

This material may be downloaded for personal use only. Any other use requires prior permission of the American Society of Civil Engineers. This material may be found at [https://ascelibrary.org/doi/10.1061/\(ASCE\)ME.1943-5479.0000816](https://ascelibrary.org/doi/10.1061/(ASCE)ME.1943-5479.0000816)

The following publication Wang, R., Lee, C. J., Hsu, S. C., Zheng, S., & Chen, J. H. (2020). Effects of career horizon and corporate governance in China's construction industry: Multilevel study of top management fraud. *Journal of Management in Engineering*, 36(5), 04020057.

1 **Effects of Career Horizon and Corporate Governance in China's Construction**

2 **Industry: A Multilevel Study of Top Management Fraud**

3 Ran Wang¹, Chia-Jung Lee², Shu-Chien Hsu^{3,*}, Saina Zheng⁴, and Jieh-Haur Chen⁵

4 **Abstract**

5 To investigate the drivers of fraudulent behavior in the construction industry, this study focused on top
6 managers and explored whether individual-level and firm-level characteristics would exert an influence
7 on likelihood of misconduct. It was first proposed that as an executive's career horizon becomes shorter,
8 the executive would become more risk-averse and less likely to participate in wrongdoing. This present
9 research also considered whether the relationship between career horizon and top management fraud
10 would be moderated by firm-specific variables, particularly board monitoring and ownership structure.
11 To investigate these hypotheses, information was collected on 1052 executives in 70 construction firms
12 in China from 2012 to 2017. This study applied hierarchical linear modeling due to the multilevel
13 structure of the data. The results support that executives with a shorter career horizon are associated with
14 a reduced likelihood of top management fraud. It also found that executives near retirement are less likely
15 to engage in fraudulent actions if their firms have a less independent board and a higher percent of shares
16 held by the state. The findings are not only an obvious echo of upper echelons theory but further
17 emphasizing the role of board composition and ownership structure in preventing top management fraud.
18 The multilevel research design helps us to understand the cross-level nature of top management fraud

¹ Ph.D. Candidate, Department of Civil and Environmental Engineering, The Hong Kong Polytechnic University, 181 Chatham Rd. South, Hung Hom, Kowloon, Hong Kong SAR. Email: ran.wr.wang@connect.polyu.hk

² Assistant Professor, Department of International Business, Tunghai University, No.1727, Sec.4, Taiwan Boulevard, Xitun District, Taichung 40704, Taiwan. Email: chiajlee@thu.edu.tw

^{3,*} Associate Professor (Corresponding Author), Department of Civil and Environmental Engineering, The Hong Kong Polytechnic University, ZS944, Block Z, 181 Chatham Rd. South, Hung Hom, Kowloon, Hong Kong SAR. Email: mark.hsu@polyu.edu.hk

⁴ Ph.D. Candidate, Department of Civil and Environmental Engineering, The Hong Kong Polytechnic University, 181 Chatham Rd. South, Hung Hom, Kowloon, Hong Kong SAR. Email: sena.zheng@connect.polyu.hk

⁵ Distinguished Professor, Department of Civil Engineering, National Central University, No.300, Jhongda Rd., Jhongli, Taiwan 32001. Email: jhchen@ncu.edu.tw

within an organization and contributes to the literature on corporate governance in the construction industry.

Keywords: Career horizon, Top management fraud, Hierarchical linear modeling, Board monitoring, Ownership structure

Introduction

The construction industry has been publicly known as one of the most corrupt sectors in the world (Owusu and Chan 2019; Transparency International 2011). In discussions of corruption involving business organizations, researchers usually refer either to “corrupt organizations” or “organizations of corrupt individuals” (Pinto et al. 2008). While certain organizations may be so thoroughly infused with corrupt norms and behavior that they could be considered “corrupt” (Rusch 2016), a growing body of research demonstrates dishonest behaviors are greatly influenced by business leaders who lack professional ethics and morals (Alkhatib and Abdou 2018). To explain unethical managerial conduct within the construction industry, many studies emphasize the role of operational level managers (Ameyaw et al. 2017; Bowen et al. 2012; Owusu et al. 2019). As a frontline manager responsible for day-to-day operations at construction sites, their deliberately negligent behaviors, including poor supervision, or use of substandard materials, lead to substantial loss of life and property (Owusu et al. 2019; Tabish and Jha 2011). Although project leaders have plenty of opportunities to engage in corrupt practices, a company's hierarchy of reporting relationships makes the unethical choices multi-determined (Kish-Gephart et al. 2010). For example, top managers, the final decision maker in a firm, may force project managers to save costs excessively by cutting corners or remain silent when their subordinates conduct

some corrupt practices. Given these considerations, it is essential to pay attention to top management's bad behaviors, which have often been overlooked. Therefore, the aim of this study is to fill this gap and to investigate the antecedents of top management fraud in construction companies.

Due to the multi-determined nature of unethical choice (Kish-Gephart et al. 2010), it is important to take into consideration multiple-antecedent sets (Flannery and May 2000) and develop a comprehensive model of organizational-and individual-level factors that are associated with top management fraud. Previous studies have not systematically investigated these two sets of drivers but generally only focused on a single level, either individual or firm level. For individual-level factors, Baucus (1994) argued that the individual decision maker's characteristics would affect the likelihood of wrongdoings. Troy et al. (2011) found that executives' age, experience and education background are associated with rationalizing accounting fraud. For firm-level antecedents, Shi et al. (2017) focused on the firm-level factors and found that the likelihood of financial fraud by executives would increase if they feel the external pressure from activist owners, takeover control and securities analysts. Lee et al. (2018) also aimed at the firm level and revealed that the internal governance, i.e., board structure plays an important role in preventing corporate misconduct commit by top managers. However, one fact has been overlooked that an individual with particular features may have different behaviors in different contexts. Managers with the same characteristics may make different decisions when they are exposed in different organizational environments. To address this gap, this study would examine the drivers of top management fraud from two levels, individual level and firm level.

With regard to individual-level factors, this research focuses on top manager career horizon, which is the amount of time remaining until an executive reaches retirement age (Matta and Beamish 2008).

Although the literature has consistently reported that CEO career horizons have a significant impact on corporate strategic decisions and subsequent organizational outcomes (e.g., McClelland et al. 2012), little research has examined the effects of executives' career horizons on top management fraud. Career horizon particularly matters for top management fraud, since an executive's career horizon impacts his/her risk preferences and risk-taking behavior (Matta and Beamish 2008). When executives approach retirement age, some risk-averse choices may be preferred to preserve a legacy of success. Once fraudulent behaviors are known by the public, the problematic executives may fall from grace, their reputations dramatically affected (Gomulya and Boeker 2016). As such, it is reasonable to surmise that an executive's career horizon can play a critical role in whether the executive makes unethical or illegal choices.

In addition to this individual-level factor (i.e., career horizon), organizational-level factors might encourage or discourage executives to commit illegal acts (Zahra et al. 2005). This study takes the characteristics of corporate governance into consideration and treats them as the boundary conditions of testing in this study. That is, it is proposed the relationship between a top manager's career horizon and his/her criminal behavior may be moderated by board structure and ownership structure.

Literature Review and Hypotheses Development

Top management fraud refers to the deliberate actions taken by top managers to con, deceive, cheat or swindle investors or other stakeholders, with the purpose of benefiting the individual perpetrator or (and) the corporation (Zahra et al. 2005). Apart from profit or some other kind of material benefit gained by top managers, such behaviors may yield negative effects on the individual perpetrator as well. Once problematic managers are caught committing fraud, their reputations are affected and are sometimes

terminated from employment (Gomulya and Boeker 2016). Thus, considering the great uncertainty of outcomes involved in committing fraud, scholars treat executive misconduct as a form of risky activity (Dong et al. 2018; Hoskisson et al. 2017).

To prevent such risky actions from occurring, antecedents of top management fraud have been explored (Zahra et al. 2005). There are numerous studies on executive characteristics and their decision to commit fraud (Finkelstein et al. 2009; Hoskisson et al. 2017). Researchers have found associations between observable characteristics of an executive and top management fraud (e.g., Troy et al. 2011). Despite extensive research, little research has examined how psychological attributes influence top managers' unethical or illegal acts. To address this gap, the present study investigated whether executives with different career horizons may make different choices about unacceptable behaviors.

Career Horizon Concerns

Career horizon concerns are mainly relevant to the career stage of an executive. When he/she becomes older and retirement gets closer, the career horizon becomes shorter. Researchers have predicted that career horizon would affect executives' priorities and incentives, which would then translate into their risk-seeking or risk-averse behaviors (Barker and Mueller 2002). Older executives would generally prefer risk-averse strategies rather than those that would maximize shareholder benefit or long-term firm performance, leading to increases in agency cost (Davidson et al. 2007). Hambrick and Mason (1984) list three possible reasons for the conservative attitude of older managers: less physical and mental stamina, greater preference for organizational status quo, and at a special point in their lives at which they highly value their financial security and career security. Matta and Beamish (2008) also mention that approaching retirement implies limited ability and time, and thus risk aversion is preferred.

Besides these reasons, legacy conservation is also considered a contributor to risk-aversion for executives with a short career horizon (Kang 2016). The legacy is the imprint that a former executive bequeaths to a firm (Sonnenfeld 1986). Though an executive may retire and leave the firm, he/she might want to still leave a lasting legacy to the firm for which he/she would be recognized. To preserve a legacy of success, some executives near retirement may exhibit myopic risk aversion, because risky actions may jeopardize the current firm performance and taint the executives' legacies (Kahneman and Lovallo 1993). In fact, the perceptions of a successful executive with reputational and human capital are often associated with good firm performance (Harris and Helfat 1997). Thus, to minimize the risk and preserve the executives' legacies, they would become more inclined to forgo some risky moves, particularly, fraud. Those dishonest behaviors could erode the executives' reputations and the public's trust (Davies and Olmedo-Cifuentes 2016). Some problematic managers would have to resign. Once executives with a short career horizon are fired, they would be less likely to find a similar position than those with long career horizons (McClelland et al. 2012). Thus, this study predicts that top managers with a short career horizon are less likely to engage in fraudulent behaviors than those with a long career horizon.

H1: There is a positive relationship between a top manager's career horizon and the likelihood of his/her engagement in the fraudulent behaviors.

Moderating Role of Board Monitoring

One of the most crucial corporate governance mechanisms is board monitoring, which refers specifically to the monitoring undertaken by a board of directors to safeguard the interests of shareholders and to mitigate the possible agency costs that arise from the separation of control and ownership (Fama and Jensen 1983). Ineffective implementation of their function could provide management with opportunities

to commit fraudulent acts (Dechow et al. 1996). To improve monitoring effectiveness, researchers and practitioners have advocated for board independence—absorbing outside directors that are independent from the listed companies and the major shareholders (CSRC 2002; Mallette and Fowler 1992). The independent directors are less likely to be influenced by executives and have more incentives to protect their reputation in the labor market. Thus they are expected to supervise the management’s performance effectively (Fama and Jensen 1983). Previous research has reported a negative relationship between board independence and incidents of corporate fraud (Beasley 1996). Some empirical research specifically focused on the construction industry has produced similar results about board monitoring (Rebeiz 2001; Rebeiz and Salameh 2006). Thus, it is expected that when a board is composed of more independent directors, monitoring effectiveness would be enhanced. Then the opportunities for managers to initiate some opportunistic activities (e.g., fraud) would be constrained. Especially for those executives with long career horizons and a preference for risk-taking, their selfish decisions that may erode the firms’ interests may be blocked by an independent board. On the other hand, an independent board may not find fault for older executives, who are more conservative and less likely to commit illegal behaviors. Thus, the relationship between career horizon and top management fraud may be less positive in relation to monitoring by an independent board.

In addition, board monitoring effectiveness may be determined in part by its size. Some researchers argue that a large board may enlarge the pool of professional experts, expanding the scope of skills and experiences, and improving the quality of monitoring (Pfeffer 1973). However, some other empirical studies suggest that the benefits could be outweighed by the costs of largeness because of the conflicts in interactions, additional challenges in coordination, and free-riding problems (Eisenberg et al. 1998).

According to Goodstein et al. (1994), it is easier for a large board to generate coalitions and more difficult to achieve consensus because directors on large boards may fail to exchange information or their ideas freely, and thus creating openings for managers to undertake some opportunistic behaviors. In contrast, a small board is considered to be more participative and cohesive. Their monitoring function is more likely to be implemented effectively. Extending the above reasoning procedure, this study expects an executive's dishonest desires, driven by his/her career horizon, would be alleviated. On the one hand, the positive effect of career horizon on top management fraud will be more salient when a firm has a larger board due to the reduced monitoring effectiveness resulting from communication barriers between directors; on the other hand, the association between career horizon and top management fraud can be mitigated because of the cohesion among board members.

H2a: Board independence weakens the positive effect of career horizon on top management fraud.

H2b: Board size strengthens the positive effect of career horizon on top management fraud.

Moderating Role of Blockholder Ownership

Blockholders are shareholders who hold at least 5% of the common shares in a firm (Connelly et al. 2010). Prior studies argue that blockholders could exert influence on the decisions made by management due to their voting control (Connelly et al. 2010; Jensen and Warner 1988). This control may not only incentivize the large shareholders to supervise the managerial activities (Aoki 1984), but also put great financial pressure on executives. The stakes for large shareholders are literally high, leading to their excessive emphasis on short-term financial earnings. Gorton and Schmid (2000) reported that the performance of firms with large shareholders would be improved. Guthrie and Sokolowsky (2010) found evidence that firms with large shareholders would inflate their earnings. Lemma et al. (2018) found that

a large percentage of institutional ownership induces an increase of accrual earnings management. To protect their benefits, blockholders would put pressure on top managers and be likely to make a threat of intervention (e.g., decreasing the executives' compensation or dismissing someone) if the firm performance is lower than their desired level (Kaplan and Minton 2012). This threat may incentivize executives to engage in risky behaviors, especially for those nearing retirement. They may become more worried about their career termination (i.e., forced retirement) in the presence of blockholder activism. To make matters worse, managers with a short career horizon may have limited ability and time to improve firm performance and to satisfy blockholders (Matta and Beamish 2008). Thus, fraud may be an available means for those approaching retirement. On the other hand, for those young managers, financial pressures from blockholders may make little difference because it may be easier for them to move on to other positions than for their older counterparts (McClelland et al. 2012). Therefore, when there are high levels of blockholders, the effect of career horizon on fraud may be less positive.

H3: Blockholder ownership weakens the positive effect of career horizon on top management fraud.

Moderating Role of State Ownership

In China, despite the privatization of state-owned-enterprises, the state still has influential ownership in about half of privatized listed firms (Shan 2013). State ownership has been found to be associated with weakening internal monitoring mechanisms, increasing the chances of executives carrying out opportunistic activities (Hou and Moore 2010). However, this study argues that this may not be the case for executives near retirement when they are faced with state ownership. Unlike general shareholders, state shareholders emphasize less on maximizing shareholder wealth. Even though governmental bureaucrats are interested with pursuing profits, they are unwilling to consume much time and effort on

187 supervising managerial activities because the involved cost is much higher than the political payoff (Shen
188 and Lin 2009). This reduces executives' financial pressure to some extent. As the result, executives with
189 a short career have fewer incentives to engage in some risky behavior.

190 The goals of state shareholders and top managers can also be aligned. On the one hand, instead of
191 setting purely profit driven goals, state shareholders prefer to achieve various social and political
192 purposes, such as controlling sensitive industries (Clarke 2003) or reducing a local unemployment rate
193 (Fan et al. 2007). Especially for some megaprojects, benefiting the megaproject community is more
194 attractive than pursuing rational economic benefit (Yang et al. 2018). In parallel, executives, especially
195 those near retirement age, often love to pursue socially responsible goals in order to build and preserve
196 their legacy (Matta and Beamish 2008). State shareholders' interest and management's aim to protect
197 their reputations are aligned, incentivizing older executives to behave in a more politically- and morally-
198 correct manner, and less likely to commit violations. Taken together, this research assumes that
199 executives near retirement would be less likely to undertake fraudulent behaviors with the presence of
200 high state ownership.

201 *H4: State ownership strengthens the positive effect of career horizon on top management fraud.*

202 **Method**

203 This section first presents the sample and data used in this study, followed by the measures of dependent
204 variable, independent variables, moderating variables and control variables. Then hierarchical linear
205 modeling is introduced as the data analysis tool.

206 **Sample and Data**

207 To test the above hypotheses, this present study analyzed a sample of top management in the construction

companies publicly listed in China from 2012 to 2017. Top management includes CEO and non-CEO executives, referring to individuals titled as executives in the annual report of the listed firm (Zhang et al. 2011). In line with other studies about Chinese companies (Conyon and He 2016; Hou and Moore 2010), the data is mainly collected from the China Stock Market and Accounting Research Database (CSMAR) database. In particular, the information about top management fraud used in this study was derived from enforcement data issued by the China Securities Regulatory Commission (CSRC). To accurately assess fraudulent actions, the enforcement information had been carefully reviewed and the year when individual managers actually took part in fraudulent activities was identified. Due to the data availability, firms newly listed after 2015 had to be removed to ensure the financial variables are known one year before the fraudulent activities they are used to explain. The removal is also because the observation period is too short to detect top management fraud and the disclosure practice could not be assessed realistically in early years (Anh et al. 2011). Thus, this research only included firms with more than two consecutive years of annual reports (Fama and French 1992; Loughran 1997). All the top managers in the remaining companies were considered including those leave their positions during the focal years. The final sample was comprised of 3722 individual-year observations. These observations are from 1052 executives in 70 firms. Subsequently, this study employed a panel dataset that includes firms with various number of top managers every year.

Measures

The measures of the relevant variables are described, including dependent variable, independent variables, moderating variables, and control variables in multiple levels.

Dependent variable (DV)

As the dependent variable, *top management fraud* is operationalized as a dummy variable indicating the fact whether a manager participated in fraudulent activities (e.g., financial misrepresentation, misappropriation of firm assets) in the focal year. The real perpetrator and the actual year when the fraud was committed were identified according to announcements made by CSRC. In the sample this study found a total number of 165 individual-year observations that engaged in fraud. If a manager was involved in fraud in the focal year, this variable equals to 1, otherwise 0 (Shi et al. 2017).

Independent variable (IV)

Career horizon is the remaining number of years before a manager reaches retirement age. This study uses 70 as the reference point when a manager should retire, following Krause and Semadeni (2014) and Matta and Beamish (2008). Hence, career horizon is measured as 70 minus a manager's age.

Moderating variables (MV)

Four moderators are considered regarding board and ownership characteristics. *Board independence* is represented by the percent of directors on the board who only have a directorial relationship with the firm (Lee et al. 2018). *Board size* could exert an influence on the board's monitoring and advising function. This variable is defined as the total number of board members (Wang et al. 2018). In many firms, including the ones this research focuses on, it is more common to have several large shareholders than a single blockholder (Maury and Pajuste 2005). Given that their interests are aligned to some extent, those several shareholders may choose to work together to implement their concentrated control. Thus, *blockholder ownership* is calculated as the sum of the shares held by blockholders. Though privatization has been extensively implemented in China, the state still exerts influence over the firms. *State ownership* is measured by the percent of shares held by governmental entities (Shen and Lin 2009).

Control variables (CV)

Several variables are controlled about the individual managers and the firms. At the individual level, *tenure* of a manager is first considered because top managers with long tenure are generally more willing to persist with unchanged strategies and maintain the status quo (Finkelstein and Hambrick 1990). It is represented by the number of months that a manager has held a position as senior management (Zhang et al. 2011). Second, an executive's *gender* may be related to engaging in risky behaviors. Women managers have been found to be less overconfident than men managers in making decisions (Huang and Kisgen 2013). The variable is given a value of 1 if an executive is a woman, 0 otherwise. Third, poor education has been regarded as an individual trait that may lead to unethical, even illegal, behaviors (Liu et al. 2017). *Education* level is controlled by coding the highest educational level attained by an executive: 1= below junior college; 2 = a junior college degree; 3 = a bachelor's degree; 4 = a master's degree; 5 = a doctoral degree (Fan et al. 2007). Fourth, an executive may have the experience of serving as a current or former officer in the central or local governments or military. This has been considered as a proxy for government influences (Fan et al. 2007), and an important reason why corruption is widely reported in the construction industry (Zhang et al. 2017). A dummy variable is included to represent whether a top manager has such *political background* (1=Yes; 0=No). Fifth, executive compensation is taken into consideration because of its influence on the incentives to commit fraud (Conyon and He 2016). The compensation is represented by the log of *total pay* and *ownership*. Total pay is the sum of salary, stipends, and bonus (Lu and Shi 2018). Ownership is calculated as the number of shares held by an executive multiplied by the stock price per share on the last day of the stock market (Barker and Mueller 2002). Sixth, the executive's power is also controlled. Two dummy variables are added to indicate whether an

executive has been a *CEO* or *board member*, respectively (1=Yes; 0=No).

For the firm level, the variables at the individual level are first aggregated to the top management team (TMT) level, representing the firm level, to capture the TMT average level or the TMT diversity. Thus, this study controls *average of tenure*, *standard deviation (SD) of tenure*, *percentage of women executives*, *average education level*, *education diversity*, *percentage of executives with political background*, *average total pay*, and *average ownership*. Among them, education diversity is calculated by the Blau's index (Blau 1977). It is operationalized as $1 - p_i^2$, where p_i is the percent of executives with i th education level. This index has been widely used for operationalizing the diversity of culture (Richard et al. 2004), education background (Lee et al. 2018) and other nominal features. Then, this research includes the number of top managers on TMT to control for *TMT size* (Greve et al. 2015) due to its influence on the decision-making dynamics (Amason and Sapienza 1997). Next, firm size and firm performance are controlled. *Firm size* is measured as the log of the total number of employees (Matta and Beamish 2008), which may impact managerial discretion (Finkelstein and Hambrick 1990). Firm performance is indicated by the return on equity (*ROE*) in the last year. Poor performance may pressure managers to engage in problematic behavior (Krause and Semadeni 2014). *Debt-to-equity ratio (DER)* is considered to control for organizational slack. A high ratio indicates less financial slack and less available resources (Kuusela et al. 2017). Too high of a DER, which is common in the construction industry, creates pressure on managers. Last, five *year* dummies are created to include the unobserved heterogeneity rooted in the environments (Greve et al. 2015).

Based on the four hypotheses and the above measures, the hypothesized model is shown as follows.

Insert Figure 1 about here.

Hierarchical Linear Modeling

The data used encompasses three levels: year, individual manager, and firm. This represents a hierarchical structure as an individual-year observation's behavior is nested in an individual manager and then nested in a firm that employs the manager. The lowest level mainly includes the year dummies, examining the effect of time on a manager's decision about fraud. The second level involves the characteristics of a manager (e.g., career horizon). The third level considers a firm's features (e.g., board composition and ownership structure). The variables in the higher two levels are stable across years.

Given the nested structure, traditional regression is inappropriate because of violating the necessary condition of independent and identically distributed random variables (Hofmann et al. 2000). As such, Hierarchical Linear Modeling (HLM) was employed in this study (Raudenbush and Bryk 2002). This method has a primary advantage that it explicitly recognizes and corrects for the problem of nested data (Holcomb et al. 2010). Apart from the nested data structure, HLM was employed due to the cross-level moderation hypothesis (Hypotheses 2a-4). Though HLM has less been used in the fraud-related studies in the construction industry, it has been popular in psychology and the behavioral sciences (McNeish et al. 2017), entrepreneurship research (Holcomb et al. 2010) and management literature (Grosvold and Brammer 2011; Mathieu and Chen 2011). While the focuses of these fields are at one single level (i.e., individual or firm level), it is clear that individuals' or firms' behaviors or other outcomes are affected by individual, group, firm, industry and even national level drivers. Furthermore, researchers are often interested in the top-down influences of high-level factors on low-level factors or relationship (Zhang et al. 2009). Similar to those literature, the present study adopted a dataset containing a three-level hierarchical structure and was interested in cross-level interactions. Hence, HLM is an appropriate

analytical technique.

Before conducting HLM analysis, it is important to consider whether a variable should be entered at a lower level (i.e., year level in this study) or at a higher level (i.e., individual or firm level). For example, the raw data on an individual's career horizon and pay varied in different years, but this research wants to input this variable in Level 2 (individual level) so that the variance between individual managers could be considered. Thus, this study performed intra-class correlations (ICC) testing. This testing is one of the most commonly used procedures that is able to justify aggregating year-level data to individual- or firm-level units and thus to provide the assessment of the extent to which the year-level data are homogeneous within an individual or a firm unit (Klein and Kozlowski 2000; LeBreton and Senter 2008). ICC(1) estimates the proportion of a variable's total variance that is attributed to the unit membership while ICC(2) examines the reliability of the aggregated variable. High ICC(1) and ICC(2) indicate the values within each group are similar but differ across groups and thus the aggregation is reliable. The ICC(1) and ICC(2) of all the time-variant variables were calculated and shown in Table 1. Except ROE, all of the variables about individuals and firms are justified in aggregation because (1) their ICC(1) values exceed 0.25 (LeBreton and Senter 2008); (2) the corresponding F tests for ICC(1) are significant (Klein and Kozlowski 2000); (3) their ICC(2) values are above 0.7 (Bliese et al. 2002; Klein and Kozlowski 2000). Thus, this research used their corresponding mean value among the focal years as the input of HLM analysis. ROE was added in the lowest level due to its large variance across years.

Insert Table 1 about here.

Another noteworthy point is the appropriate centering because the intercept and slopes in lower level of HLM model will become the dependent variables in higher level, and different centering decisions

may result in different interpretations (Raudenbush and Bryk 2002). Considering that the Level 2 (individual-level) predictors indicate the individual variance and are of interest, this study chose to group mean center all the continuous and ordinal variables in Level 2 (individual level), and to grand mean center all the continuous variables about the TMT or firm mainly in Level 1 (year level) and Level 3 (firm level) (Ou et al. 2017). The dichotomous variables including year dummies were uncentered to guarantee these variables' interpretability (Lander et al. 2018). The above centering is necessary to avoid multilinearity when testing the cross-level moderating effect of career horizon.

This study adopted a binary outcome as the dependent variable. Thus, a multilevel logit model is the most suitable for the present study (Greve et al. 2015). To avoid unwieldy models, the random intercept model was applied to limit the number of random parameters. That is, only intercepts in low levels are allowed to vary, and the intercept in Level 3 and all the slopes remain constant. Its general model is shown as follows:

$$\log \left[\frac{p_{ijk}}{(1-p_{ijk})} \right] = \eta_{ijk} = \pi_{0jk} + \sum_P \pi_{Pjk} * a_{Pijk} \quad (\text{Level 1}) \quad (1)$$

$$\pi_{0jk} = \beta_{00k} + \sum_q \beta_{0qk} * X_{qjk} + r_{0jk} \quad (\text{Level 2}) \quad (2)$$

$$\beta_{00k} = \gamma_{000} + \sum_s \gamma_{00s} * W_{sk} + u_{00k} \quad (\text{Level 3}) \quad (3)$$

where p_{ijk} is the probability that an executive j in firm k participated in top management fraud in year i , and error terms r_{0jk} and u_{00k} represent the unique effects relevant to individual j and firm k .

There is no random error term in Level 1 of the model because of the assumption that the total variance in this level is included in the estimated value η_{ijk} (Hox et al. 2017). This multilevel logit model was implemented in HLM6, a software that is able to handle the analysis of hierarchically structured data. First, the moderators (board independence, board size, blockholder ownership, state ownership) and the control variables including the five year dummies were added into Level 3 (firm level) of the model.

Next, the independent variable (career horizon) was included in Level 2 (individual level) of the model.

Then, the slope of the independent variable was constructed as a function of moderators before a full model was estimated.

Results

Table 2 displays the information on the descriptive statistics among the variables this study focused on in the three levels: year, individual, and firm level. Table 3 presents collinearity diagnostics and the correlations for the three-level data. To check for potential multicollinearity, variance inflation factor (VIF) was calculated among the explanatory variables. All of the VIF values are lower than 10, indicating that there is no serious collinearity issue in this study (Hair et al. 2014). Besides, there is no high dependence among the variables. The hypotheses for top management fraud were tested by hierarchical linear modeling and the results are summarized in Table 3.

Insert Table 2 about here.

Insert Table 3 about here.

Model 1 estimates the influences of control variables on top management fraud. To test Hypothesis 1 about the positive effect of career horizon, career horizon (IV) was introduced in Model 2. The results indicate that career horizon does have a positive effect ($\gamma = 0.060$; $p < 0.01$), supporting Hypothesis 1. Hypothesis 2 emphasizes the moderating effects of board monitoring. The coefficient of the interaction term of career horizon (IV) and board independence (MV) in Model 3 is significantly negative ($\gamma = -0.606$; $p < 0.05$). This shows that the positive effect of career horizon is weakened with an independent board, which is consistent with Hypothesis 2a. The interaction term of career horizon (IV) and board size

(MV) was included in Model 4 and the interaction term is statistically insignificant ($\gamma = 0.003$; NS). Hypothesis 2b is hence not supported. Hypothesis 3 predicts that blockholder ownership would weaken the relationship between career horizon and top management fraud. As indicated in Model 5, the interactive effect of blockholder ownership (MV) on that relationship is not significant either ($\gamma = 0.002$; NS), rejecting Hypothesis 3. Next, the positive relationship between career horizon and top management fraud is assumed to be strengthened by state ownership in Hypothesis 4. It is supported in Model 6 given the significant positive interaction term of career horizon (IV) and state ownership (MV) ($\gamma = 0.952$; $p < 0.05$). Finally, Model 7 shows the full model including the four interaction terms, generating results similar to those found for Models 2-6.

To interpret the significant moderating effects of board independence and state ownership further, this paper plotted the relationship between career horizon and top management fraud with different levels of moderators (\pm one standard deviation) following common guidelines (Aiken et al. 1991). However, one negative standard deviation goes beyond the value range of state ownership. This study chose its lowest value as the low level of state ownership. Fig. 2 and Fig. 3 present the moderating effect of board independence and state shareholder on that relationship. When the board independence (MV) is higher, the relationship between career horizon (IV) and top management fraud (DV) is less positive. This trend is in line with Hypothesis 2a. When more shares are held by the state (MV), the effect of career horizon (IV) on fraud (DV) is more positive and the likelihood of participating in dishonest actions appears to decrease. This result confirms Hypothesis 4.

Insert Figure 2 about here.

Insert Figure 3 about here.

408

409 **Discussion**

410 Under the context of construction industry, the findings present several insights into top management
411 fraud in construction companies. First, this study found that the likelihood of top management fraud
412 being committed decreases as a manager's career horizon becomes shorter. Due to considerations of
413 legacy conservation, executives near retirement become more risk averse. Approaching retirement, an
414 executive may strive to preserve a legacy of success and avoid risky actions (e.g., fraud in this study)
415 that could jeopardize their legacy. This is in line with existing studies on career horizon (Kang 2016;
416 Matta and Beamish 2008). While the findings in this study may contradict some studies (e.g., Antia et al.
417 2010), indicating retirement draws short-term earnings at the expense of long-term performance, most
418 researchers will agree that executives approaching retirement tend to have more risk-averse mindsets,
419 especially in the context of China. An individual's risk perception in China has been found to be different
420 than those in Western countries due to cultural differences (Weber and Hsee 1998). Particularly,
421 construction practitioners are inclined to be risk-averse (Zou et al. 2009). Thus, the Chinese context may
422 increase the conservative nature of executives near retirement.

423 Second, such risk aversion is found to be contingent upon board monitoring. As expected, board
424 independence weakens the positive relationship between career horizon and top management fraud. That
425 is, when board independence is low, the impact of career horizon on whether an executive commits fraud
426 is more prominent. While the moderating effect of board independence is verified by the empirical results
427 in this paper, it may not necessarily play a role in preventing managers from engaging in unethical
428 behavior. This may be explained by the construction industry's characteristics, which emphasizes
429 professional skills and knowledge (Edum-Fotwe and McCaffer 2000). Many construction firms employ

lawyers, accountants and bankers as independent directors (Rebeiz 2001), who have little tacit knowledge and experiences about the firm and its environment. Thus, a board with too many independent members may have inadequate information to implement its monitoring function. Executives near retirement are likely to have strived for many years in the firms or in the construction industry. This means that they may have the advantage of possessing important knowledge (Rebeiz 2001) and even dominate the board (Stiles 2001). Further, board size has no significant effect on the career horizon-top management fraud relationship. The insignificant effect may be attributed to the ambiguous effects of board size. A large board may be beneficial to obtain some technical or business information (Pfeffer 1973), which may be significant for the construction industry. A large board may also facilitate free-riding problems and group faultlines (Eisenberg et al. 1998). Thus, simply increasing board independence or board size may not be effective in preventing an executive near retirement from committing fraud. This finding extends the current understanding of the effects of board monitoring on top management fraud.

Finally, the findings also suggest that the relationship between career horizon and top management fraud is moderated by ownership structure. Blockholders and state shareholders were considered given whether these stakeholders emphasize profitability or not. Regarding blockholders, this research argued that they would put great financial pressure on executives and thus force some executives approaching retirement to fulfill blockholders' goals even through illicit means. However, this study did not find a significant moderating effect of blockholders. This is consistent with studies about large shareholders (e.g., Oh et al. 2016). It may be explained by the mixed roles of blockholders. Considering the conflicts between blockholders and minority shareholders (Thomsen et al. 2006), the effects of blockholders may be complex and uncertain. Concerning state ownership, as predicted, the results indicate that state

shareholders exert less financial pressure and thus executives with short career horizons have less external incentive to commit undesired activities to fulfill financial goals. Nevertheless, state shareholders exert less of an influence on executives with a long career horizon. This may be because the main drivers of fraud for those young managers is not external financial pressure but personal wealth maximization. Though state shareholders could intervene via termination and replacement of executives, Shen and Lin (2009) found that state ownership is negatively related to top management turnover. That is, the likelihood of forced retirement is less if the firm's shares are held by the state. Hence, dishonest actions of executives near retirement is mitigated by the existence of state shareholders.

Conclusion

To advance a multilevel understanding of top management fraud in construction companies, this study introduced an executive's career horizon as a possible antecedent of his/her fraudulent activities. Its varied effects were investigated with different cross-level moderators related to board monitoring and ownership structure. Using a multilevel dataset involving 3722 individual-year observations about 1052 executives from 70 construction firms in China, this paper employed a multilevel research method, HLM, to explore the combined effects of individual- and firm-level characteristics. This study found that a manager with a shorter career horizon would be less likely to engage in unacceptable behaviors. This likelihood is further reduced (1) if the board has fewer independent directors, and (2) if more firm's shares are held by the state. However, board size and blockholder ownership have no significant moderating effect on the relationship between managers' career horizon and their wrongdoing.

This research makes several contributions to the literature. First, this study supplements the growing body of literature on corrupt practices in the construction industry. The studies on the cause of

misconduct often addressed the issue from the perspective of regulatory-specific, statutory-specific, project-specific, organizational-specific and individual psychosocial-specific (Owusu et al. 2019). In particular, previous works (Alutu and Udhawuve 2009; Ameyaw et al. 2017; Brown and Loosemore 2015; Zhang et al. 2017) emphasize the roles of professionals (e.g., engineers and architects) and middle managers (e.g., project managers) in corruption. This study suggests that top managers also play a strong part in determining misconduct in construction companies.

Second, this study extends the scope of upper echelons theory. Prior literature has proposed that background and demographic characteristics of CEOs exert influences on firms' strategic outcomes, including international acquisitions (Matta and Beamish 2008), R&D spending (Cazier 2011) and the commitment of CSR (Kang 2016). The findings in the present study further suggests that top managers' psychological attributes (e.g., career horizon) play a role in top management fraud even after controlling for some contextual factors which have been identified as influential by other researchers.

Third, this research unpacks additional mechanisms through which top managers commit fraudulent behaviors. There have been many attempts to identify the mechanisms in single level. Traditional studies (e.g., Sen 2007; Shi et al. 2017) tend to focus solely on the characteristics of managers or firms, and overlooking the fact that an individual with particular features may have different behaviors in different environments. Taking the nested structure of data into consideration, the present study analyzed the combined effects of year-, individual- and organizational-level factors simultaneously. The multilevel framework in this study responds to the need for a cross-level and hierarchical understanding of top management fraud not otherwise pursued in previous studies (Kish-Gephart et al. 2010; Piquero and Piquero 2001; Zahra et al. 2005). The potential of multilevel modeling highlighted in this study is able

to enrich the research about top management fraud.

Finally, from the methodological standpoint, the application of HLM contributes to the research methods in the field of fraudulent behaviors in organizations. Considering the nested nature of organizational data, traditional regression is inappropriate because the condition of independent and identically distributed random variables is violated (Hofmann et al. 2000). HLM is capable of handling organizational data, which is characterized as hierarchical nature (Gavin 2004). The present study provides an example of how multilevel methods could be adopted to identify the antecedents and mechanisms of top management fraud.

Besides theoretical contributions, several practical implications could be offered through the present study. First, this study may raise important considerations about top managers perpetrate fraud in construction companies. In particular, more attentions need to be paid to an executive's psychological attributes, represented by career horizon here. Thus, firms need to be more careful when dismissing or selecting top managers to prevent fraudulent activities. Second, findings of this study offer an important insight that additional consideration of corporate governance (i.e., board composition and ownership structure here) are needed. Though independent directors are expected to provide effective control of the senior management, they only have a limited effect on mitigating top management fraud. Firms may rethink the composition of board members. As for ownership structure, findings of this study imply the importance of interest alignment. When the interest of management and shareholders are consistent, the likelihood of fraud would decrease. Retaining executives with shorter career horizon for a firm with larger percent of state shares would alleviate violating acts taken by executives. Therefore, firms may need to align the executives' career horizon with internal contingencies to diminish the occurrence of bad

activities. Taken together, firms need to take three-pronged attack on corruption from three aspects of an individual's psychological attribute, board composition and ownership structure. This may provide decision makers, including top managers themselves, investors and regulators, with a better understanding about how to reduce corporate scandals.

This study also has several limitations. First, as mentioned in the introduction section, an individual's traits (e.g., moral intention and attitude) have been found to be associated with an individual's unethical decisions in the construction industry (Alkhatib and Abdou 2018; Liu et al. 2017). This paper relies on the observable variables (e.g., career horizon) to capture the executives' invisible psychological status. This approach has been criticized by some scholars (e.g., Carpenter et al. 2004). This study has to employ this approach because those intra-psychological processes toward fraud are difficult to obtain. Future studies may adopt other research methods, like field surveys and case interviews, to collect more detailed information on executives' thought processes. Second, in terms of board role in preventing top management fraud, this study only applies two classic but simple indicators of monitoring effectiveness. In subsequent studies, researchers may use more sophisticated and advanced indicators to explore board governance quality. Third, although the monitoring and pressures from internal governance have been considered, executives are also exposed to the external market and policy environments. Environment dynamism may affect the choices of managers near retirement on fraud as well as the monitoring severity by internal governance, which are important to explore for enriching the existing literature. Last, our samples are derived from the construction firms in China. The fraudulent cases as well as perpetrators are defined according to the CSRC. This limits the generalization of our findings. Different contexts may result in unpredictable effects of career horizon and corporate governance due to various cultural

perceptions on career and success (Aguilera and Jackson 2003). Replicating this study using data on other contexts may be needed to verify our findings.

Data Availability Statement

Models used and data including top manager age, companies board size, independent director number, shareholder percentage held by blockholders and state as well as control variables are available from the corresponding author by request.

References

- Aiken, L. S., West, S. G., and Reno, R. R. (1991). *Multiple regression: Testing and interpreting interactions*. Sage Publications, Newbury Park, Calif.
- Alkhatib, O. J., and Abdou, A. (2018). "An Ethical (Descriptive) Framework for Judgment of Actions and Decisions in the Construction Industry and Engineering—Part I." *Science and Engineering Ethics*, 24(2), 585–606.
- Alutu, O. E., and Udhawuve, M. L. (2009). "Unethical Practices in Nigerian Engineering Industries: Complications for Project Management." *Journal of Management in Engineering*, 25(1), 40–43.
- Amason, A. C., and Sapienza, H. J. (1997). "The effects of top management team size and interaction norms on cognitive and affective conflict." *Journal of Management*, 23(4), 495–516.
- Ameyaw, E. E., Pärn, E., Chan, A. P. C., Owusu-Manu, D.-G., Edwards, D. J., and Darko, A. (2017). "Corrupt Practices in the Construction Industry: Survey of Ghanaian Experience." *Journal of Management in Engineering*, 33(6), 05017006.
- Anh, V. K., Tower, G., and Scully, G. (2011). "Corporate communication for Vietnamese listed firms." *Asian Review of Accounting*, 19(2), 125–146.
- Antia, M., Pantzalis, C., and Park, J. C. (2010). "CEO decision horizon and firm performance: An empirical investigation." *Journal of Corporate Finance*, 16(3), 288–301.
- Aoki, M. (1984). *The co-operative game theory of the firm*. Oxford university press.
- Barker, V. L., and Mueller, G. C. (2002). "CEO Characteristics and Firm R&D Spending." *Management Science*, 48(6), 782–801.
- Baucus, M. S. (1994). "Pressure, opportunity and predisposition: A multivariate model of corporate illegality." *Journal of Management*, 20(4), 699–721.
- Beasley, M. S. (1996). "An empirical analysis of the relation between the board of director composition and financial statement fraud." *Accounting review*, 443–465.
- Blau, P. M. (1977). *Inequality and heterogeneity: A primitive theory of social structure*. Free Press, New York.
- Bliese, P. D., Halverson, R. R., and Schriesheim, C. A. (2002). "Benchmarking multilevel methods in leadership: The articles, the model, and the data set." *The Leadership Quarterly*, 13(1), 3–14.
- Bowen, P. A., Edwards, P. J., and Cattell, K. (2012). "Corruption in the South African construction

571 industry: a thematic analysis of verbatim comments from survey participants.” *Construction*
572 *Management and Economics*, 30(10), 885–901.

573 Brown, J., and Loosemore, M. (2015). “Behavioural factors influencing corrupt action in the Australian
574 construction industry.” *Engineering, Construction and Architectural Management*, 22(4), 372–
575 389.

576 Carpenter, M. A., Geletkanycz, M. A., and Sanders, Wm. G. (2004). “Upper Echelons Research Revisited:
577 Antecedents, Elements, and Consequences of Top Management Team Composition.” *Journal*
578 *of Management*, 30(6), 749–778.

579 Clarke, D. C. (2003). “Corporate Governance in China: An Overview.” 14, 494–507.

580 Connelly, B. L., Hoskisson, R. E., Tihanyi, L., and Certo, S. T. (2010). “Ownership as a Form of
581 Corporate Governance.” *Journal of Management Studies*, 47(8), 1561–1589.

582 Conyon, M. J., and He, L. (2016). “Executive compensation and corporate fraud in China.” *Journal of*
583 *Business Ethics*, 134(4), 669–691.

584 CSRC. (2002). *Code of Corporate Governance for Listed Companies in China*. China Securities
585 Regulatory Commission.

586 Davidson, W. N., Xie, B., Xu, W., and Ning, Y. (2007). “The influence of executive age, career horizon
587 and incentives on pre-turnover earnings management.” *Journal of Management & Governance*,
588 11(1), 45–60.

589 Davies, G., and Olmedo-Cifuentes, I. (2016). “Corporate misconduct and the loss of trust.” *European*
590 *Journal of Marketing*, 50(7/8), 1426–1447.

591 Dechow, P. M., Sloan, R. G., and Sweeney, A. P. (1996). “Causes and Consequences of Earnings
592 Manipulation: An Analysis of Firms Subject to Enforcement Actions by the SEC.”
593 *Contemporary Accounting Research*, 13(1), 1–36.

594 Dong, W., Liao, S., and Zhang, Z. (2018). “Leveraging Financial Social Media Data for Corporate Fraud
595 Detection.” *Journal of Management Information Systems*, 35(2), 461–487.

596 Edum-Fotwe, F. T., and McCaffer, R. (2000). “Developing project management competency:
597 perspectives from the construction industry.” *International Journal of Project Management*,
598 18(2), 111–124.

599 Eisenberg, T., Sundgren, S., and Wells, M. T. (1998). “Larger board size and decreasing firm value in
600 small firms.” *Journal of Financial Economics*, 48(1), 35–54.

601 Fama, E. F., and French, K. R. (1992). “The Cross-Section of Expected Stock Returns.” *The Journal of*
602 *Finance*, 47(2), 427–465.

603 Fama, E. F., and Jensen, M. C. (1983). “Separation of ownership and control.” *The Journal of Law &*
604 *Economics*, 26(2), 301–325.

605 Fan, J. P. H., Wong, T. J., and Zhang, T. (2007). “Politically connected CEOs, corporate governance, and
606 Post-IPO performance of China’s newly partially privatized firms.” *Journal of Financial*
607 *Economics*, 84(2), 330–357.

608 Finkelstein, S., and Hambrick, D. C. (1990). “Top-management-team tenure and organizational outcomes:
609 The moderating role of managerial discretion.” *Administrative Science Quarterly*, 484–503.

610 Finkelstein, S., Hambrick, D. C., and Cannella, A. A. (2009). *Strategic leadership: Theory and research*
611 *on executives, top management teams, and boards*. Oxford University Press, USA.

612 Flannery, B. L., and May, D. R. (2000). “Environmental Ethical Decision Making in the U.S. Metal-

613 Finishing Industry.” *The Academy of Management Journal*, 43(4), 642–662.

614 Gavin, M. (2004). “Hierarchical Linear Models: Applications and Data Analysis Methods.”

615 *Organizational Research Methods; Thousand Oaks*, 7(2), 228–231.

616 Gomulya, D., and Boeker, W. (2016). “Reassessing board member allegiance: CEO replacement

617 following financial misconduct.” *Strategic Management Journal*, 37(9), 1898–1918.

618 Goodstein, J., Gautam, K., and Boeker, W. (1994). “The effects of board size and diversity on strategic

619 change.” *Strategic Management Journal*, 15(3), 241–250.

620 Gorton, G., and Schmid, F. A. (2000). “Universal banking and the performance of German firms.”

621 *Journal of Financial Economics*, Special Issue on International Corporate Governance, 58(1),

622 29–80.

623 Greve, P., Biemann, T., and Ruigrok, W. (2015). “Foreign executive appointments: A multilevel

624 examination.” *Journal of World Business*, 50(4), 674–686.

625 Grosvold, J., and Brammer, S. (2011). “National Institutional Systems as Antecedents of Female Board

626 Representation: An Empirical Study.” *Corporate Governance: An International Review*, 19(2),

627 116–135.

628 Guthrie, K., and Sokolowsky, J. (2010). “Large shareholders and the pressure to manage earnings.”

629 *Journal of Corporate Finance*, 16(3), 302–319.

630 Hair, J. F., Black, W. C., Babin, B. J., and Anderson, R. E. (2014). *Multivariate data analysis*. Pearson

631 Education Limited, Essex.

632 Hambrick, D. C., and Mason, P. A. (1984). “Upper echelons: The organization as a reflection of its top

633 managers.” *Academy of Management Review*, 9(2), 193–206.

634 Harris, D., and Helfat, C. (1997). “Specificity of CEO Human Capital and Compensation.” *Strategic*

635 *Management Journal*, 18(11), 895–920.

636 Hofmann, D. A., Griffin, M. A., and Gavin, M. B. (2000). “The application of hierarchical linear

637 modeling to organizational research.” *Multilevel theory, research, and methods in organizations:*

638 *Foundations, extensions, and new directions*, Jossey-Bass, San Francisco, CA, US, 467–511.

639 Holcomb, T. R., Combs, J. G., Sirmon, D. G., and Sexton, J. (2010). “Modeling levels and time in

640 entrepreneurship research: An illustration with growth strategies and post-IPO performance.”

641 *Organizational Research Methods*, 13(2), 348–389.

642 Hoskisson, R. E., Chirico, F., Zyung, J. (Daniel), and Gambeta, E. (2017). “Managerial Risk Taking: A

643 Multitheoretical Review and Future Research Agenda.” *Journal of Management*, 43(1), 137–

644 169.

645 Hou, W., and Moore, G. (2010). “Player and Referee Roles Held Jointly: The Effect of State Ownership

646 on China’s Regulatory Enforcement Against Fraud.” *Journal of Business Ethics*, 95(2), 317–

647 335.

648 Hox, J. J., Moerbeek, M., Schoot, R. van de, Moerbeek, M., and Schoot, R. van de. (2017). *Multilevel*

649 *Analysis : Techniques and Applications, Third Edition*. Routledge, New York.

650 Huang, J., and Kisgen, D. J. (2013). “Gender and corporate finance: Are male executives overconfident

651 relative to female executives?” *Journal of Financial Economics*, 108(3), 822–839.

652 Jensen, M. C., and Warner, J. B. (1988). “The distribution of power among corporate managers,

653 shareholders, and directors.” *Journal of Financial Economics*, The Distribution of Power

654 Among Corporate Managers, Shareholders, and Directors, 20, 3–24.

655 Kahneman, D., and Tversky, A. (1979). "Prospect Theory: Analysis of Decision Under Uncertainty." *Econometrica*, 47(2), 263–291.

656 Risk Taking." *Management Science*, 39(1), 17–31.

657 Kang, J. (2016). "Labor market evaluation versus legacy conservation: What factors determine retiring

658 CEOs' decisions about long-term investment?" *Strategic Management Journal*, 37(2), 389–405.

659 Kaplan, S. N., and Minton, B. A. (2012). "How Has CEO Turnover Changed?" *International Review of*

660 *Finance*, 12(1), 57–87.

661 Kish-Gephart, J. J., Harrison, D. A., and Treviño, L. K. (2010). "Bad apples, bad cases, and bad barrels:

662 meta-analytic evidence about sources of unethical decisions at work." *Journal of applied*

663 *psychology*, 95(1), 1.

664 Klein, K. J., and Kozlowski, S. W. J. (2000). "From Micro to Meso: Critical Steps in Conceptualizing

665 and Conducting Multilevel Research." *Organizational Research Methods*, 3(3), 211–236.

666 Krause, R., and Semadeni, M. (2014). "Last dance or second chance? Firm performance, CEO career

667 horizon, and the separation of board leadership roles." *Strategic Management Journal*, 35(6),

668 808–825.

669 Kuusela, P., Keil, T., and Maula, M. (2017). "Driven by aspirations, but in what direction? Performance

670 shortfalls, slack resources, and resource-consuming vs. resource-freeing organizational change."

671 *Strategic Management Journal*, 38(5), 1101–1120.

672 Lander, M. W., van Oosterhout, J. (Hans), Heugens, P., and Pruijssers, J. L. (2018). "Career stage

673 dependent effects of law firm governance: A multilevel study of professional-client misconduct."

674 *Human Relations*, 0018726718796157.

675 LeBreton, J. M., and Senter, J. L. (2008). "Answers to 20 Questions About Interrater Reliability and

676 Interrater Agreement." *Organizational Research Methods*, 11(4), 815–852.

677 Lee, C. J., Wang, R., Lee, C. Y., Hung, C. C. W., and Hsu, S. C. (2018). "Board structure and directors'

678 role in preventing corporate misconduct in the construction industry." *Journal of Management*

679 *in Engineering*, 34(2), 04017067.

680 Lemma, T. T., Negash, M., Mlilo, M., and Lulseged, A. (2018). "Institutional ownership, product market

681 competition, and earnings management: Some evidence from international data." *Journal of*

682 *Business Research*, 90, 151–163.

683 Liu, J., Zhao, X., and Li, Y. (2017). "Exploring the Factors Inducing Contractors' Unethical Behavior:

684 Case of China." *Journal of Professional Issues in Engineering Education and Practice*, 143(3),

685 04016023.

686 Loughran, T. (1997). "Book-to-Market across Firm Size, Exchange, and Seasonality: Is There an Effect?"

687 *Journal of Financial & Quantitative Analysis*, 32(3), 249–268.

688 Lu, J., and Shi, Z. (2018). "Does improved disclosure lead to higher executive compensation? Evidence

689 from the conversion to IFRS and the dual-class share system in China." *Journal of Corporate*

690 *Finance*, 48, 244–260.

691 Mallette, P., and Fowler, K. L. (1992). "Effects of Board Composition and Stock Ownership on the

692 Adoption of 'Poison Pills.'" *Academy of Management Journal*, 35(5), 1010–1035.

693 Mathieu, J. E., and Chen, G. (2011). "The Etiology of the Multilevel Paradigm in Management Research."

694 *Journal of Management*, 37(2), 610–641.

695 Matta, E., and Beamish, P. W. (2008). "The accentuated CEO career horizon problem: evidence from

696 international acquisitions." *Strategic Management Journal*, 29(7), 683–700.

- Maury, B., and Pajuste, A. (2005). "Multiple large shareholders and firm value." *Journal of Banking & Finance*, 29(7), 1813–1834.
- McClelland, P. L., Barker, V. L., and Oh, W.-Y. (2012). "CEO career horizon and tenure: Future performance implications under different contingencies." *Journal of Business Research*, 65(9), 1387–1393.
- McNeish, D., Stapleton, L. M., and Silverman, R. D. (2017). "On the Unnecessary Ubiquity of Hierarchical Linear Modeling." *Psychological Methods*, 22(1), 114–140.
- Oh, W.-Y., Chang, Y. K., and Cheng, Z. (2016). "When CEO Career Horizon Problems Matter for Corporate Social Responsibility: The Moderating Roles of Industry-Level Discretion and Blockholder Ownership." *Journal of Business Ethics*, 133(2), 279–291.
- Ou, A. Y., Jungmin (jamie) Seo, Dongwon Choi, and Hom, P. W. (2017). "When Can Humble Top Executives Retain Middle Managers? The Moderating Role of Top Management Team Faultlines." *Academy of Management Journal*, 60(5), 1915–1931.
- Owusu, E. K., and Chan, A. P. C. (2019). "Barriers Affecting Effective Application of Anticorruption Measures in Infrastructure Projects: Disparities between Developed and Developing Countries." *Journal of Management in Engineering*, 35(1), 04018056.
- Owusu, E. K., Chan, A. P. C., and Shan, M. (2019). "Causal Factors of Corruption in Construction Project Management: An Overview." *Science and Engineering Ethics*, 25(1), 1–31.
- Pfeffer, J. (1973). "Size, Composition, and Function of Hospital Boards of Directors: A Study of Organization-Environment Linkage." *Administrative Science Quarterly*, 18(3), 349–364.
- Pinto, J., Leana, C. R., and Pil, F. K. (2008). "Corrupt organizations or organizations of corrupt individuals? Two types of organization-level corruption." *Academy of Management Review*, 33(3), 685–709.
- Piquero, N. L., and Piquero, A. L. E. X. (2001). "Characteristics and sources of white-collar crime." *Crimes of privilege: Readings in white-collar crime*, Oxford University Press, Oxford, UK, 329–341.
- Raudenbush, S. W., and Bryk, A. S. (2002). *Hierarchical linear models: Applications and data analysis methods*. Sage Publications, Thousand Oaks, California.
- Rebeiz, K. S. (2001). "Corporate Governance and Role of CEO in Engineering Companies." *Journal of Management in Engineering*, 17(1), 14–23.
- Rebeiz, K. S., and Salameh, Z. (2006). "Relationship between governance structure and financial performance in construction." *Journal of Management in Engineering*, 22(1), 20–26.
- Richard, O. C., Barnett, T., Dwyer, S., and Chadwick, K. (2004). "Cultural diversity in management, firm performance, and the moderating role of entrepreneurial orientation dimensions." *Academy of Management Journal*, 47(2), 255–266.
- Rusch, J. (2016). "The social psychology of corruption." *Proceedings of 2016 OECD Integrity Forum, Fighting the Hidden Tariff: Global Trade Without Corruption*.
- Sen, P. K. (2007). "Ownership Incentives and Management Fraud." *Journal of Business Finance & Accounting*, 34(7–8), 1123–1140.
- Shan, Y. G. (2013). "Can Internal Governance Mechanisms Prevent Asset Appropriation? Examination of Type I Tunneling in China." *Corporate Governance: An International Review*, 21(3), 225–241.

- Shen, W., and Lin, C. (2009). "Firm profitability, state ownership, and top management turnover at the listed firms in China: A behavioral perspective." *Corporate Governance: An International Review*, 17(4), 443–456.
- Shi, W., Connelly, B. L., and Hoskisson, R. E. (2017). "External corporate governance and financial fraud: cognitive evaluation theory insights on agency theory prescriptions." *Strategic Management Journal*, 38(6), 1268–1286.
- Sonnenfeld, J. (1986). "Heroes in collision: Chief executive retirement and the parade of future leaders." *Human Resource Management*, 25(2), 305–333.
- Stiles, P. (2001). "The Impact of the Board on Strategy: An Empirical Examination." *Journal of Management Studies*, 38(5), 627–650.
- Tabish, S. Z. S., and Jha, K. N. (2011). "Analyses and evaluation of irregularities in public procurement in India." *Construction Management and Economics*, 29(3), 261–274.
- Thomsen, S., Pedersen, T., and Kvist, H. K. (2006). "Blockholder ownership: Effects on firm value in market and control based governance systems." *Journal of Corporate Finance*, 12(2), 246–269.
- Transparency International. (2011). *Bribe Payers Index -- 2011*. Transparency International.
- Troy, C., Smith, K. G., and Domino, M. A. (2011). "CEO demographics and accounting fraud: Who is more likely to rationalize illegal acts?" *Strategic Organization*, 9(4), 259–282.
- Wang, R., Lee, C. J., Hsu, S. C., and Lee, C. Y. (2018). "Corporate misconduct prediction with support vector machine in the construction industry." *Journal of Management in Engineering*, 34(4), 04018021.
- Weber, E. U., and Hsee, C. (1998). "Cross-Cultural Differences in Risk Perception, but Cross-Cultural Similarities in Attitudes Towards Perceived Risk." *Management Science*, 44(9), 1205–1217.
- Yang, D., He, Q., Cui, Q., and Hsu, S. C. (2018). "Organizational citizenship behavior in construction megaprojects." *Journal of Management in Engineering*, 34(4), 04018017.
- Zahra, S. A., Priem, R. L., and Rasheed, A. A. (2005). "The antecedents and consequences of top management fraud." *Journal of Management*, 31(6), 803–828.
- Zhang, B., Le, Y., Xia, B., and Skitmore, M. (2017). "Causes of Business-to-Government Corruption in the Tendering Process in China." *Journal of Management in Engineering*, 33(2), 05016022.
- Zhang, L., Ji, W., Tao, J., and Wang, Q. (2011). "Who Shall Leave? How CEO Preference and Power Affect Executive Turnover in Chinese Listed Companies." *Corporate Governance: An International Review*, 19(6), 547–561.
- Zhang, Z., Zyphur, M. J., and Preacher, K. J. (2009). "Testing Multilevel Mediation Using Hierarchical Linear Models: Problems and Solutions." *Organizational Research Methods*, 12(4), 695–719.
- Zou, J., Zillante, G., and Coffey, V. (2009). "Project Culture in the Chinese Construction Industry: Perceptions of Contractors." *Construction Economics and Building*, 9(2), 17–28.

Fig. 1 The Hypothesized Model

Fig. 2 Moderating Effect of Board Independence (BI) on Career Horizon (CH)-Top Management Fraud Relationship

Fig. 3 Moderating Effect of State Ownership (SO) on Career Horizon (CH)-Top Management Fraud Relationship

781

Table 1. Intra-class correlations (ICC) of relevant variables

Variable	ICC(1)	F Ratio for ICC(1)	ICC(2)
Individual Level			
Career horizon	0.9117	62.95***	0.9844
Tenure	0.7228	16.64***	0.9433
Total pay	0.3566	4.33***	0.7712
Ownership	0.8485	34.60***	0.9712
Firm Level			
Board independence	0.8221	28.74***	0.9652
Board size	0.6863	14.13***	0.9294
Blockholder ownership	0.8503	35.08***	0.9715
State ownership	0.5135	7.33***	0.8636
TMT size	0.7356	17.69***	0.9435
Firm size	0.9261	76.24***	0.9869
ROE	0.0152	1.09	0.0822
DER	0.7217	16.56***	0.9397
Percent of political	0.4025	5.04***	0.8075
Percent of female	0.7416	18.22***	0.9451
Average education	0.8066	26.02***	0.9617
Education diversity	0.5453	8.20***	0.8780
Average tenure	0.6189	10.74***	0.9070
SD of tenure	0.4523	5.95***	0.8351
Average total pay	0.6943	14.63***	0.9327
Average ownership	0.8187	28.10***	0.9644

782 Notes: † $p < 0.10$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

783

784

785

Table 2. Descriptive Statistics

Variable	N	Mean	SD	Minimum	Maximum
Year Level					
Fraud	3722	0.04	0.21	0.00	1.00
ROE	3722	0.09	0.5	-1.20	14.78
Individual Level					
Career horizon	1052	22.34	6.88	-5.00	43.50
Tenure	1052	49.08	40.96	0.00	228.00
Gender	1052	0.12	0.33	0.00	1.00
Education	1052	3.3	0.88	1.00	5.00
Political background	1052	0.08	0.27	0.00	1.00
Total pay	1052	12.64	1.74	0.00	14.91
Ownership	1052	5.17	7.29	0.00	23.08
CEO	1052	0.16	0.36	0.00	1.00
Board member	1052	0.32	0.47	0.00	1.00
Firm Level					
Board independence	70	0.4	0.07	0.33	0.69
Board size	70	8.56	1.36	5.67	13.83
Blockholder ownership	70	47.68	15.59	10.34	90.87
State ownership	70	0.06	0.12	0.00	0.57
TMT size	70	8.95	3.46	2.67	21.83
Firm size	70	7.91	1.86	2.70	12.57
DER	70	2.51	2.08	0.30	13.82
Percent of political	70	0.06	0.08	0.00	0.36
Percent of female	70	0.13	0.12	0.00	0.45
Average education	70	3.26	0.45	2.24	4.12
Education diversity	70	0.52	0.11	0.06	0.69
Average tenure	70	59.12	20.42	23.60	125.79
SD of tenure	70	34.76	13.98	9.36	76.38
Average total pay	70	12.96	0.54	11.50	14.13
Average ownership	70	10.06	7.59	0.00	20.60

Table 3. Collinearity Diagnostics and Pearson Correlations

Variable	VIF	1 Fraud	2 ROE	3 Career horizon	4 Tenure	5 Gender	6 Education	7 Political background	8 Total pay	9 Ownership	10 CEO	11 Board member	12 Board independence
2	1.019	-0.008	-										
3	1.3	0.114***	-0.003	-									
4	1.502	-0.087***	-0.017	-0.281***	-								
5	1.183	0.079***	-0.015	0.167***	-0.030†	-							
6	1.377	-0.008	-0.008	0.037*	-0.063***	0.064***	-						
7	1.164	0.023	-0.003	-0.056**	0.070***	0.025	0.111***	-					
8	1.276	-0.003	0.018	-0.042*	0.063***	-0.004	0.029†	0.052**	-				
9	1.912	-0.053**	0.035*	-0.037*	0.221***	0.076***	-0.075***	0.051**	0.190***	-			
10	1.488	0.071***	0.004	-0.070***	0.120***	-0.093***	0.012	0.056**	0.072***	0.118***	-		
11	1.588	0.107***	0.009	0.001	0.170***	-0.01	0.018	0.060***	0.059***	0.160***	0.550***	-	
12	2.534	-0.015	0.006	-0.251***	-0.049**	-0.071***	0.190***	0.040*	0.030†	-0.02	-0.023	-0.129***	-
13	1.639	-0.050**	-0.016	0.018	0.064***	-0.023	-0.060***	-0.088***	-0.026	-0.021	0.001	0.062***	-0.486***
14	2.039	0.02	0.005	-0.135***	-0.068***	-0.077***	0.125***	-0.003	0.067***	-0.01	-0.036*	-0.046**	0.353***
15	2.171	-0.080***	-0.029†	-0.166***	-0.075***	-0.120***	0.111***	-0.038*	-0.151***	-0.335***	-0.036*	-0.094***	0.281***
16	1.646	-0.035*	-0.027	-0.135***	-0.017	-0.108***	0.036*	-0.015	-0.076***	0.003	-0.139***	-0.216***	0.274***
17	3.625	-0.155***	0.011	-0.316***	0.066***	-0.140***	0.141***	0.035*	0.130***	0.074***	-0.068***	-0.159***	0.578***
18	1.737	-0.096***	-0.035*	-0.186***	0.121***	-0.129***	0.051**	0.044**	-0.001	-0.168***	-0.026	-0.046**	0.137***
19	1.336	0.105***	-0.016	0.039*	-0.02	0.023	0.089***	0.332***	0.008	-0.061***	0.007	0.004	0.070***
20	1.548	0.196***	-0.042*	0.210***	-0.055**	0.355***	-0.016	-0.011	0.021	0.201***	0.050**	0.101***	-0.199***
21	2.179	-0.063***	-0.007	-0.142***	-0.049**	-0.018	0.494***	0.069***	0.098***	-0.085***	0.002	-0.058***	0.402***
22	1.382	-0.001	0.069***	0.01	0.026	-0.01	-0.144***	0.044**	0.021	0.122***	-0.032†	-0.087***	0.068***
23	2.49	-0.154***	0.016	-0.197***	0.468***	-0.030†	-0.057**	0.01	0.095***	0.096***	-0.025	-0.033*	-0.110***
24	2.567	-0.099***	-0.013	-0.065***	0.305***	0.002	-0.098***	-0.046**	0.018	-0.091***	0.001	-0.045**	-0.206***
25	2.095	-0.116***	-0.008	-0.151***	0.055**	-0.013	0.169***	0.038*	0.421***	0.289***	-0.014	-0.044**	0.271***
26	2.599	-0.051**	0.028†	0.121***	-0.037*	0.096***	-0.099***	0.050**	0.181***	0.591***	0.003	0.052**	-0.189***

790 **Table 3.** Collinearity Diagnostics and Pearson Correlations (Continued)

Variable	13 Board size	14 Blockholder ownership	15 State ownership	16 TMT size	17 Firm size	18 DER	19 Percent of political	20 Percent of female	21 Average education	22 Education diversity	23 Average tenure	24 SD of tenure	25 Average total pay	26 Average ownership
13	-													
14	-0.232***	-												
15	-0.069***	0.362***	-											
16	0.062***	0.183***	0.333***	-										
17	-0.120***	0.500***	0.390***	0.481***	-									
18	0.128***	0.059***	0.365***	0.220***	0.443***	-								
19	-0.223***	-0.015	-0.088***	-0.036*	0.01	0.014	-							
20	-0.068***	-0.206***	-0.334***	-0.294***	-0.387***	-0.363***	0.051**	-						
21	-0.129***	0.264***	0.225***	0.074***	0.301***	0.102***	0.145***	-0.052**	-					
22	-0.076***	-0.016	0.005	0.244***	0.158***	-0.070***	0.125***	-0.01	-0.273***	-				
23	0.133***	-0.146***	-0.173***	-0.057**	0.128***	0.249***	-0.006	-0.096***	-0.104***	0.023	-			
24	0.182***	-0.456***	-0.146***	-0.046**	-0.097***	0.224***	-0.095***	-0.008	-0.190***	-0.026	0.648***	-		
25	-0.139***	0.293***	-0.008	0.021	0.408***	0.033*	-0.035*	-0.027	0.383***	0.011	0.118***	-0.078***	-	
26	0.007	-0.097***	-0.522***	-0.053**	-0.068***	-0.286***	-0.006	0.264***	-0.191***	0.048**	-0.053**	-0.137***	0.291***	-

791

792 Notes: † p < 0.10; * p<0.05; ** p<0.01; *** p<0.001. All variables in the three levels are included here. For collinearity diagnostics and Pearson correlations, the data in individual level

793 and firm level was disaggregated to year level (Ou et al. 2017). Thus, N=3722 observations for the two tests.

Table 4. Results of Hierarchical Linear Modeling for Top Management Fraud

Variable	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6		Model 7	
	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.
Intercept	-7.043***	0.851	-7.303***	0.858	-7.350***	0.867	-7.300***	0.856	-7.286***	0.861	-7.469***	0.890	-7.720***	0.937
Firm Level														
Firm size	-0.341	0.234	-0.349	0.241	-0.347	0.243	-0.347	0.241	-0.349	0.242	-0.360	0.242	-0.380	0.244
Board size	0.184	0.259	0.167	0.267	0.157	0.270	0.160	0.268	0.169	0.265	0.190	0.267	0.225	0.278
Board independence	8.710	5.590	8.379	5.788	8.629	5.885	8.344	5.792	8.417	5.746	9.421†	5.523	11.343*	5.335
TMT size	0.065	0.113	0.066	0.115	0.070	0.117	0.066	0.116	0.067	0.115	0.069	0.117	0.083	0.121
State ownership	-10.287*	4.555	-11.132*	4.729	-11.308*	4.757	-11.113*	4.713	-11.099*	4.744	-14.697**	4.569	-17.620**	4.932
DER	0.356*	0.163	0.376*	0.169	0.384*	0.172	0.376*	0.169	0.374*	0.168	0.350*	0.172	0.324†	0.178
Percent of political	1.043	4.367	0.051	4.517	0.088	4.566	0.094	4.556	0.079	4.497	-0.283	4.444	-1.267	4.545
Percent of female	5.381†	3.055	5.511†	3.126	5.460†	3.178	5.495†	3.127	5.637†	3.064	5.653†	3.082	6.002†	3.100
Average education	-1.791†	0.931	-1.882†	0.955	-1.888†	0.965	-1.884†	0.956	-1.872†	0.959	-1.917*	0.947	-1.947†	0.973
Education diversity	2.166	4.448	2.596	4.656	2.697	4.774	2.588	4.659	2.620	4.646	2.577	4.603	3.079	4.781
Average tenure	-0.044	0.027	-0.046	0.028	-0.047	0.029	-0.046	0.028	-0.046	0.028	-0.045	0.028	-0.045	0.028
SD of tenure	0.012	0.038	0.009	0.039	0.011	0.039	0.009	0.039	0.010	0.038	0.009	0.038	0.010	0.037
Average total pay	0.585	0.656	0.673	0.670	0.683	0.678	0.668	0.672	0.663	0.671	0.672	0.663	0.641	0.666
Average ownership	-0.073	0.055	-0.083	0.057	-0.080	0.057	-0.082	0.056	-0.082	0.057	-0.088	0.057	-0.094	0.057
Blockholder ownership	0.032	0.029	0.034	0.030	0.034	0.031	0.034	0.030	0.032	0.029	0.033	0.029	0.032	0.030
Individual Level														
Career horizon			0.060**	0.018	0.061**	0.017	0.060**	0.018	0.061**	0.020	0.094***	0.020	0.115***	0.021
Tenure	-0.011†	0.006	-0.009†	0.006	-0.009	0.005	-0.009†	0.005	-0.010†	0.005	-0.009	0.006	-0.010†	0.006
Gender	0.632*	0.308	0.595*	0.284	0.596*	0.273	0.592*	0.278	0.560†	0.294	0.583*	0.292	0.571*	0.285
Education	-0.029	0.114	-0.049	0.115	-0.070	0.115	-0.053	0.121	-0.045	0.114	-0.072	0.121	-0.095	0.119

Political background	0.399	0.519	0.711	0.533	0.664	0.544	0.682	0.519	0.750	0.503	0.626	0.536	0.768	0.556
Total pay	1.443**	0.494	1.596**	0.502	1.652**	0.514	1.598**	0.501	1.581**	0.514	1.539**	0.491	1.614**	0.526
Ownership	-0.023	0.027	-0.022	0.027	-0.019	0.026	-0.022	0.027	-0.015	0.028	-0.029	0.027	-0.016	0.028
CEO	0.063	0.287	0.265	0.339	0.282	0.333	0.270	0.342	0.212	0.354	0.392	0.351	0.398	0.376
Board member	0.871*	0.346	0.779*	0.323	0.747*	0.323	0.777*	0.321	0.806*	0.331	0.732*	0.335	0.697*	0.349
Year Level														
ROE	0.145	0.136	0.145	0.138	0.149	0.140	0.146	0.139	0.143	0.137	0.135	0.133	0.125	0.130
Year dummies	Yes		Yes		Yes		Yes		Yes		Yes		Yes	
Cross-level interactions														
Career horizon × Board independence					-0.606*	0.303							-1.222*	0.48
Career horizon × Board size							0.003	0.017					-0.023	0.016
Career horizon × Blockholder ownership									0.002	0.002			0.002	0.001
Career horizon × State ownership											0.952*	0.401	1.401**	0.49
-2 log likelihood	7993.678		8027.562		8094.456		8070.414		7950.706		7887.768		7818.618	

Notes: † p < 0.10; * p<0.05; ** p<0.01; *** p<0.001. The results of multilevel logit modeling are reported, and the coefficients are generated from the estimation of the Unit-specific model with robust standard errors. The robust standard errors are shown in parentheses. The sample sizes are 3722 in year level, 1052 in individual level, and 70 in firm level.