approach. Collectivist cultures measured by the regional rice cultivation are used as an instrumental variable for the absence of controlling owner to perform two-stage least squares analysis following Talhelm et al. (2014) and Fan, Gu, and Yu (2022).

As Talhelm et al. (2014) proposed in the rice theory, regions where cultivation of rice is prevalent tend to foster collectivist cultures due to the intensive irrigation and labour required, which facilitate cooperative work among farmer's family members and neighbourhood. Based on this theory, Fan, Gu, and Yu (2022) demonstrate that founders originating from regions with a background of stronger collectivist cultures are more inclined to share controlling ownership. This practice is aimed at capturing the benefits of ownership diffusion with family, including improved financing options and better alignment of incentives.

Based on this rationale, we hypothesize that firms situated in regions with collectivist cultures will exhibit a more dispersed ownership structure, thereby increasing the likelihood of the controller's absence. However, while regional collectivist culture may influence inclinations towards cooperation, it is less likely to directly determine shareholders' fraudulent activities within a firm,

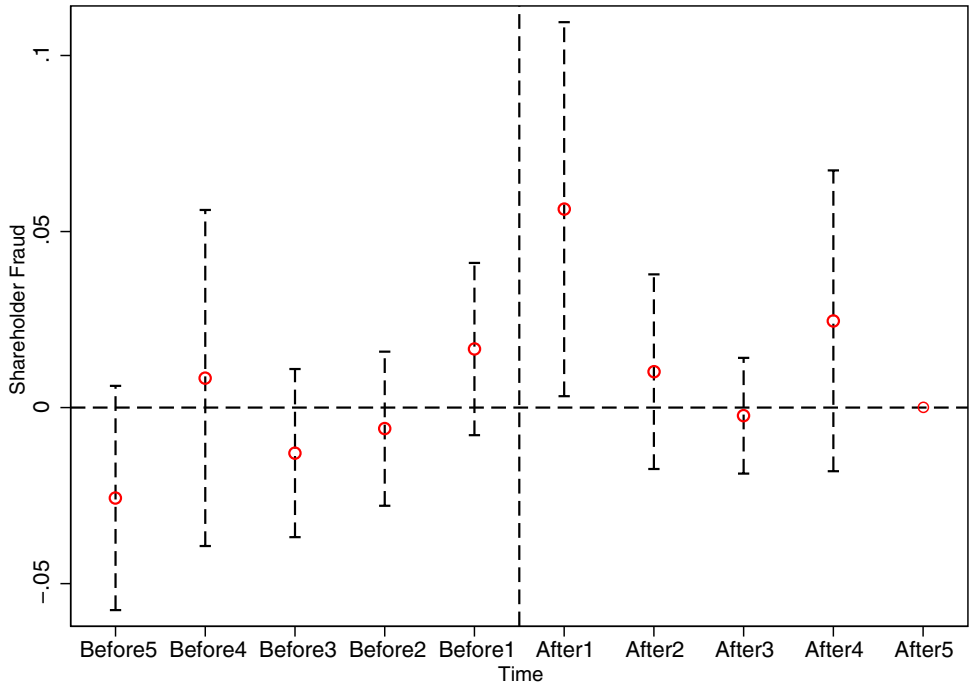

Figure 1. Dynamic effect of exogenous control absence on shareholder frauds

Table 6. The shock of M&A deregulation.

	Full sample		1-1 Matched sample	
Variables	FNumber (1)	FDummy (2)	FNumber (3)	FDummy (4)
Treat×Post	0.039***	0.038***	0.154**	0.143**
	(4.10)	(4.03)	(2.49)	(2.35)
Treat	0.039***	0.034***	0.027	0.021
	(3.94)	(3.46)	(0.45)	(0.39)
Control Variables	NO	YES	NO	YES
Year FE	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES
Adj.R^2	0.0376	0.0387	0.0103	0.0124
Observations	31,314	31,314	2,017	2,017

This table presents the results of DID analysis using M&A deregulation in 2014 as an exogenous shock. The dependent variable is *Ln_(1+Fraud_num)*. The key explanatory variable is *Treat×Post*. In Columns (1) and (2), the results are based on the full sample covering all A-share listed non-financial firms. In Columns (3) and (4), the results are based on the matched sample. Robust t-statistics are reported in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

as it primarily impacts cooperation rather than ethical decision-making. To proxy for collectivist culture, we utilize the amount of cultivated land devoted to rice paddies in 1995 in the province where the listed firms are registered.

We regress *ControlAbs* and *Rice* and the control variables in the following first-stage regression:

$$ControlAbs_{i,t} = \alpha + \beta_1 Rice_{i,t} + \Phi Controls_{i,t} + Fixed\ Effects + \varepsilon_{i,t} \quad (11)$$

Nest, we obtain the fitted value of the dependent variable, $\widehat{ControlAbs}$, and run the second-stage regression:

$$Ln(1 + Fraud\_num)_{i,t} = \alpha + \beta_1 \widehat{ControlAbs}_{i,t-1} + +\Phi Controls_{i,t-1} + Fixed\ Effects + \varepsilon_{i,t} \quad (12)$$

Table 7 reports the results of IV regressions. Column (1) reports the result of the first-stage regression in Eq.

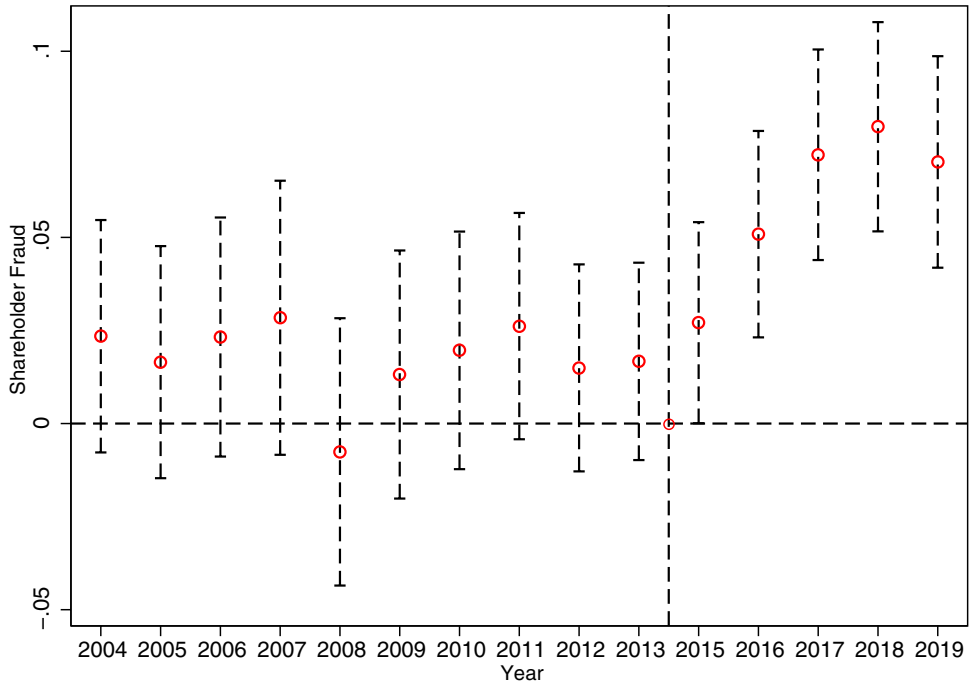

Figure 2. Dynamic effect of M&A deregulation on shareholder frauds.

Table 7. Two-stage instrumental approach.

	IV regression	
Variables	First stage (1)	Second stage (2)
ControlAbs		0.397***
		(4.93)
Rice	0.003***	
	(7.67)	
Control Variables	YES	YES
Year FE	YES	YES
Industry FE	YES	YES
Adj.R^2	0.008	
F	17.01	
Observations	31,314	31,314

This table presents the IV regression results. The instrument variable is *Rice*, the collectivist cultures measured by regional rice cultivation. Column (1) reports the results of first-stage regression, in which the dependent variable is *ControlAbs* and the independent variable is *Rice*. Column (2) reports the results of second-stage regression, in which the dependent variable is the *Ln_(1+Fraud_num)* and the key independent variable is the fitted value of dependent variable of the first stage regression. Robust t-statistics are reported in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

(11). The coefficient of *Rice* is positive and significant at the 1% level, indicating that controlling owners are significantly less likely to retain their control if firms operate in regions with relatively stronger collectivist culture. The value of F-statistics in the first-stage regression is 17.01, bigger than 10, and thus rejects the null hypothesis that *Rice* is a weak instrumental variable. Column (2) reports the results of the second-stage regression in Eq. (12). The coefficient of $\widehat{ControlAbs}$ is positive and significant at the 1% level. Thus, the 2SLS regression results confirm that the absence of the controlling owners increases the likelihood of non-controlling shareholders' fraud commitment.

Altogether, we use difference-in-differences (DID) analyses and 2SLS regressions to alleviate endogeneity issues and the results still hold.

V. Additional tests

In this section, we first investigate whether the absence of controlling owners leads to changes in the non-controlling shareholders' attendance at the general meetings. Second, we examine in the absence of the controlling owners, besides non-controlling shareholders, whether managers also conduct more fraud.

The shareholders' voting at the general meetings

Lu et al. (2023) show that non-controlling shareholders have a governance role and higher non-controlling shareholders voting shares lead to less corporate misconduct. Thus, a possible explanation for why a controller's absence increases shareholders' fraud is that the absence of a controller reduces other non-controlling shareholders' inclination to participate in general meetings and vote for

their rights against controlling shareholders, resulting in the decline of corporate governance quality.

To this end, we test the impact of controller absence on shareholders' voting at the general meetings. We use the annual average of share voting percent at the shareholders' general meetings for each firm as the dependent variable to rerun our baseline regression in Eq. (1). We also use the matched sample for robustness. Table 8 presents the results. The estimated coefficients on *ControlAbs* are both significantly negative in Columns (1) and (2). The results indicate that in the absence of controlling owners, shareholders participate less in the general meetings in terms of voting percentage, finally resulting in a fall in corporate governance and a surge in fraud.

The fraud conducted by managers

Indeed, the absence of controlling owners may exacerbate agency problems from insiders, potentially leading to a lack of oversight on management (Shleifer and Vishny 1997). This situation can intensify the conflict of interest between shareholders and management, potentially resulting in more managerial misconduct. Hence, we investigate whether, in the absence of controlling owners, managers are also incentivized to engage in more fraudulent activities, in addition to non-controlling shareholders.

We employ the number of frauds conducted by managers in a year, *Ln_(1+MFraud_num)*, as the dependent variable and rerun our baseline regression using Eq. (1). Additionally, we code an indicator, *MFraud Dummy*, for robustness. Table 9 presents the results. The estimated coefficients on *ControlAbs* are not significant. Therefore, the findings indicate that in the absence of controlling owners, managers do not increase their fraudulent activities, and there is no significant escalation of agency problems from insiders.

VI. The role of external governance

In this section, we investigate whether external control mechanisms effectively deter corporate fraud, through either monetary incentives, such as in the case of short sellers (Fang, Huang, and Karpoff 2016; Karpoff and Lou 2010), or reputational incentives, as seen with financial analysts who expose problems in their reports (T. Chen, Harford, and Lin 2015; Dyck, Morse, and Zingales 2010).

The role of analysts' external governance

We first examine the effect of analysts' external monitoring role in the case of corporate fraud due to the absence of controlling owners. We conduct sub-sample regressions for firms covered by at least one analyst and firms not covered by analysts, in Columns (1) and (2) in Table 10 respectively.

Consistent with our expectations, as shown in Column (2), the estimated coefficients on *ControlAbs* are significantly positive for firms not covered by analysts. However, when firms are covered by analysts, the absence of controlling owners does not significantly increase shareholder fraud, as

Table 8. Additional tests: absence of controlling owners and shareholders' general meetings.

	Shares voting% at the shareholders' general meetings	
Variables	Full sample (1)	1-1 Matched sample (2)
ControlAbs	−1.899**	−2.512**
	(−2.23)	(−2.47)
Control Variables	YES	YES
Year FE	YES	YES
Firm FE	YES	YES
Adj.R^2	0.673	0.598
Observations	31,301	2,017

This table presents the results of the association between the absence of controller and shares voting percent at the shareholders' general meetings. The dependent variable is the annual average of share voting at the shareholders' general meetings for each firm. The independent variable is *ControlAbs*. Columns (1) reports the result based on full sample, and Columns (2) reports the result based on 1 on 1 Matched sample. Robust t-statistics are reported in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Table 9. Additional tests: absence of controlling owners and managers' fraud.

	Manager Fraud	
Variables	FNum (1)	FD (2)
ControlAbs	−0.005	−0.007
	(−1.04)	(−0.97)
Control Variables	YES	YES
Year FE	YES	YES
Firm FE	YES	YES
Adj.R^2	0.0206	0.0231
Observations	31,314	31,314

This table presents the results of the association between the absence of controller and managers' fraud. The independent variable is *ControlAbs*. In the odd columns, the dependent variable is *Ln(1+Manager Fraud_num)*. In the even columns, the dependent variable is an indicator *Manager Fraud Dummy*. Robust t-statistics are reported in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

shown in Column (1). This suggests that the external governance provided by analysts helps alleviate the positive impact of controlling owners' absence on corporate fraud.

The role of short selling

Further, we investigate the effect of the short-selling's monitoring mechanism. To this end, we divide the sample into two groups based on whether the stocks are restricted for short selling, in Columns (3) and (4) in Table 10 respectively. The Shanghai Stock Exchange and Shenzhen Stock Exchange issued announcements stating that the margin trading system was officially opened on 31 March 2010, and began accepting margin trading declarations of pilot members. The margin trading targets can be short-sold. Our sample period only covers 2010 to 2019 when examining the short-selling mechanism.

The estimated coefficient on *ControlAbs* is only significantly positive for firms unrestricted for short selling, as shown in Column (4). However, when firms are restricted for short selling, the absence of controlling owners does not significantly increase non-controlling shareholder fraud. This suggests that the external governance role of the short-selling mechanism helps alleviate the impact of controlling owners' absence on corporate fraud.

Overall, our tests confirm the external governance effect of financial analysts and the short-selling mechanism in mitigating the increase in firms' fraud resulting from the absence of controlling owners.

VII. Discussion and conclusion

To the best of our knowledge, our paper represents the first empirical study to specifically analyse the relation between the absence of controller and corporate fraud in China. The central research question concerns whether the absence of controlling owners leads to a higher level of fraudulent activities committed by non-controlling shareholders in Chinese listed firms. In general, our findings support this assertion.

We have taken careful measures to address potential biases such as selection bias, partial observability, and reverse causality. Our additional tests indicate that when controllers are absent, shareholders participate less in general meetings in terms of voting percentage, resulting in lower corporate governance quality and increased corporate fraud. Moreover, we find that fraud conducted by managers does not change when controllers are absent.

Interestingly, we observe that the external governance provided by analysts and short-sellers helps alleviate the association between the absence of controlling owners and non-controlling shareholders' fraud. These results emphasize the positive role of controlling owners in restricting the misconduct of non-controlling shareholders, particularly in emerging markets where external governance mechanisms may be weak.

This paper contributes to the literature in three significant ways. First, it adds to the growing body of research on corporate governance in emerging markets. Our findings suggest that controlling owners serve as a deterrent to incentives for corporate shareholder fraud, thereby enhancing the supervision and regulation of listed firms in emerging markets like China. Second, we extend the

Table 10. Cross-sectional analysis: analyst monitoring and short selling.

Variables	High analyst coverage (1)	Low analyst coverage (2)	Short selling (3)	Not Short selling (4)
ControlAbs	0.008	0.056**	−0.001	0.083***
	(0.91)	(2.46)	(−0.12)	(2.65)
Control Variables	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES
Adj.R^2	0.0921	0.0264	0.0364	0.0219
Observations	10,328	20,383	6,577	16,209

This table presents the results of the cross-sectional examination. The dependent variable is *Ln_(1+Fraud_num)*. The independent variable is *ControlAbs*. Column (1) reports the result based on firms that have analyst coverage higher than the industry average each year. Column (2) reports the result based on firms that have analyst coverage lower than the industry average each year. Column (3) reports the result based on firms unrestricted for short selling. Column (4) reports the result based on firms restricted for short selling. Robust t-statistics are reported in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

literature on ownership structure by exploring the economic consequences of control absence, a facet not extensively discussed in prior studies. By examining control absence as a unique type of ownership structure, our study highlights its role in increasing the likelihood of corporate non-controlling shareholder fraud. Lastly, we contribute to the empirical research on the antecedents of corporate fraud. Our study demonstrates that the absence of controlling owners serves as an important antecedent of corporate fraud, shedding light on a previously overlooked factor in the literature.

Our findings carry several practical implications. First, given the heightened fraud risks associated with control absence in listed firms, investors should exercise extra caution when evaluating enterprises with such ownership structures before making investment decisions. Conducting thorough due diligence and risk assessments can help investors mitigate potential losses. Second, regulatory authorities should consider implementing additional restrictions and regulations for firms without controlling owners. These measures could serve to enhance corporate governance standards and mitigate the risk of corporate misconduct. By imposing stricter oversight and accountability measures on such firms, regulatory bodies can help safeguard the interests of shareholders and maintain market integrity.

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References

Agrawal, A., and S. Chadha. 2005. "Corporate Governance and Accounting Scandals." *Journal of Law & Economics* 48 (2): 371–406. https://doi.org/10.1086/430808.

Alexander, C. R., and M. A. Cohen. 1999. "Why Do Corporations Become Criminals? Ownership, Hidden Actions, and Crime as an Agency Cost." *Journal of Corporate Finance* 5 (1): 1–34. https://doi.org/10.1016/S0929-1199(98)00015-7.

Bao, Y., B. Ke, B. Li, Y. J. Yu, and J. Zhang. 2020. "Detecting Accounting Fraud in Publicly Traded US Firms Using a Machine Learning Approach." *Journal of Accounting Research* 58 (1): 199–235. https://doi.org/10.1111/1475-679X.12292.

Beasley, M. 1996. "An Empirical Analysis of the Relation Between the Board of Director Composition and Financial Statement Fraud." *The Accounting Review* 71 (4): 443–465.

Bergstresser, D., and T. Philippon. 2006. "CEO Incentives and Earnings Management." *Journal of Financial Economics* 66 (3): 511–529. https://doi.org/10.1016/j.jfineco.2004.10.011.

Brown, N. C., R. M. Crowley, and W. B. Elliott. 2020. "What are You Saying? Using Topic to Detect Financial Misreporting." *Journal of Accounting Research* 58 (1): 237–291. https://doi.org/10.1111/1475-679X.12294.

Burns, N., and S. Kedia. 2006. "The Impact of Performance-Based Compensation on Misreporting." *Journal of Financial Economics* 79 (1): 35–67. https://doi.org/10.1016/j.jfineco.2004.12.003.

Chan, K. C., X. Jiang, D. Wu, N. Xu, and H. Zeng. 2020. "When is the Client King? Evidence from Affiliated-Analyst Recommendations in China's Split-Share Reform." *Contemporary Accounting Research* 37 (2): 1044–1072. https://doi.org/10.1111/1911-3846.12550.

Chen, D., Y. Chen, O. Z. Li, and C. Ni. 2018. "Foreign Residency Rights and Corporate Fraud." *Journal of Corporate Finance* 51:142–163. https://doi.org/10.1016/j.jcorpfin.2018.05.004.

Chen, G., M. Firth, D. N. Gao, and O. M. Rui. 2006. "Ownership Structure, Corporate Governance, and Fraud: Evidence from China." *Journal of Corporate Finance* 12 (3): 424–448. https://doi.org/10.1016/j.jcorpfin.2005.09.002.

Chen, H., J. Z. Chen, G. J. Lobo, and Y. Wang. 2011. "Effects of Audit Quality on Earnings Management and Cost of Equity Capital: Evidence from China." *Contemporary Accounting Research* 28 (3): 892–925. https://doi.org/10.1111/j.1911-3846.2011.01088.x.

Chen, J., D. Cumming, W. Hou, and E. Lee. 2016. "Does the External Monitoring Effect of Financial Analysts Deter Corporate Fraud in China?" *Journal of Business Ethics* 134 (4): 727–742. https://doi.org/10.1007/s10551-014-2393-3.

Chen, Q., X. Chen, K. Schipper, Y. Xu, and J. Xue. 2012. "The Sensitivity of Corporate Cash Holdings to Corporate Governance." *The Review of Financial Studies* 25 (12): 3610–3644. https://doi.org/10.1093/rfs/hhs099.

Chen, T., J. Harford, and C. Lin. 2015. "Do Analysts Matter for Governance? Evidence from Natural Experiments." *Journal of Financial Economics* 115 (2): 383–410. https://doi.org/10.1016/j.jfineco.2014.10.002.

Cheung, Y. L., P. R. Rau, and A. Stouraitis. 2010. "Helping Hand or Grabbing Hand Central Vs. Local Government Shareholders in Chinese Listed Firms." *Review of Finance* 14 (4): 669–694. https://doi.org/10.1093/rof/rfp024.

Claessens, S., S. Djankov, J. P. Fan, and L. H. Lang. 2002. "Disentangling the Incentive and Entrenchment Effects of Large Shareholding." *The Journal of Finance* 57 (6): 2741–2771. https://doi.org/10.1111/1540-6261.00511.

Claessens, S., S. Djankov, and L. H. Lang. 2000. "The Separation of Ownership and Control in East Asian Corporations." *Journal of Financial Economics* 58 (1–2): 81–112. https://doi.org/10.1016/S0304-405X(00)00067-2.

Conyon, M. J., and L. He. 2016. "Executive Compensation and Corporate Fraud in China." *Journal of Business Ethics* 134 (4): 669–691. https://doi.org/10.1007/s10551-014-2390-6.

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): 1–36. https://doi.org/10.1111/j.1911-3846.1996.tb00489.x.

Dyck, A., A. Morse, and L. Zingales. 2010. "Who Blows the Whistle on Corporate Fraud?" *The Journal of Finance* 65 (6): 2213–2253. https://doi.org/10.1111/j.1540-6261.2010.01614.x.

Edmans, A. 2014. "Blockholders and Corporate Governance." *Annual Review of Financial Economics* 6 (1): 23–50. https://doi.org/10.1146/annurev-financial-110613-034455.

Efendi, J., A. Srivastava, and E. P. Swanson. 2007. "Why Do Corporate Managers Misstate Financial Statements? The Role of Option Compensation and Other Factors." *Journal of Financial Economics* 85 (3): 667–708. https://doi.org/10.1016/j.jfineco.2006.05.009.

Faccio, M., and L. H. Lang. 2002. "The Ultimate Ownership of Western European Corporations." *Journal of Financial Economics* 65 (3): 365–395. https://doi.org/10.1016/S0304-405X(02)00146-0.

Fan, J. P., Q. Gu, and X. Yu. 2022. "Collectivist Cultures and the Emergence of Family Firms." *Journal of Law & Economics* 65 (S1): S293–S325. https://doi.org/10.1086/718853.

Fan, J. P., and T. J. Wong. 2002. "Corporate Ownership Structure and the Informativeness of Accounting Earnings in East Asia." *Journal of Accounting and Economics* 33 (3): 401–425. https://doi.org/10.1016/S0165-4101(02)00047-2.

Fang, V. W., A. H. Huang, and J. M. Karpoff. 2016. "Short Selling and Earnings Management: A Controlled Experiment." *The Journal of Finance* 71 (3): 1251–1294. https://doi.org/10.1111/jofi.12369.

Firth, M., O. M. Rui, and W. Wu. 2011. "Cooking the Books: Recipes and Costs of Falsified Financial Statements in China." *Journal of Corporate Finance* 17 (2): 371–390. https://doi.org/10.1016/j.jcorpfin.2010.09.002.

Gul, F. A., J. B. Kim, and A. A. Qiu. 2010. "Ownership Concentration, Foreign Shareholding, Audit Quality, and Stock Price Synchronicity: Evidence from China." *Journal of Financial Economics* 95 (3): 425–442. https://doi.org/10.1016/j.jfineco.2009.11.005.

He, J., X. Mao, O. M. Rui, and X. Zha. 2013. "Business Groups in China." *Journal of Corporate Finance* 22:166–192. https://doi.org/10.1016/j.jcorpfin.2013.05.001.

Hope, O. K., H. Wu, and W. Zhao. 2017. "Blockholder Exit Threats in the Presence of Private Benefits of Control." *Review of Accounting Studies* 22 (2): 873–902. https://doi.org/10.1007/s11142-017-9394-2.

Hou, W., and G. Moore. 2010. "Player and Referee Roles Held Jointly: The Effect of State Ownership on China's Regulatory Enforcement Against Fraud." *Journal of Business Ethics* 95 (SUPPL. 2): 317–335. https://doi.org/10.1007/s10551-011-0858-1.

Jensen, M. C., and W. Meckling. 1976. "The Theory of the Firm: Managerial Behavior, Agency Costs, and Ownership Structure." *Journal of Financial Economics* 3 (4): 305–360. https://doi.org/10.1016/0304-405X(76)90026-X.

Jia, N., J. Shi, and Y. Wang. 2013. "Coinsurance within Business Groups: Evidence from Related Party Transactions in an Emerging Market." *Management Science* 59 (10): 2295–2313. https://doi.org/10.1287/mnsc.1120.1703.

Jiang, F., Z. Jiang, and K. A. Kim. 2020. "Capital Markets, Financial Institutions, and Corporate Finance in China." *Journal of Corporate Finance* 63:101309. https://doi.org/10.1016/j.jcorpfin.2017.12.001.

Jiang, F., and K. A. Kim. 2020. "Corporate Governance in China: A Survey." *Review of Finance* 24 (4): 733–772. https://doi.org/10.1093/rof/rfaa012.

Jiang, F., Y. Ma, and X. Wang. 2020. "Multiple Blockholders and Earnings Management." *Journal of Corporate Finance* 64:101689. https://doi.org/10.1016/j.jcorpfin.2020.101689.

Jiang, G., C. M. C. Lee, and H. Yue. 2010. "Tunneling Through Intercorporate Loans: The China Experience." *Journal of Financial Economics* 98 (1): 1–20. https://doi.org/10.1016/j.jfineco.2010.05.002.

Johnson, M. F., K. K. Nelson, and A. C. Pritchard. 2007. "Do the Merits Matter More? The Impact of the Private Securities Litigation Reform Act." *Journal of Law, Economics, & Organization* 23 (3): 627–652. https://doi.org/10.1093/jleo/ewm015.

Johnson, S. A., H. E. Ryan, and Y. S. Tian. 2009. "Managerial Incentives and Corporate Fraud: The Sources of Incentives Matter." *Review of Finance* 13 (1): 115–145. https://doi.org/10.1093/rof/rfn014.

Jones, C. L., and S. E. Weingram. 1996. "The Determinants of 10b-5 Litigation Risk." *WorKing Paper*, Standford Law School.

Karpoff, J. M., and X. Lou. 2010. "Short Sellers and Financial Misconduct." *The Journal of Finance* 65 (5): 1879–1913. https://doi.org/10.1111/j.1540-6261.2010.01597.x.

Kedia, S., and S. Rajgopal. 2011. "Do the SEC's Enforcement Preferences Affect Corporate Misconduct?" *Journal of Accounting and Economics* 51 (3): 259–278. https://doi.org/10.1016/j.jacceco.2011.01.004.

Khanna, V., E. H. Kim, and Y. Lu. 2015. "CEO Connectedness and Corporate Fraud." *The Journal of Finance* 70 (3): 1203–1252. https://doi.org/10.1111/jofi.12243.

Khatib, S. F. A. 2023. "The Role of Share Repurchases for firms' Social and Environmental Sustainability." *Social and Environmental Accountability Journal* 44 (1): 82–84. https://doi.org/10.1080/0969160X.2023.2281904.

Khatib, S. F., D. F. Abdullah, A. Elamer, and S. A. Hazaea. 2022. "The Development of Corporate Governance Literature in Malaysia: A Systematic Literature Review and Research Agenda." *Corporate Governance the International Journal of Business in Society* 22 (5): 1026–1053. https://doi.org/10.1108/CG-12-2020-0565.

Laeven, L., and R. Levine. 2008. "Complex Ownership Structures and Corporate Valuations." *The Review of Financial Studies* 21 (2): 579–604. https://doi.org/10.1093/rfs/hhm068.

La Porta, R., F. Lopez-De-Silanes, and A. Shleifer. 1999. "Corporate Ownership Around the World." *The Journal of Finance* 54 (2): 471–517. https://doi.org/10.1111/0022-1082.00115.

La Porta, R., F. Lopez-De-Silanes, A. Shleifer, and R. Vishny. 2002. "Investor Protection and Corporate Valuation." *The Journal of Finance* 57 (3): 1147–1170. https://doi.org/10.1111/1540-6261.00457.

Lu, Q., C. Xiang, B. Li, and L. Feng. 2023. "Non-Controlling shareholders' Governance Participation and Corporate Misconduct: Evidence from Voting in General Meetings." *Pacific-Basin Finance Journal* 81:102118. https://doi.org/10.1016/j.pacfin.2023.102118.

Morck, R., A. Shleifer, and R. Vishny. 1988. "Management Ownership and Market Valuation: An Empirical Analysis." *Journal of Financial Economics* 20:293–315. https://doi.org/10.1016/0304-405X(88)90048-7.

Peng, L., and A. Röell. 2008. "Executive Pay and Shareholder Litigation." *Review of Finance* 12 (1): 141–184. https://doi.org/10.1093/rof/rfl003.

Peng, W. Q., K. C. J. Wei, and Z. Yang. 2011. "Tunneling or Propping: Evidence from Connected Transactions in China." *Journal of Corporate Finance* 17 (2): 306–325. https://doi.org/10.1016/j.jcorpfin.2010.08.002.

Poirier, D. J. 1980. "Partial Observability in Bivariate Probit Models." *Journal of Econometrics* 12 (2): 209–217. https://doi.org/10.1016/0304-4076(80)90007-X.

Shleifer, A., and R. W. Vishny. 1997. "A Survey of Corporate Governance." *The Journal of Finance* 52 (2): 737–783. https://doi.org/10.1111/j.1540-6261.1997.tb04820.x.

Stulz, R. 1988. "Managerial Control of Voting Rights: Financing Policies and the Market for Corporate Control." *Journal of Financial Economics* 20:25–54. https://doi.org/10.1016/0304-405X(88)90039-6.

Talhelm, T., X. Zhang, S. Oishi, C. Shimin, D. Duan, X. Lan, and S. Kitayama. 2014. "Large-Scale Psychological Differences within China Explained by Rice versus Wheat Agriculture." *Science* 344 (6184): 603–608. https://doi.org/10.1126/science.1246850.

Tirole, J. 2010. *The Theory of Corporate Finance*. Princeton, USA: Princeton university press.

Torres, J. P., M. J. Bertín, and F. J. López-Iturriaga. 2017. "Corporate Control and Firm Value: The Bright Side of Business Groups." *Journal of Family Business Strategy* 8 (2): 99–108. https://doi.org/10.1016/j.jfbs.2017.04.003.

Wang, T. Y., A. Winton, and X. Yu. 2010. "Corporate Fraud and Business Conditions: Evidence from IPOs." *The Journal of Finance* 65 (6): 2255–2292. https://doi.org/10.1111/j.1540-6261.2010.01615.x.

Wu, W., S. A. Johan, and O. M. Rui. 2014. "Institutional Investors, Political Connections, and the Incidence of Regulatory Enforcement Against Corporate Fraud." *Journal of Business Ethics* 134 (4): 709–726. https://doi.org/10.1007/s10551-014-2392-4.

Xu, X., F. Xiong, and Z. An. 2023. "Using Machine Learning to Predict Corporate Fraud: Evidence Based on the Gone Framework." *Journal of Business Ethics* 186 (1): 137–158. https://doi.org/10.1007/s10551-022-05120-2.

Zhang, J. 2018. "Public Governance and Corporate Fraud: Evidence from the Recent Anti-Corruption Campaign in China." *Journal of Business Ethics* 148 (2): 375–396. https://doi.org/10.1007/s10551-016-3025-x.

Appendix

Table A1. Variable definitions.

Name	Definition
Ln_(1+Fraud_num)	Logged value of one plus the total fraud number that listed firms' non-controlling shareholders are punished in a year.
Fraud Dummy	A dummy variable that equals one if a firm has at least one shareholder fraud during a specific year and zero otherwise.
ControlAbs	A dummy variable that equals one if a firm does not have a controlling owner in a year, and zero otherwise.
SIZE	Logged value of one plus total asset.
LEV	Total Liabilities/Total Asset.
ROE	Net Profit/Equity.
Sales_G	Annual sales growth rate for the firm.
Duality	A dummy variable that is equal to one if there is a duality between CEO and board Chairman in the firm and zero otherwise.
Board_size	Logged value of one plus the number of directors on the board.
BOD_meetings	Logged value of one plus the number of board meetings held during a given year.
IndBoard	The proportion of independent directors on the board.
TobinQ	Market value of equity plus book value of total assets minus book value of equity, divided by book value of total assets.
Stk_return	The annual stock return minus the annual market return.
VOL	The standard deviation of daily stock returns.
Turnover	(Number of shares traded in a year)/(Number of shares outstanding).
Crash	Indicator that equals one if the stock return is lower than 5%ile of all stocks returns in that year.
Auditcomsize	Logged value of one plus the number of directors on the audit committee.
Rice	Logged value of cultivated land hectare devoted to rice paddies in 1995 in a province where the listed firms are registered.