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Does independent director's cash compensation matter? Evidence from corporate fraud.

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DOES INDEPENDENT DIRECTOR'S CASH COMPENSATION MATTER? EVIDENCE FROM CORPORATE FRAUD

Abstract

This study empirically investigates the relationship between independent directors' cash compensation and the likelihood of corporate fraud. Using data of 2542 Chinese firms and 17239 firm years from 2010 to 2017, the findings of logistic regression, firm-fixed effects, instrumental variable specification, and propensity score matching models show that there is a negative association between cash compensation of independent directors and corporate fraud. Our findings suggest that if independent directors are treated with higher cash compensation, it enhances the board's independence and makes the effective monitoring over management behaviors and financial reporting process. On contrary to non-SOEs, the findings also document that the negative association between independent directors' compensation and corporate fraud is pronounced in SOEs. The study not only shows the impact of independent director's compensation on firm fraud beyond agency and contract theories but also creates policy implications regarding independent director's compensation in particular scenario of emerging economies.

Keywords: Independent Directors' Cash Compensation; Corporate Fraud; Financial Reporting Quality; non-equity incentives; State ownership; China.

JEL Classification: M41, M10

1. Introduction

The past accounting scandals have given rise to a revolution in the accounting industry and corporate governance(Fich & Shivdasani, 2007). Those events made academic researchers, regulatory bodies, rethink the causes that lead to those collapses because understanding the reasons for fraud scandals can prevent their occurrence in the future. The consequences of corporate fraud are very sensitive to shareholders. Corporate fraud may give rise to huge costs not only for shareholders but also for the entire capital market (Haß, Müller, & Vergauwe, 2015). To avoid those costs firms have to determine the incentives that led to corporate fraud. One of the proper incentives of committing fraud is the compensation of board directors(Jensen, 2005). A fraud phenomenon is common cross-world but, in the context of China, it is severe because of its weaknesses in the financial capital market's regulatory framework(Tang, Gu, Weng, & Ho, 2021). In China, the consequences of fraud are estimated to be a 1–2% loss in wealth within 5 days after the announcement of fraud (Haß, Vergauwe, & Zhang, 2019). Fraud is one of the most serious threats to shareholder's equity and corporate governance's failure, reflecting an agency problem between the management and shareholders who rely on using outside directors to monitor management behaviors. Accordingly, a vital question arises about the role of independent directors. Literature has documented a positive role of independent directors in the quality of financial reporting (Armstrong, Core, & Guay, 2014; Bar-Hava, HUANG, Segal, & Segal, 2015; Kong, Xiang, Zhang, & Lu, 2019; Lanis & Richardson, 2018).

The role of independent directors in monitoring manager's behaviors and quality of financial reporting depends on their qualifications. Studies document that independent directors' characteristics have a positive effect on their performance (Agrawal & Chadha, 2005; Brooks, Oliver, & Veljanovski, 2009). A question is posited why some independent directors are effective and some are not. So, exploring whether independent directors' compensation is a key factor in their effectiveness is very important. The compensation structure of independent directors plays an essential role in agency issues. The majority of the literature has focused on the equity-based incentives and has documented that equity-based compensation encourages managers to opportunistically behave in their favor rather than the interests of shareholders (Bruner, McKee, & Santore, 2008; Denis, Hanouna, & Sarin, 2006; Erickson, Hanlon, & Maydew, 2006; Johnson, Ryan, & Tian, 2003, 2009; Karpoff, Lee, & Martin, 2014; Murphy, 1999). On the other hand, limited evidence on the role of cash-based incentives in financial reporting quality has provided mixed results (Brick et al., 2006; Persons, 2012; Ye, 2014). These mixed results provide limited knowledge on the

impact of independent directors' cash compensation, thereby, extant evidence cannot ultimately deter the implication of cash-based to independent directors on corporate fraud. This paper attempts to provide evidence on the role of cash-based incentives in deterring corporate fraud by investigating a different-based compensation: only cash-based compensation to independent directors in the context of China. This study is motivated by the recent and specific call for investigating what would happen if independent directors are compensated by different incentives (Hayek, 2018). Although the usefulness of existing evidence on cash compensation, the implication of using only cash-based to independent directors on corporate fraud remains exclusive because existing studies on directors' cash compensation and corporate fraud have used data from settings where firms mainly use equity or cash/equity-based compensation to independent directors. Moreover, the rapid growth of the economy of China in recent decades has attracted foreign investors who are interested in investor protection (Chan et al., 2016). Since deterring corporate fraud reflects strong investor protection in the market of China (Canyon 2016). Therefore, the findings from this study will bear further significant implications for foreign investors in trusting China's market and making more investment decisions. In addition, previous studies on independent directors' cash compensation and corporate fraud overlooked the influence of ownership structure as a possible moderating context. Unlike developed countries, China's investor protection, and corporate governance are weak because almost 50% of the Chinese firms are affiliated with the government (D. Chen, Jiang, Liang, & Wang, 2011; G. Chen, Firth, Gao, & Rui, 2006). The study also explores the moderating influence of ownership structure on the role of independent directors' compensation in corporate fraud.

This paper focus on China because of the following. First, as the compensation structure in China's setting is mainly cash-based compensation unlikely in developed countries (Zhang, Huang, & Habib, 2018), So, China is an ideal setting to investigate the specific call of Hayek (2018) and the theoretical assumption regarding the effect of cash-based compensation to independent directors on financial reporting quality. Second, scholars argue that the differences in settings (e.g., compensation scheme, ownership structure, and culture) limit the generalizability of the study's findings from developed to developing settings. Such differences suggest that firms in emerging economies do not undergo the same circumstances as firms in developed economies do (Fan, Wei, & Xu, 2011; Ghosh, 2006). This implies that the implication of cash compensation of independent directors on corporate fraud may differ (Yuan et al. 2008). Therefore, investigating this relationship using a setting from emerging economies "China" will provide a contribution to institutional theory. Further, by choosing China, this paper enriches the limited literature on the effect of independent directors' compensation in emerging economies. Third, as China is the world's second-biggest, the largest rising economy, and it has numerous influential firms, knowing the problems of corporate governance in China facilitates understanding an important part of global corporate governance and business.

We, based upon a sample of 2524 Chinese public firms, find that independent director's cash compensation is negatively related to corporate fraud, suggesting that high cash compensation to independent directors enhances their independence and strengthens their effectiveness as well as provides an effective monitor. This finding also sets up using propensity score matching, fixed effect firm, and instrumental variable specification models. Also it examine the moderating influence of state-ownership on the role of independent directors' cash compensation. Results reveal that the negative association between independent directors' cash compensation and corporate fraud is more pronounced in state-owned enterprises (SOEs), suggesting that ownership structure influences the independent directors' cash compensation effect on the likelihood of corporate fraud.

Our study contributes to the existing literature in the following aspects. First, it contributes to the inconclusive directors' compensation literature by investigating the role of independent directors' cash compensation where firms use only cash-based incentives to independent directors. Besides, it is the first attempt that examines corporate fraud from the perspective of "only" cash incentives of independent directors in China. Second, the study is also the first to consider the moderating effect of the institutional environment "ownership structure" during investigating the relationship between independent directors' compensation and corporate fraud. The study's findings help to understand what Fan et al. (2011) and Ghosh (2006) claim on the impact of the differences in settings on corporate governance research. Finally, this study bears important practical implications. As part of China's capital-market

reforms' credibility, it depends on investors' trust in stock market quality and adopts instruments that prevent corporate fraud assist building confidence in China's capital markets.

The remainder of this paper is presented as follows: Section two addresses the institutional background, literature, hypotheses development. Section three shows the study design, section four presents the findings, and section five provides the robustness test. Finally, section six shows the conclusions.

2. Literature review and hypotheses development

2.1. Institutional background

China's Securities Law published the first comprehensive securities legislation in July 1999. As a result of this law, the CSRC was given the ability to organize and unify securities market rules, and the CSRC was given responsibility for creating policies and regulations, as well as investigating and enforcing fines against firms that participate in illegal activity. (C. Huang, 2008).

The Chinese institutional setting is identified by the presence of pressures leading managers to participate in corporate fraud (i.e., regulations and dynamic changing environment) (J. Chen, Cumming, Hou, & Lee, 2016). For instance, to be listed on the stock exchange market, a company must earn a profit for two years consecutively (Aharony, Lee, & Wong, 2000). To issue additional shares, the company must have a return on equity ROE of at least 10% for three years in a row (Chen and Yuan,2004). These pressures drive managers to engage in illegal behavior. That is, because the regulations change over time, companies operating in quickly changing settings and transitional markets are more prone to engage in fraudulent and illegal actions (Jia, Ding, Li, & Wu, 2009).To mitigate such an opportunistic behavior, article 123 of 2006 Chinese company law (CCL), requires all listed firms to apply an independent directors system. The CSRC and Shanghai & Shenzhen stock exchange stipulate that the board of firms must have at least one-third of outside directors (Commission, 2001; C. Huang, 2008). In terms of compensation structure, directors' incentives in China differ considerably from that of developed countries such as the U.S., Australia, and the UK. Chinese firms do not use mainly equity compensation to motivate directors because of their culture (He & Fang, 2016). Chinese firms use mainly cash-based compensation to motivate independent directors with few firms that use equity-based to independent directors (W. Huang & Boateng, 2017). This implies that the implication of independent directors' cash compensation on corporate fraud in emerging markets needs empirical evidence.

Unlikely other developed countries, the role of independent directors as a corporate governance mechanism in the Chinese setting is weak because of the distinct institutional difference such as ownership and compensation structure. Where the state-ownership is the key form of corporate ownership structure. In fact, state-owned enterprises (SOEs) suffer from government intervention which in turn reduces the quality of governance (J. Chen et al., 2016; Faccio, Masulis, & McConnell, 2006). SOEs should fulfill governmental requirements. There exists a pressure to engage in corporate fraud. Further, the state-ownership influences the independent directors' compensation level and effect (Chen et al. 2018). Empirical studies have documented that state-ownership significantly affects the role of executives' cash compensation (Conyon & He, 2016; Firth, Fung, & Rui, 2007). Therefore, it is worthwhile to explore the effect of cash compensation of independent directors in curbing corporate fraud in China, and the moderating effect of ownership structure on such a relationship.

2.2. Independent director's cash compensation and corporate fraud

A considerable body of research has examined the factors that affect corporate fraud in developed and developing countries. Many factors have been found as key determinants of corporate fraud, firm characteristics (Ozcan, 2016), corporate governance (Kim, Roden, & Cox, 2013; Liao, Smith, & Liu, 2019; Luo, Peng, & Zhang, 2020), executives' compensation (Conyon & He, 2016; Haß et al., 2015; Johnson et al., 2003), ownership structure (Haß,

Vergauwe, & Zhang, 2019). Independent directors' characteristics have also documented to be related to corporate fraud. For instance, a negative link between board independence and a likelihood of fraud (Beasley, 1996; Kong et al., 2019; Persons, 2005). According to Agrawal and Chadha (2005), the restatement is negatively related to board independence and the financial skills of independent directors. Lanis and Richardson (2018) investigate the relationship between the interaction of outside directors and CSR performance and tax aggressiveness. They find that there is a negative relation between the interaction of independent directors and tax aggressiveness. Chen et al. (2017) examine the relationship between independent directors and real earnings management. They find that more outside directors in a firm mean more constraints on its real earnings management. In terms of independent directors' compensation, Persons (2012), using U.S. data, finds that stock compensation of independent directors is positively associated with financial fraud, while no association between independent directors' cash compensation and financial fraud has been found. Cullinan et al (2008) document that firms that granting outside directors stock options motivates them to misstate the revenue. Kim et al (2013) find that paying high compensation for directors is positively associated with corporate fraud.

The role of independent directors' compensation in the quality of financial reporting has mixed results in the literature. Alkebsee et al. (2021) report a positive connection between the audit committee directors cash compensation and earnings management. Hope et al. (2019) find a significant relation between independent directors' cash compensation and related party transection. Kim et al (2018) documented that giving equity compensation for directors has a negative effect on quality disclosure. In terms of the non-equity compensation, extant studies also find inconsistent findings. Crutchley and Minnick (2012) find that directors with incentive compensation are more likely to be sued by shareholders whereas directors with cash compensation are less likely to be sued by shareholders. Although the majority of extant studies focus on the role of independent directors' equity compensation in financial reporting quality, limited concern has been paid to the impact of independent directors' cash compensation on corporate fraud. A major exception is a study by Person (2012), who examines the relationship between cash compensation of independent directors and financial fraud using U.S firms. He finds no relationship between the two variables. This study investigates the relationship between cash compensation of independent directors and corporate fraud using the unique institutional context (China).

2.3. Hypotheses development

Extant investigations on corporate fraud in China focus either on consequences of corporate fraud for the capital market or executives (Conyon & He, 2016; Ding, Jia, Li, & Wu, 2012; Wang, Chen, Chin, & Zheng, 2017). This study focuses on the implication of outside director's cash compensation in deterring corporate fraud. According to the notion of ownership and control separation, shareholders are not able to manage their own wealth. As a result, shareholders need an agent on the board to observe the management. Based on the corporate governance perspective, shareholders have the right to appoint outside directors on the board (C. Huang, 2008). Those directors are responsible for monitoring financial reporting process as well as protecting shareholder's equity (CSRC, 2001) . However, the interplay between the agency and contract theories shows the link between independent directors' pay and the quality of financial reporting. The agency theory states that the company is the agency in which the principle (shareholders) delegates agents (outsiders) for managerial monitoring (Pepper & Gore, 2015). In the meantime, there is a possibility of a principal-agent problem occurrence. Contract theory can alleviate the conflict of interests by determining a suitable compensation contract for independent directors (Spatt, 2006). According to the positive agency perspective, when a contract is based on a reasonable compensation, independent directors are more inclined to act in the best interests of shareholders (Jensen, 2001). Independent directors' performance depends on their incentives (Z. Chen & Keefe, 2018). Adams and Ferreira (2008) argue and document that high compensation to independent directors results in an effective monitor, as they find that granting high compensation for outsiders provides effective monitoring of management.

Compensation structure, however, plays a crucial effect on the board's independence and effectiveness. Although regulation bodies set the incentives compensation for mitigating the agency problem through aligning the interests of directors with shareholders, Stout (2003) argues that equity compensation for directors is an ineffective tool and has

adverse results on directors' performance. Since equity compensation is associated with a stock price which encourages managers to engage in fraudulent behaviors (Crutchley & Minnick, 2012). Vafeas (2000) find that adopting equity incentive plans for outside directors is not associated with high operating performance, indicating that there are no improvements in operating performance when firms adopt equity incentive plans for independent directors. Jiang et al. (2020) report a positive linkage between managers' stock options and acquisitions. Cullinan et al (2008) find that stock options for outside directors may weaken their role in overseeing financial reporting quality. In contrast, giving cash compensation for directors may have a positive effect on their performance because non-equity compensation is not associated with a stock price, thereby, cash compensation may not motive directors to engage in fraudulent behaviors. Crutchley and Minnick (2012) find that non-executives with high cash pay are less likely to face shareholder lawsuits. Recently, Rahman and Ying (2020) conclude that cash compensation to managers clogs the financial fraud. However, based on agency theory, cash compensation to independent directors is more likely to curb illegal behaviors by aligning independent directors' interests with that of shareholders. In line with the perspective that states high compensation for independent directors provides a good monitor and enhances their effectiveness, we expect that high cash compensation to independent directors creates a positive incentive for them to behave in favor of shareholders and make them more independent and effective. According to the argument above, we hypothesize the following:

H1: **Independent director's cash compensation is negatively linked to corporate fraud in Chinese public firms.**

The role of independent directors in overseeing managerial behaviors is supposed to be effective in firms in which agency issues are acute (J. Z. Chen, Cussatt, & Gunny, 2017). This suggests that the function of the cash compensation of independent managers in reducing the risk of corporate fraud may rely upon the issues of the company's agency. The ownership structure is a key source of agency issues in the Chinese setting. However, paying mainly cash compensation to independent directors is not only the unique characteristic in China's context, there are other characteristics such as predominant state ownership. As the major proportion of Chinese listed companies are controlled by the government, corporate governance effectiveness, financial circumstances, and director's board compensation are affected (Z. Chen & Keefe, 2018; Jia et al., 2009).

SOEs basically seek social and political objectives (G. Chen, Firth, Gao, & Rui, 2006; Z. Chen & Keefe, 2018). The owner "state" in SOEs does not daily monitor the firm's operation, thereby, executives may engage in illegal activities due to SOEs are required to achieve the government's requirements. As result, SOEs are more likely to commit fraud than non-SOEs. Chen et al. (2006) find that SOEs are more encouraged to fake their financial statements and commit fraud, suggesting that agency issues in SOEs are severe. In line with the notion that the effect of independent directors' cash compensation on corporate fraud may be elevated in firms with acute agency issues, we expect that high cash compensation to independent directors provides effective monitoring of the management in SOEs. Therefore, we hypothesize the following:

H2: **The negative association between independent director's cash compensation and corporate fraud is more pronounced in SOEs.**

3. **Research Design**:

3.1. Sample selection and data

The study sample consists of all listed companies in Shanghai and Shenzhen stock exchanges for the period from 2010 to 2017. It has chosen 2010 as starting point to avoid the 2008-financial crisis effects on China's capital market. Corporate fraud, ownership structure, and financial and economic data collected from China's Security Market and Accounting Research (CSMAR) database, and independent directors' compensation data from the SCMAR personal Characteristics database. As mentioned before, contrary to developed countries Chinese

independent directors' compensation consists of mainly cash-based such as salary and bonuses. The final sample in this empirical study consists of 2542 Firms and 17239 observations.

3.2. Empirical model

$$\boldsymbol{FRAUD_{i,t} = \beta_0 + \beta_1 INDP\_DIRd\_PAY_{i,t} + \sum_{i=1}^{n} \beta_n Controls_{i,t} + \varepsilon_{i,t}} \ (\mathbf{1})$$

Where *FRAUD* is the dependent variable in our study, following literature in this area (Conyon & He, 2016; Haß et al., 2015; Wang et al., 2017), FRAUD variable defined as a binary variable coded 1 if a firm committed fraud, zero otherwise. The CSMAR database retrieves fraud data from the announcement disclosed by Shanghai and Shenzhen stock exchanges and the CSRC. While $INDP\_DIR\_PAY_{i,t}$ refers to our independent variable which is the independent director's cash compensation. Following prior studies, INDP_DIR_PAY defined as the logarithm of total annual cash compensation for outsiders reported in the firm's payroll. As for $\boldsymbol{Controls_{i,t}}$ refers to all control variables included in our model.

The empirical model includes a set of control variables to capture the independent influence of independent directors' cash pay on corporate fraud. Control variables are selected based on extant literature in this research stream (Bruner et al., 2008; Conyon & He, 2016; Kong et al., 2019; Liao et al., 2019; Persons, 2012; Qiu, He, & Luo, 2019; Schuchter & Levi, 2016). Therefore, the empirical model includes independent director's characteristics such as INDEP_EXPERTISE, INDEP_EDUCATION, FEM_INDEP, and INDEP_AGE. Adding CEO_PAY variable to control for the potential effect of CEO pay on corporate fraud. The model includes the corporate governance characteristics like BOARDSIZE, BOARDIND, CEODUALITY, and NU_OF_BOARD_MEETING to control for the impact of corporate governance. Moreover, it includes SOE measured as a binary variable equals 1 if a firm affiliated by the state as well as controlling shareholders PDCSH to control for ownership structure effect on corporate fraud. TOP10_BIG4 and INTERNALCONTROLW were included in the model to control the opportunities that might encourage managers to conduct fraud. Finally, the model includes a set of firm characteristics such as FIRM_SIZE, ROA, BTM, LOSS, and EPS. For more details about the description of variables see Table 1.

[TABLE 1 ABOUT HERE]

4. Empirical results

4.1. Descriptive statistics

Table 2 provides basic descriptive statistics of all variables used in our model. The mean *FRAUD* is 12.9%, indicating that 12.9% of firms engaged in corporate fraud during the study period. The average *INDP_DIR_PAY* is around 58764.09 RMB. The mean (median) *INDEP_EXPERTISE* is 0.723 (1), suggesting that each firm has almost one independent director who is a financial expert. It also shows that each firm has around three independent directors who are highly educated where the mean (median) INDEP_EDUCATION is 2.65 (3). The mean *FEM_INDEP* is 0.47. The average *INDEP_AGE* is about 53.1 years. The average CEO PAY is 669438.1 RMB. In addition, it reveals that the mean *BOARDSIZE and* BOARDIND is 8.7 and 37.2%, with a median of 33.3%, indicating that each firm has at least one-third of independent members. 26.1% of our sample firms have a CEO who also is the chairman, and each board of directors gets together at least 10 times a year.

In addition, 39% of our sample firms are affiliated with the government. Only 37% of our sample audited by one of the top 10 and big 4 audit firms. 18.7% of firms have a weak internal control environment, suggesting that there is

an opportunity to commit fraud. Regarding the firm economic characteristics, the mean *FIRM_SIZE* is about 21.93, and the *ROA* is approximately 4.4%, and the *BTM* is around 0.84, the average *EPS* are 39.3%, and 7.9% of sample firms achieved loss. Finally, the percentage of controlling shareholders is around 37.92%, indicating that the Chinese market is highly concentrated.

Table 3 shows the linear correlation among variables of the empirical model. The correlation between *FRAUD* and *INDP_DIR_PAY* is negative and significant (Coeff= -0.031). In addition, the correlation between *FRAUD* and *SOE* is negative and significant (Coeff=-0.025). Table 4 shows that some variables positively associated with *FRAUD* and some of them negatively. However, the correlation coefficients among variables are below 0.60, indicating that there is no collinearity problem in our model.

[TABLE 2 ABOUT HERE]

[TABLE 3 ABOUT HERE]

4.2. Results discussion

Table 4 provides the main regression results of the association between independent directors' cash compensation and corporate fraud as well as the moderating effect of state-ownership on such an association. Model 1 of Table 4 provides estimates for H1, models 2 and 3 of Table 4 present estimates for H2. The coefficient of *INDP_DIR_PAY* is negative and significant in model 1 (Coeff=-0.195, p<1%), indicating that cash-based to independent directors curbs the likelihood of corporate fraud. This finding supports the presumption that cash compensation to independent directors aligns their interests with those of shareholders, unlike equity compensation. Economically this estimated coefficient implies that a 10% increase in independent directors' cash compensation decreases the likelihood of corporate fraud by 0.02. However, this finding supports H1. Our results are inconsistent with the results of Persons (2012) who uses U.S. data, and documents no association between cash compensation of independent directors and fraud. The inconsistent results can be explained due to the difference in settings where Chinese firms use mainly cash compensation while in the U.S. firms use mainly equity compensation to independent directors. While our findings are consistent with the recent Chinese evidence provided by Jiang, Kling, & Bo, (2020) who find that executives' equity pay is positively associated with acquisitions while cash pay to managers is positively but economically not significant.

Model 4 of Table 4 shows firm-fixed effect estimates, the coefficient of *INDP_DIR_PAY* also is negative and significant (Coeff=-0.018, P< 5%). Overall, these findings demonstrate a negative and significant association between independent directors' cash compensation and corporate fraud, suggesting that high cash compensation to independent directors provides effective management monitoring and enhances the board's effectiveness.

In terms of control variables, in model 1 of Table 4, It is shown that fraud increases with firms with financial expertise independent directors, boards are frequently met, weak internal control environment, and with loser firms. Whereas Fraud decreases in firms with well-educated independent directors, powerful CEO, state-owned, firms audited by top 10 and big 4 audit firms, large size, high EPS, and firms with large controlling shareholders.

To test the moderating effect of SOEs on the relationship between independent directors' cash compensation and corporate fraud, this study utilizes the sub-sample method (SOE=1 and SOE=0). The coefficient of *INDP_DIR_PAY* in model 2 of Table 4 is negative and significant for state-owned firms SOE (Coeff=-0.334, p< 1%) while is insignificant for private firms (non-SOE). The Chow test reveals that the coefficient of *INDP_DIR_PAY* in SOEs significantly differs from that of non-SOEs. This finding suggests that the positive effect of cash-based to independent directors on corporate fraud is more pronounced in state-owned firms than private firms, supporting H2.

[TABLE 4 ABOUT HERE]

5. Robustness test:

5.1. Propensity score (PSM) approach.

The main result revealed that the probability of corporate fraud has been driven by high cash compensation to independent directors, but some can argue that the negative association between independent directors' compensation and the likelihood of corporate fraud because of the characteristics of fraud and non-fraud companies. To control for this problem scholars suggest utilizing the propensity score (PSM) regression. The main purpose for using PSM (Z. Huang, Lou, & Taitel, 2013; Shipman, Swanquist, & Whited, 2016) is to divide our sample into two groups; high cash compensation for independent directors (treatment) and low cash compensation for independent directors (control), so that the rest of our model variables can be used to match the two groups. Here, the median method was used; if the *INDP_DIR_PAY* value is more than (less) the median it considers high (low). To apply the PSM, both groups (treatment and control) should be similar regarding all variables except FRAUD variable. Based on the nearest neighbor approach, all covariates were matched between both groups. In Table 5' Panel A, the t-statistics of all covariates are insignificant except ROA and LOSS. This suggests that the covariate matching process is successfully done. Panel B shows estimates of the PSM model. The coefficient of *INDP_DIR_PAY* remains negative and significant (-0.180, $p< 0.01$). This implies that the main results in the issue of endogeneity are robust.

[TABLE 5 ABOUT HERE]

5.2. Two stage least square (2SLS) model

The study may have another potential problem of endogeneity which is a causal effect. That is, our main results may be affected by simultaneous equations or measurement errors (Antonakis, Bendahan, Jacquart, & Lalive, 2010; Larcker & Rusticus, 2010). The study employs the 2SLS model to control for this potential problem. For performing the 2SLS, it is important to have a suitable instrumental variable. Following Ye (2014) this study utilizes the average local pay of executives (*LOCAL_PAY*) as an instrumental variable. Because most independent directors of Chinese companies are businesspeople or academicians from the local area in which the company is located, it is assumed that listed companies offer compensation for independent directors based on the average compensation of managers in the local area. Accordingly, the *LOCAL_PAY* variable should be related to the independent director's cash compensation and not related to FRAUD. However, Table 6 model 1 presents the estimates of the 1st stage of the 2SLS, where the coefficient of *LOCAL_PAY* is highly significant (0.011, P< 1%), indicating a positive relationship between our independent variable and our instrumental variable. This suggests that our instrumental variable is valid. Model 2 of Table 6 presents the estimates of the 2SLS model, the coefficient of *INDP_DIR_PAY* remains negative and significant (-0.201, $p<5\%$), indicating that the baseline finding is robust for endogeneity issues.

[TABLE 6 ABOUT HERE]

6. Conclusions

In response to the call for investigating the effect of using a different-based compensation to independent directors, this paper intends to explore the governance role of only cash-based compensation to independent directors in deterring corporate fraud in China. Using a sample of China's public firms from 2010 to 2017, the results of logistic regression show a negative association between cash compensation of independent directors and the likelihood of corporate fraud. This suggests that using cash-based compensation to independent directors enhances the corporate governance mechanism in deterring corporate fraud. Because this study is conducted in a unique setting, China,

which is characterized by a unique compensation scheme and concentrated ownership, it also aims to investigate the moderating effect of state ownership on the association in question. The findings show that the negative association between independent directors' cash compensation and corporate fraud is more pronounced in state-owned firms than in private firms. For endogeneity concerns, the results are robust.

This study contributes to the literature as follows. It provides the first empirical evidence on the effectiveness of independent directors' cash compensation in curbing corporate fraud in China: a country characterized with a distinctive compensation structure but also suffering from controlling shareholder-related agency problems. It, further, adds to the institutional theory literature by documenting that state ownership significantly moderates the function of independent directors' cash compensation in mitigating corporate fraud. Although the Chinese government has reformed regulations several times to attract investors, the Chinese capital market has a lower international investor's ratio. Therefore, our results show important practical implications for international investors who are interested in the Chinese capital market in evaluating corporate governance mechanisms. Our findings may not be generalizable to unlisted firms in China's stock exchanges, and it could be only applicable for firms that operate in similar capital markets. Because in developed countries the ownership and compensation structure differs from China. Thus, further examination is needed to explore whether the impact of independent directors' cash compensation on financial reporting quality will be different, in case the data will use is from another country.

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Table 1. Description of variables

Variable	Description
FRAUD	An indicator equals 1 if a firm illegally is engaged in corporate fraud, zero otherwise.
INDP_DIR_PAY	The log of average cash compensation of independent directors.
INDEP_EXPERTISE	Number of independent directors who has financial expertise
INDEP_EDUCATION	Number of independent directors who has high degree of education
FEM_INDEP	Number of female independent directors on the board.
INDEP_AGE	Age of independent directors.
CEO_PAY	The log of the average CEO cash pay.
BOARDSIZE	Number of directors on the board.
BOARDIND	The ratio of independent directors on the board
CEODUALITY	An indicator equals 1 if the CEO also is the chairman in the firm, and zero otherwise.
NO_OF_MEETINGS	Number of board meetings held a year in each firm.
SOE	An indicator equals 1 if the firm affiliated by government, and zero otherwise.
TOP10_BIG4	An indicator equals 1 if the firm audited by one of the top 10 and big 4 auditors, and zero otherwise.
INTERNALCONTROLW	An indicator equals 1 if there are weaknesses (deficiencies) in internal control system, and zero otherwise.
FIRM_SIZE	The logarithm of the firm's total assets
ROA	Return on assets
BTM	The ratio of book to market value of the firm.
LOSS	An indicator equals 1 if the firm achieve a loss in a year t, and zero otherwise
EPS	Earnings per share in a firm
PDCSH	Controlling shareholder ratio defined as the ratio of major controlling shareholders.

Table 2. Descriptive Statistics

Variable	Mean	SD	P25	Median	P75
FRAUD	0.129	0.335	0	0	0
INDP_DIR_PAY	10.86	0.485	10.571	10.82	11.168
INDEP_EXPERTISE	0.723	0.859	0	1	1
INDEP_EDUCATION	2.64	1.938	1	3	4
FEM_INDEP	0.47	0.499	0	0	1
INDEP_AGE	53.10	5.42	49.33	52.8	56.67
CEO_PAY	13.09	0.81	12.618	13.098	13.571
BOARDSIZE	8.70	1.7	8	9	9
BOARDIND	0.372	0.053	0.333	0.333	0.429
CEODUALITY	0.261	0.439	0	0	1
NO_OF_MEETINGS	3.26	1.789	2	3	4
SOE	0.39	0.488	0	0	1
TOP10_BIG4	0.37	0.48	0	0	1
INTERNALCONTROLW	0.187	0.39	0	0	0
FIRM_SIZE	21.93	1.28	21.01	21.77	22.67
ROA	0.044	0.913	0.015	0.038	0.067
BTM	0.84	0.914	0.32	0.553	0.983
LOSS	0.079	0.27	0	0	0
EPS	0.393	0.693	0.098	0.289	0.563
PDCSH	37.92	15.75	25.67	36.18	49.48

Table 3. Correlation matrix

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
FRAUD	1.000																			
INDP_DIR_PAY	-0.031*	1.000																		
INDEP_EXPERTISE	0.024*	-0.110*	1.000																	
INDEP_EDUCATION	-0.018*	-0.125*	0.453*	1.000																
FEM_INDEP	0.026	-0.095*	0.078*	0.056*	1.000															
INDEP_AGE	-0.015*	0.120*	0.019*	-0.056*	-0.034*	1.000														
CEO_PAY	-0.030*	0.391*	-0.009	0.029*	-0.005	0.096*	1.000													
BOARDSIZE	-0.012	0.066*	-0.025*	0.072*	0.025*	0.074*	0.088*	1.000												
BOARDIND	0.005	0.025*	0.052*	0.066*	0.022*	0.010	-0.013	-0.453*	1.000											
CEODUALITY	-0.002	-0.017*	0.082*	0.148*	0.006	-0.053*	0.012	-0.169*	0.105*	1.000										
NO_OF_MEETINGS	0.094*	0.039*	0.089*	0.125*	0.041*	-0.035*	0.074*	-0.026*	0.035*	0.033*	1.000									
SOE	-0.025*	0.008	-0.163*	-0.239*	-0.015*	0.100*	0.004	0.273*	-0.068*	-0.294*	-0.135*	1.000								
TOP10_BIG4	-0.037*	0.185*	-0.031*	-0.007	-0.032*	0.092*	0.162*	0.122*	0.005	-0.063*	-0.038*	0.122*	1.000							
INTERNALCONTROLW	0.096*	0.081*	-0.024*	-0.107*	0.021*	0.063*	0.078*	0.053*	0.010	-0.082*	0.040*	0.179*	0.052*	1.000						
FIRM_SIZE	-0.015*	0.333*	-0.070*	-0.091*	-0.007	0.188*	0.385*	0.273*	-0.008	-0.171*	0.162*	0.338*	0.302*	0.203*	1.000					
ROA	-0.010	0.002	0.007	0.013	-0.001	-0.008	0.002	-0.001	0.006	0.019*	-0.009	-0.013	0.001	-0.011	-0.007	1.000				
BTM	0.002	0.160*	-0.085*	-0.121*	-0.020*	0.115*	0.126*	0.184*	-0.013	-0.144*	0.129*	0.320*	0.163*	0.135*	0.422*	-0.018*	1.000			
LOSS	0.098*	-0.059*	-0.010	-0.065*	0.009	-0.021*	-0.156*	-0.011	0.011	-0.024*	-0.004	0.060*	-0.026*	0.062*	-0.082*	-0.058*	0.049*	1.000		
EPS	-0.074*	0.102*	0.017*	0.086*	-0.013	0.018*	0.255*	0.037*	0.010	0.024*	-0.014	-0.024*	0.097*	-0.042*	0.188*	0.116*	-0.041*	-0.365*	1.000	
PDCSH	-0.069*	0.035*	0.021*	0.049*	-0.025*	0.054*	0.005	-0.022*	0.051*	-0.011	-0.016*	0.089*	0.086*	-0.022*	0.143*	0.016*	0.080*	-0.084*	0.119*	1.000

Note: All variables are described in table 1. * shows significance at the 1% level

Table 4. Regression results of H1 & H2.

Fraud	Model 1	Model 2 SOE=1	Model 3 SOE=0	Model 4 Firm-fixed effect
INDP_DIR_PAY	-0.195***(-3.49)	-0.334***(-3.88)	-0.046(-0.65)	-0.018**(-2.04)
INDEP_EXPERTISE	0.040*(1.67)	0.094*(1.76)	0.092**(2.47)	0.016***(3.14)
INDEP_EDUCATION	-0.056***(-3.68)	0.011(0.46)	-0.087***(-4.52)	-0.006**(-2.32)
FEM_INDEP	0.051(1.06)	0.092(1.18)	0.079(1.33)	0.012(1.51)
INDEP_AGE	-0.008*(-1.71)	0.001(-0.03)	-0.003(-0.61)	0.001(0.01)
CEO_PAY	-0.105***(-3.02)	-0.060(-1.05)	-0.075*(-1.79)	0.014**(2.38)
BOARDSIZE	0.026(1.47)	-0.038(-1.53)	0.053**(2.15)	0.001(0.12)
BOARDIND	0.361(0.70)	-0.273(-0.34)	0.819(1.22)	0.089(0.95)
CEODUALITY	-0.025(-0.44)	0.158(1.26)	-0.039(-0.62)	0.001(0.15)
NO_OF_MEETINGS	0.129***(10.06)	0.190***(8.18)	0.114***(7.64)	0.015***(7.52)
SOE	-0.170***(-2.81)	0.000	0.000	-0.007(-0.31)
TOP10_BIG4	-0.501**(-2.37)	-0.608***(-2.56)	-0.104(-0.52)	-0.042(-1.30)
INTERNALCONTROLW	0.450***(7.68)	0.728***(8.93)	0.529***(6.85)	0.085***(10.49)
FIRM_SIZE	-0.035*(-1.70)	-0.041(-0.88)	0.032(0.85)	0.009(1.52)
ROA	-0.169(-0.77)	0.022(0.08)	-0.672(-1.42)	-0.009(-0.69)
BTM	0.008(0.21)	0.001(0.03)	-0.099(-1.61)	-0.002(-0.42)
LOSS	0.513***(6.06)	0.585***(4.65)	0.480***(4.08)	0.057***(4.94)
EPS	-0.111**(-2.10)	-0.004(-0.06)	-0.264***(-3.22)	-0.013**(-1.97)
PDCSH	-0.010***(-5.75)	-0.007**(-2.53)	-0.011***(-5.07)	-0.001(-1.28)
Constant	1.994**(2.35)	2.991**(2.50)	-1.497(-1.53)	-0.128*(-1.86)
Observation	17239	6723	10516	17239
Year	yes	Yes	yes	Yes
Industry	Yes	Yes	Yes	No
Pseudo R^2	16	15.5	15.7	13.3
The Chow test		Chi^2=6.30***, p<0.012		

Note: The table gives coefficients and adjusted R^2 cross for all year and industry, T-statistics are reported in parentheses. Variables list in Table 1. *, **, *** significant at 10%, 5% and 1%, respectively.

Table 5. Results of Propensity Score Analysis

Panel A: Covariates matching				
Variable	Treated	Controls	Difference	T-stat
INDEP_EXPERTISE	0.773	0.765	0.008	0.390
INDEP_EDUCATION	2.544	2.556	-0.012	-0.270
FEM_INDEP	0.506	0.505	0.002	0.130
INDEP_AGE	52.905	52.935	-0.030	-0.250
CEO_PAY	13.006	13.020	-0.013	-0.690
BOARDSIZE	8.649	8.650	-0.002	-0.050
BOARDIND	0.373	0.373	-0.000	-0.170
CEODUALITY	0.254	0.255	-0.001	-0.080
NO_OF_MEETINGS	3.695	3.658	0.078	1.500
SOE	0.363	0.364	-0.001	-0.070
TOP10_BIG4	0.35	0.37	-0.010	-0.310
INTERNALCONTROLW	0.281	0.267	0.014	1.390
FIRM_SIZE	21.876	21.879	-0.003	-0.100
ROA	0.023	0.029	-0.006	-1.910***
BTM	0.846	0.843	0.003	0.150
LOSS	0.145	0.131	0.014	1.820***
EPS	0.264	0.290	-0.026	-1.500
PDCSH	33.921	34.257	-0.336	-0.980

Panel B: Results of PSM regression	
Fraud	model
INDP_DIR_PAY	-0.180***(-2.91)
INDEP_EXPERTISE	0.001(0.04)
INDEP_EDUCATION	-0.013(-0.83)
FEM_INDEP	-0.019(-0.40)
INDEP_AGE	-0.001(-0.14)
CEO PAY	0.016(0.48)
BOARDSIZE	0.004(0.25)
BOARDIND	-0.023(-0.04)
CEODUALITY	0.002(0.04)
CEO PAY	0.019(1.44)
SOE	-0.034(-0.56)
TOP10_BIG4	0.012 (0.08)
INTERNALCONTROLW	0.041*(1.70)
FIRM_SIZE	0.007(0.23)
ROA	-0.407(-1.03)
BTM	-0.001(-0.03)
LOSS	0.048(0.54)
EPS	0.002(0.04)
PDCSH	-0.001(-0.52)
Constant	1.617*(1.90)
Observation	2197
Year and Industry	yes
Pseudo R2	3.3

Note: The table gives coefficients and adjusted R^2 cross for all year and industry, T-statistics are reported in parentheses. For a detailed description of variables, see Table 1. *, **, *** significant at 10%, 5% and 1%, respectively.

Table 6: result of the two stages least squares 2SLS

Fraud	Model 1 First stage	Model2
INDP_DIR_PAY	----	-0.201**(-2.22)
LOCAL_PAY	0.011***(12.59)	----
INDEP_EXPERTISE	-0.034***(-8.12)	0.004(0.96)
INDEP_EDUCATION	-0.033***(-16.97)	-0.011***(-3.40)
FEM_INDEP	-0.082***(-12.83)	-0.005(-0.59)
INDEP_AGE	0.004***(5.89)	0.001(0.66)
CEO PAY	0.114***(20.36)	0.023(1.51)
BOARDSIZE	0.016***(6.57)	0.003(1.42)
BOARDIND	0.392***(5.67)	0.111*(1.70)
CEODUALITY	0.009(1.19)	0.001(0.16)
NU_OF_BOARD_MEETING	-0.006***(-3.37)	0.016***(10.03)
SOE	-0.100***(-12.47)	-0.045***(-3.55)
TOP10_BIG4	0.142***(6.32)	0.008(0.36)
INTERNALCONTROLW	-0.016*(-1.77)	0.080***(11.24)
FIRM_SIZE	0.068***(16.09)	0.016*(1.96)
ROA	0.015(0.92)	-0.006(-0.49)
BTM	-0.007(-1.30)	-0.003(-0.71)
LOSS	0.011(0.85)	0.090***(8.45)
EPS	-0.014**(-2.43)	-0.017***(-3.54)
PDCSH	0.001***(3.24)	-0.001***(-5.29)
Constant	8.08***(83.3)	0.881***(4.29)
Observation	17239	17239
Year and Industry	yes	yes
R^2	26.8	14.1

Note: The table gives coefficients and adjusted R^2 cross for all year and industry, and T-statistics are provided in parenthesis. LOCAL PAY is the average pay of managers where the business is located. Table 1 lists the variables. *, **, *** are statistically significant at 10%, 5%, and 1%, respectively.