Received: 18 February 2022 | Revised: 26 August 2023 | Accepted: 30 August 2023

DOI: 10.1111/corg.12560

ORIGINAL ARTICLE

WILEY

Does the age of compensation committee members matter for CEO compensation?

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Abstract

Research Question/Issue: We examine the impact of the age of compensation committee (CC) members on CEO compensation. Sociological theory suggests that age is a significant demographic factor influencing behavior. We argue that monitoring intensity increases with age because older directors are more likely to commit to their fiduciary duties.

Research Findings/Insights: Using FTSE 350 firms for the period 2002 to 2017, we find that CC members' age is negatively associated with the level of CEO pay but positively associated with pay–performance sensitivity after controlling for risk aversion attitude, experience in board monitoring, knowledge of the firm, and other firm and CEO characteristics. The relationships remain robust to alternative measures for age and compensation, using two-stage least squares and high-dimensional fixed effects models. Consistent with the view that older individuals tend to hold higher ethical standards and concomitant closer monitoring, we find that age effects are sensitive to the influence of ethical factors and are strongest for those firms for which intense monitoring is most needed. This suggests that age operates via older directors carrying out their roles more assiduously. We further show that our findings are less likely to be driven by director reputational effects, and the relationship between CC member age and CEO compensation persists even when we control for multiple dimensions of culturally inherited attributes of the CC members.

Theoretical/Academic Implications: Despite the large literature on the influence of demographic characteristics on corporate governance, this study is the first on the monitoring effect of CC members' age. It contributes to the literature on the influence of demographic characteristic. It also contributes to the literature on CEO compensation by identifying a demographic factor—age—as a determinant of CEO pay, after controlling for the economic and corporate governance variables of the firm.

Practitioner/Policy Implications: This study highlights the role of demographic factors in explaining the monitoring of the CEO compensation contracting process and provides timely evidence on the recent regulatory changes.

KEYWORDS
corporate governance, age, CEO compensation, compensation committee, monitoring intensity

1 | INTRODUCTION

CEO compensation has consistently attracted attention from business, academia, and policymakers. In the United Kingdom, in particular, this topic has come under the spotlight in recent years, and regulators have intensified reforms in response to calls from the media and stakeholders to curb "excessive" CEO compensation. The literature documents multiple corporate governance factors influencing CEO compensation. However, there is limited research on the role of the compensation committee (hereafter CC), which is the body directly responsible for setting the pay of the CEO. In the literature, several studies examine the association between the independence of the CC and the level of CEO pay, or pay–performance sensitivity (e.g., Anderson & Bizjak, 2003; Bebchuk et al., 2010; Daily et al., 1998; Newman & Mozes, 1999). Other studies examine the quality of the CC, the CC composition, CC processes, and the task separation between the different board committees (e.g., Das et al., 2020; Hermanson et al., 2012; Laux & Laux, 2009; Sun & Cahan, 2009). Malsch et al. (2012) adopt a cultural perspective to examine how CC members' ways of thinking and acting affect compensation outcomes.

Research in the social sciences has demonstrated the importance of demographic factors as influences of individual behavior and, in turn, therefore of corporate management and governance activities (e.g., BenAmar et al., 2013; Hambrick et al., 1996; Hambrick & Mason, 1984; Kosnik, 1990; Pfeffer, 1981, 1985). Yet our understanding of whether demographic characteristics of the CC affect CEO compensation is limited. In a related area, Dao et al. (2013) examine the effect of the age of the audit committee on the cost of equity capital. However, such factors are rarely examined for CC members, with a few exceptions that have explored gender diversity and the tenure length of CC members (Bugeja et al., 2016; Harris et al., 2019; Vafeas, 2003). The potential importance of age, as a determinant of CEO compensation, remains unexplored.

To bridge this gap, we investigate whether the age of the CC members affects CEO compensation. To the best of our knowledge, no study has investigated the effects of the age composition of CCs. Existing research suggests that people acquire higher ethical standards as they age (e.g., Dawson, 1997; Deshpande, 1997; Mudrack, 1989; Pfeffer, 1985; Rhodes, 1983). Building upon these findings in sociological and psychological research, studies on corporate management and governance have considered the possibility of an age effect with regard to the principal–agent problem. As an example, the age of CEOs has been found to be positively related with higher quality financial reporting, suggesting that higher ethical, and more conservative, standards are possessed by older people (H.-W. Huang et al., 2012). In contrast, firms with younger CEOs are more likely to experience stock price crashes (Andreou et al., 2017). If age affects ethical standards and behavior, one might conjecture that the age of the compensation monitors—that is, of the CC members—might also influence their deliberations concerning CEO compensation.

We suggest that age may affect the monitoring activities of CC members in two ways. First, the fulfillment of fiduciary duties by CC members not only relies on statutory regulations but is also guided by the individuals' own ethical standards. Although "high levels" of CEO compensation may be justifiable on economic grounds—reflecting economic efficiency—there are also ethical implications (see, e.g., Edmans et al., 2017; Neeley & Boyd, 2010; Piketty, 2014; Piketty & Saez, 2003; Rost & Weibel, 2013; Wilhelm, 1993). Older CC members may be more likely to respond to these, and to restrain CEO pay. Second, directors themselves also face agency problems and may be led by their own interests. The extent to which agents act in an ethical manner is affected by the costs and benefits of taking various actions (Trautmann et al., 2013). Older committee members may be less likely to be concerned with the prospect of losing out on future directorships by being overly strict and may be more likely to attempt to rein in compensation settlements and monitor CEO pay more intensively. Alternatively, older members approaching retirement may in fact be less diligent in terms of their monitoring activities and may lack the zeal of younger members. It is an empirical question which of the opposing effects of age dominates.

We examine the effect of CC members' age on CEO compensation by focusing on two important aspects, the level of pay and the pay–performance sensitivity. These two aspects serve as a major focus of prior research into agency problems associated with CEO compensation (e.g., Chhaochharia & Grinstein, 2009; Gormley et al., 2013; Hagendorff & Vallascas, 2011; Q. Huang et al., 2017). In addition, the level of CEO compensation and the pay–performance sensitivity both have ethical implications. High executive pay can adversely affect income inequality and may foster perceptions of injustice within the company (Piketty, 2014; Piketty & Saez, 2003); and low sensitivity of CEO compensation to firm performance may also harm employee morale (Wilhelm, 1993). Therefore, CC members with higher ethical standards may be concerned with both these constituents of the compensation package.

Our sample of firms is collected from UK FTSE 350 index companies for the period 2002 to 2017. We find that CC members' age is negatively associated with the level of CEO pay but positively associated with pay–performance sensitivity after controlling for the attitude to risk, experience in board monitoring, knowledge of the firm, and other firm and CEO characteristics. The relationship remains robust to alternative measures for CEO compensation (such as excess compensation and scaled total compensation) and dimensions of age (such as the age of the CC chair).

Age may be associated with other qualities or characteristics that simply parallel the effects of age on compensation. We make every effort to determine the true effect of age, by including an extensive set

of explanatory variables to minimize the problem of omitted variables and hard-to-measure factors (such as corporate culture, history, and conventional recognition of value). To the extent that these factors are systematically related to the age of CC members, their neglect would of course bias our estimates of the effect of CC member age on CEO compensation. We also use two-stage least squares (2SLS) and models with fixed effects to alleviate endogeneity concerns and potential problems with omitted variables. Our findings remain robust.

To determine whether the observed association between CC member age and CEO compensation results from the higher ethical standards that we posit older directors hold, we consider whether the effect of age is nullified when the CC members have culturally determined lower ethical standards. If age acts via ethical standards, the effects of age might be expected to be weaker for such members. Our results show that the association between the age of CC members and CEO compensation is sensitive to cultural heritage, as proxied by the Corruption Perceptions Index (CPI). We also observe more pronounced effects of age in firms that fare less well in terms of social responsibility. We further examine the cross-sectional effects of age by conducting sub-sample analyses in which we differentiate firms by their relatively high or low monitoring needs. We find that the age effect is pronounced in firms facing lower financial constraints and with weaker governance. Yet the age effect disappears in the sub-sample of firms requiring lower levels of monitoring. This finding consolidates our argument that the observed associations between CC members' age and CEO compensation are likely driven by monitoring intensity derived from the effect of age.

An alternative explanation of the effect of age could be reputation. Reputation is a factor that may well be highly correlated with age and requires careful treatment. We test for reputational effects by dividing the sample into sub-samples based on whether the majority of CC members hold more than one directorship and weighing CC members' age by the number of directorships that CC members hold. Collectively, our findings suggest that it is perhaps unlikely that directors' reputational effects confound our results. We then take further steps in investigating whether the relationship between CC members' age and CEO compensation is dominated by culturally inherited attributes of the CC members and show that our findings hold up even once allowance is made for multiple dimensions of CC members' cultural heritage.

Our study makes a number of contributions. First, it provides insights into the influence of the demographic factor of age in corporate governance, and in particular, the value of the age of the CC committee in delivering closer monitoring of the CEO compensation contracting process. Demographic characteristics have for the most part been investigated in relation to management performance and corporate policies, with more attention slowly being paid to board monitoring activities. Current research is applying these sociological and psychological findings on the influence of demographic characteristics to boards of directors, but to the best of our knowledge, this is the first study on the effect of CC members' age.

Second, we contribute to the literature on CEO compensation by identifying a demographic factor—CC members' age—as a determinant of CEO pay. We control for other CC characteristics, including those that are likely to be closely related to age, such as CC members' experience and tenure. We also control for CC members' gender and the diversity of the CC. After controlling for these variables, as well as for economic and corporate governance variables of the firm, we find evidence that a CC with older members is less likely to grant CEOs higher levels of compensation and that compensation is more sensitive to CEO performance.

Third, we provide evidence on likely channels by which CC member age may affect CEO compensation. The evidence suggests it is via older CC members having higher ethical standards, and this chimes with much of the literature we cite. Naturally, the evidence we are able to bring to bear on the channel of influence is more tentative than the finding that there is an age effect.

Fourth, our study has implications for policymakers, who generally focus on the independence of boards and board committees, as reinforced by recent calls for greater diversity on such boards and committees. The updated 2018 UK Corporate Governance Code highlights that the composition of the board should consider social and ethnic backgrounds, and cognitive and personal strengths.[1] Our study provides pertinent evidence on the age effect, which is closely related to an individual's social and ethnic attitudes. This suggests that age may be a relevant factor when reforming corporate governance.

2 | LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

2.1 | CC and CEO compensation

The CC has direct responsibility for setting CEO compensation. Some studies have examined various aspects of the CC, and how these influence CEO compensation. Independence of the members comprising the CC has attracted the attention of researchers and regulators alike. Yermack (1997) finds that CEOs exploit their power to increase the value and lower the riskiness of their compensation when they serve on their own CCs. Similarly, Newman and Mozes (1999) find that when insiders sit on the CC, the CEO is awarded greater compensation, at the expense of the shareholders. Yet Daily et al. (1998) find no evidence of a systematic relationship between CC independence and CEO compensation. This finding is supported by Anderson and Bizjak (2003), who report that greater committee independence does not affect executive pay. Moreover, they do not find that committees consisting of insiders, or including the CEO, award "excessive" pay, or lower overall incentives. Bebchuk et al. (2010) observe that firms that do not have an independent CC with an outside blockholder on it are more likely to use opportunistic timing in granting options to CEOs.

In addition to committee independence, Sun and Cahan (2009) and Sun et al. (2009) construct a multidimensional measure of CC quality and report a positive effect of quality on CEO cash compensation and stock option grants. Conyon et al. (2019) find that CC size is positively related to CEO total compensation. Laux and Laux (2009) relate the structure of board committees to the pay–performance sensitivity of CEO compensation and suggest that the separation of board functions

between committees leads to stronger pay–performance sensitivity of CEO compensation. Malsch et al. (2012) adopt a cultural perspective and provide important insights into the role of the shared values and beliefs of the CC members, and how these affect compensation outcomes. Hermanson et al. (2012) interviewed 20 US public company CC members to understand the compensation process. They show that "fairness" and "balance" are the notions mostly commonly mentioned by committee members in the compensation process.

There has been limited research on whether the demographic characteristics of the CC affect CEO compensation. Demographic factors may include innate characteristics, such as social, racial, or cultural diversity, or acquired characteristics, related to life experience (BenAmar et al., 2013). Demographics such as gender, tenure, age, and ethnicity have long been considered in terms of their potential influence on corporate management and governance (e.g., BenAmar et al., 2013; Hambrick et al., 1996; Hambrick & Mason, 1984; Kosnik, 1990; Pfeffer, 1981, 1985). However, the scope of application of these factors has arguably been somewhat limited. For example, Bugeja et al. (2016) and Vafeas (2003), and Harris et al. (2019) study gender diversity and the tenure length of directors on CCs, respectively. Bugeja et al. (2016) explore the relationship between gender-diverse CCs and the level of CEO pay, suggesting that CEO total pay is negatively associated with the proportion of female members on CCs. Vafeas (2003) finds that the presence of senior directors (i.e., those with longer tenures of directorship) on CCs is associated with higher pay for the CEO, especially when the CEO is more powerful in the firm. Thus, in the emerging stream of research on the demographic characteristics of CCs, one potentially important aspect—age—has been overlooked.

2.2 | Age and ethics

The social and behavioral psychology literature attests to the importance of age as a determinant of ethical standards and behavior. Barnett and Karson (1989), in a study using 513 employees of an insurance company, report a positive relationship between age/career stage and ethical standards. Mudrack (1989) investigates age-related differences in Machiavellianism[2] among adults, finding that older individuals have a greater and longer exposure to traditional culture and complicated situations and so behave more ethically. Similarly, Arlow (1991) finds that younger respondents to his survey obtain higher Machiavellian scores than older ones. Borkowski and Ugras (1998), in a meta-analysis of 35 studies that include age as a factor, suggest that as age increases, individuals' attitudes and behaviors seem to become more ethical. Moreover, Brady and Wheeler (1996) affirm that age is a powerful determinant of ethical disposition.

A similar relationship between age and ethics is found in business contexts. For example, Ruegger and King (1992), in an experimental study of the determinants of student business ethics, find that age is a significant factor in making ethical decisions and that older individuals are more ethical than younger ones. Terpstra et al. (1993) investigate the influence of personality and demographics on individuals' ethical decisions related to insider trading and find that younger individuals are more inclined to engage in this practice than older individuals. Further, Deshpande (1997) finds that how various business practices are perceived differs between older managers, who are more ethically conservative, and younger respondents. Dawson (1997) reports that ethical awareness is higher in sales professionals in the 40- to 50-year age group compared with sales people in their 20s. Chan et al. (2002) affirm that younger Chinese executives are more inclined to tolerate less ethical or even illicit activities for profit than their older counterparts.

Studies have also examined CEO age and corporate policies. These suggest that age influences firm policies and that greater age may alleviate agency problems. For example, H. W. Huang et al. (2012) document that CEO age is positively associated with higher quality financial reporting, proxied by meeting or beating analyst earnings forecasts and financial restatements. They interpret their results as consistent with the finding in social psychology that individuals become more ethical and conservative as they age. Consistent with risk-taking behavior decreasing as CEOs become older, Serfling (2014) finds that CEOs reduce firm risks as they age. Linking the age effect to CEOs' compensation incentives, Yim (2013) demonstrates a negative effect of CEO age on the propensity for firm acquisitions, while Andreou et al. (2017) show that firms with younger CEOs are more likely to experience stock price crashes. Their incentives-based explanation for the relation between CEO age and certain firm activities suggests that younger CEOs are more motivated to pursue activities whose anticipated financial benefits are large or that may have a permanent effect on the rest of their career.

Given the evidence on the importance of age on behavior, and CEO agency problems, an important question to ask is whether or not the age of the parties responsible for overseeing agency problems has a significant effect on outcomes. A natural domain in which to study this question is to examine the CC, since this body directly determines and monitors CEO compensation.

2.3 | Hypothesis development

In this paper, we argue that age affects the monitoring activities of CC members in two ways. First, CC members operate under a corporate governance code specified in the Companies Act. The Act imposes fiduciary duties on them to act in good faith, with reasonable care, skills, and diligence and in the best interests of the firm for the benefit of its members as a whole.[3] Therefore, the fulfilment of fiduciary duties by CC members relies not only on statutory restrictions but also on the ethical standards they uphold. Without proper acknowledgment of ethical values, it is unlikely that directors would be able to fulfill their fiduciary duties. Although the evidence on why older individuals are more likely to hold higher ethical standards than younger people is not exhaustively examined (Mudrack, 1989), there is a growing body of literature in finance and economics investigating how beliefs and values affect economic outcomes (Ellahie et al., 2017; Guiso et al., 2006, 2009, 2015). Given the ongoing debate over large CEO compensation and the increasing disparity between CEO pay and that of other employees, as

deliberated in the business press[4] and the academic literature (e.g., Bebchuk et al., 2010; Bebchuk & Fried, 2004), many have called for directors to be more accountable to shareholders (e.g., Bebchuk & Fried, 2006, 2009). In this environment, CC members discharging their fiduciary duties are pivotal. If the assertion of the age–ethics relation is substantiated, older CC members may be found to be more diligent in the execution of their fiduciary duty than their younger counterparts and, therefore, more likely to curb CEO pay.

Second, directors also face agency problems with regard to their own interests. Prior research finds that boardroom disputes may occur over a range of issues but can generally be traced back to power struggles between directors and top management (Agrawal & Chen, 2017). If directors have concerns over losing their directorships and the possibility of obtaining future directorships and as a result yield to the power of the CEO, they will be less likely to carry out intense monitoring and to design stringent compensation plans. Trautmann et al. (2013) suggest that ethical behavior is influenced by the costs and benefits of taking various decisions. Challenging the CEO may not only jeopardize directors' board seats but may also endanger valued personal and professional relationships (Daily et al., 1998). Because older committee members are less likely to have concerns over losing out on future directorships and because the costs of losing professional relationships decline as they age, withstanding CEO pressure and conducting tough pay negotiations will be less costly for them. Therefore, older committee members may be more likely to challenge the CEO's power and closely monitor their pay and performance than their younger counterparts.

With regard to CEO compensation, the level and the sensitivity of CEO wealth to firm performance have both received significant attention—whether in academic literature or in public discourse. These two dimensions of CEO compensation would appear to be not only relevant in terms of the pursuit of shareholder value maximization but also involve ethical considerations that could potentially affect non-shareholding stakeholders. In the past two decades, the level of CEO compensation has received the most criticism (Edmans et al., 2017; Hermanson et al., 2012). "Excessive" pay may reduce shareholders' wealth but also interacts with social welfare and political economy issues, because of the externality that high executive pay has on income inequality (see, e.g., Piketty, 2014; Piketty & Saez, 2003). Within the company, the perceptions of injustice related to the "excessive" nature of executive compensation may have negative effects on employee behavior and be counterproductive and detrimental to organizational effectiveness (Neeley & Boyd, 2010). Thus, CC members with high ethical standards may view constraining the level of CEO pay not just as a way of fulfilling their fiduciary duty to shareholders who hired them but also as a reflection of broader concerns of societal inequality and social responsibility. We then propose our first hypothesis as follows:

> **H1.** The age of CC members is negatively associated with the level of CEO compensation.

The sensitivity of CEO compensation to firm performance, linking CEO compensation to firm performance, is considered the mechanism to alleviate agency problems by aligning managers' interests with those of shareholders (Edmans et al., 2017). However, CEO compensation goes beyond economic efficiency arguments, and its determination and consequence involve social norms (Edmans et al., 2017; Piketty, 2014; Piketty & Saez, 2003; Rost & Weibel, 2013). Morale, loyalty, and productivity are eroded when CEO compensation bears little relationship to firm performance (Wilhelm, 1993). Given the ethical considerations, CC members with high ethical standards are likely to tighten the relationship between CEO compensation and firm performance when designing the compensation package. We therefore propose our second hypothesis as follows:

> **H2.** The age of CC members is positively associated with the sensitivity of CEO wealth to firm performance.

Despite evidence in prior literature suggesting the relation between age and ethics, the association between the age of CC members and CEO compensation may be more nuanced than it first appears. There are at least three counterarguments that may suggest a different direction for the association. First, following evolving governance reforms and regulatory changes, board monitoring expectations have undergone significant changes over the last two decades—not only in the United Kingdom but also worldwide. A committee member's age may be an indicator of their openness to the new governance environment and the demanding monitoring role of directors. Second, older directors approaching retirement may commit less time and effort to their duties compared to their younger counterparties, since their future opportunities and wealth are less dependent on their current directorships. In addition, older directors may face declining energy, physical strength, and mental acumen, which would undermine their monitoring and advisory functions (Masulis et al., 2020).[5] It is, therefore, an empirical matter which of the two sets of opposing effects of age dominate.

3 | SAMPLE SELECTION

We start our sample construction with the UK's FTSE 350 index covering the period between 2002 and 2017. Given the potential concern over survivorship bias, we first index all the constituents identified in any year of our sample period and then track forwards and backwards over the whole period of our sample, regardless of whether the companies were index members in the other years.[6]

All CEO compensation data, CEO attributes, board characteristics, and CC characteristics are drawn from BoardEx. Using these data, we manually identify the CEO of each company. We then merge these data with the Datastream database, from which we obtain all of our accounting and financial market data. Data on risk attitude and other cultural heritage aspects are obtained from Hofstede et al. (2010). After excluding firms with missing values for compensation details, accounting values, market values, or corporate governance information, we are left with 4617 firm-year observations in our main sample. To reduce the influence of outliers, we winsorize all the financial variables at the 1st and 99th percentiles.

4 | RESEARCH DESIGN

Our main interest lies in whether a demographic characteristic—the age of CC members—influences CEO total compensation and CEO pay–performance sensitivity. We calculate CEO total compensation as the per-year sum of base salary, annual bonus, other compensation, the value of stock options granted during the fiscal year, and the value of restricted stock or other equity granted during the fiscal year. Then, we take the natural logarithm of the sum as our measure for the level of CEO compensation, *Log*(*TC*), by following Chhaochharia and Grinstein (2009) and Gormley et al. (2013). In line with Hagendorff and Vallascas (2011) and Shi et al. (2019), we measure CEO pay–performance sensitivity by delta (*Delta*), which is computed as the pound change in the CEO's firm-based wealth for a 1% change in the firm's stock price in millions.

4.1 | Model specification and variables

To test our hypotheses, we estimate the following regression model to examine the relationship between the age of CC members and the level of CEO compensation and CEO pay–performance sensitivity:

$$Y_{i,t} = \beta_0 + \beta_1 CC\_Age_{i,t} + \gamma_1 X_{i,t} + \theta_1 Z_{i,t-1} + \varepsilon_{i,t}, \quad (1)$$

where the dependent variable $Y_{i,t}$ is either $Log(TC)_{i,t}$, the natural logarithm of total compensation for firm i in year t, or $Delta_{i,t}$, the pound change in the CEO's personal firm-based wealth with respect to a 1% change in the stock price. CEO firm-based wealth is calculated as the value of all stock ownership, unexpired stock options, and long-term incentive plans (LTIPs) accumulated and held by the CEO to date. The test variable is the age of the CC members (CC_Age_{it}), which is defined as the average age of the CC members. We include two sets of control variables that are likely to influence CEO total compensation, CEO pay–performance sensitivity and the monitoring of CC. $X_{i,t}$ in the equation represents the sets of control variables related to CC members' and CEOs' characteristics, and $Z_{i,t-1}$ represents lagged firm-level fundamentals and board characteristics. We discuss the details of these controls in the following paragraphs.

4.1.1 | Other attributes of the CC members and CC characteristics

Attributes other than the age of the CC may also play a determining role in the design of CEO compensation. Thus, we include variables that relate to risk attitude, experience, and expertise of the CC members and that capture the structure of the CC. Prior literature suggests that age can be associated with risk preferences and older managers tend to be associated with more conservative decisions than younger ones (Sundaram & Yermack, 2007; Vroom & Pahl, 1971). Therefore, lower CEO compensation or lower sensitivity between CEO pay and stock price performance could result from risk-averse older CC members' conservative attitude on equity incentives. Since we argue that the older CC members may provide better monitoring of CEO compensation because of their higher ethical standards, we control for risk aversion attributes that could potentially confound the ethical effect with the age effect. We employ Hofstede et al.'s (2010) uncertainty avoidance index (UAI) as a proxy for CC members' risk aversion attitude. The UAI captures a society's tolerance for uncertainty and ambiguity. Individuals with a strong UAI will try to control the future and maintain more rigid codes of belief and behavior (Hofstede et al., 2010). CC members with a strong UAI may prefer to avoid future uncertainty and ambiguity for their firms and may thus tend to grant lower compensation and a lower percentage of equity compensation. Therefore, we construct UAIs to capture CC members' risk preferences (*CC_UAI*) by computing the average UAI of the CC members based on the country-level Hofstede UAI according to each member's country origin. We acknowledge that country-level characteristics may not represent individual directors' characteristics perfectly; however, as Becker (1996) states: "Individuals have less control over their culture than over other social capital. They cannot alter their ethnicity, race or family history, and only with difficulty can they change their country or religion. Because of the difficulty of changing culture and its low depreciation rate, culture is largely a 'given' to individuals throughout their lifetimes." (p. 16). In this spirit, we believe, cultural characteristics that are inherited by an individual from previous generations are likely to remain invariant over their lifetime. We therefore follow Pan et al. (2017) to use an individual's last name to infer their cultural heritage. With a given last name, we obtain a distribution of countries of origin for each last name and then employ the UAI index developed by Hofstede et al. (2010) for each country.

Because age could arguably proxy experience, knowledge, and power, we also construct two proxies to control for these factors, namely, *CC_Experience* and *CC_Tenure*. *CC_Experience* captures the monitoring experience of the CC members and is measured as the percentage of CC members who sit on over three public boards.[7] *CC_Tenure* captures the extent of CC members' knowledge of the firm in which they serve and is measured as the natural logarithm of average number of years that the CC members have been serving on this particular CC. Age dissimilarity can also be a determining factor related to age. Sociology theory on the "homophily principle" and in-group bias suggests that people generally prefer to interact and communicate with others who are similar to themselves. Individuals use demographic attributes, such as age, to define themselves as members of a social group, tending to treat in-group members more favorably (McPherson et al., 2001; Tajfel, 1978). Because age is a significant demographic factor that helps people to identify their groups, board members of a similar age to the CEO may demonstrate reduced governance effectiveness and monitoring intensity (Goergen et al., 2015). Therefore, we control for age dissimilarity between the CC members and the CEO ($CC\_Age\_Dissimilarity_{it}$). We measure this as the standard deviation of the gap between the age of CC members and the age of the CEO by following O'Reilly et al. (1989).

We also follow prior literature (e.g., Anderson & Bizjak, 2003; Bebchuk et al., 2010; Sun & Cahan, 2009) to control for the size and independence of the CC. Size (*CC_Size*) is measured as the total number of CC members, while independence (*CC_Indep*) is measured as the percentage of CC members who are independent. In addition, as the literature suggested, board diversity, for example, gender and foreign minority, can be influencing characteristics as well (e.g., Bugeja et al., 2016; Vafeas, 2003; Oxelheim & Randøy, 2003). We, therefore, include these two features of diversified CC: *CC_Female*, which is measured as the ratio of CC members who are female, and *CC_British*, which is measured as the ratio of CC members who are British.

4.1.2 | CEO characteristics

Prior studies suggest that more powerful CEOs are likely to extract higher compensation (e.g., Veprauskaite & Adams, 2013; Westphal & Zajac, 1995). We therefore control for CEO power by constructing three proxies. First, we control for the power that CEOs may have to directly influence their compensation through the CC members appointed during their tenure, *CEO_CC_Appointment*. We calculate *CEO_CC_Appointment* as the ratio of the number of CC members appointed after the incumbent CEO came into power over the total number of CC members. We then follow Veprauskaite and Adams (2013) to include the ratio of CEO total compensation to the sum of all directors' total compensation,[8] *CEO_Pay_Slice*, in our regression model to control for the CEO's power over the board. CEO tenure is also typically treated as a proxy for CEO power (e.g., Hill & Phan, 1991; H. W. Huang et al., 2012) because it is possible that CEOs with longer tenure have more influence over board members, which could lead to managerial entrenchment. Therefore, we control for *CEO_Tenure*, which is the natural logarithm of the number of years that the CEO has spent in the CEO role.

We use *CEO_Age* (in years) as a proxy to control for the CEO's experience and skills (e.g., Conyon et al., 2019). Prior studies consistently show that women tend to be paid less than men in the general workforce (Blau & Kahn, 2017). Thus, we include an indicator variable, *CEO_Female*, to control for the gender effect on CEO compensation. Last, we include an indicator variable for a first-year CEO (*CEO_First*), which equals 1 if it is the CEO's first year of service in the firm and 0 otherwise.

4.1.3 | Board characteristics

We also include a set of board characteristics to control for the potential influence of overall corporate governance quality on CEO compensation. According to Core et al. (1999), Jensen (1993), and Yermack (1996), the effectiveness of board monitoring is reduced when the number of directors is high. This is because it is easier for the CEO to capture the board and create "free-rider" problems among directors. Thus, we expect a positive relationship between CEO compensation and board size (*Board Size*). *Board Size* is measured as the total number of directors on the board. Second, board independence has long been discussed regarding its influence on monitoring quality. Therefore, we include the ratio of outside directors (*Board_Indep*) as a measure of board independence, defined as the percentage of non-executive directors on the board. However, there is mixed evidence on board independence. Cyert et al. (2002) and Yermack (1996) find no evidence of a relationship between CEO compensation and the proportion of outside directors. In contrast, Core et al. (1999) suggest that independent directors may not always act in the best interests of the shareholders because of board capture theory. Given the mixed evidence in the prior literature, we do not predict a sign for this variable.

4.1.4 | Firm characteristics

In addition to the characteristics of the CC members, the CEO, and the board, we control for a variety of firm fundamentals that are likely to be related to CEO compensation. Murphy (1999) finds that firm size explains the largest proportion of the variation in executive compensation. Managing large firms requires more effort and managerial expertise because of the increased complexity of investment and operating decisions. Therefore, large firms use higher levels of compensation to attract more talented executives. We include firm size in our model, *Size*, which is the natural logarithm of total assets and proxies for firm size and the operational complexity of the firm. Growth opportunities account for the larger proportion of firm value. Thus, the closer the managers' compensation is tied to firm value, the greater is the variance in their compensation (Smith & Watts, 1992). To compensate for the additional risk, managers require higher pay. Similarly, stock return volatility increases the riskiness of equity-based compensation and should thus be linked with higher compensation (Fernandes et al., 2013). We control for these effects through *Tobin's Q* and *Volatility*. *Tobin's Q* is calculated as the market to book value of assets and proxies for growth opportunities. *Volatility* is the annualized standard deviation of daily stock returns for the fiscal year. Since managerial talent and ability are difficult to observe and measure, agency theory predicts that the board will, in general, use specific firm-level performance outcome criteria to determine CEO compensation. To capture firm performance, both accounting- and market-based measures of performance are included. The accounting-based performance measure is return on assets (*ROA*), which is measured as the ratio of net income to average total assets. The market-based measure is stock returns (*Stock Return*), which is measured as the average of the monthly return on common stock. We also control for firms' leverage (*Leverage*), which is measured as total liabilities over total assets. All financial variables are winsorized at 1% and 99% to mitigate the influence of outliers.

Finally, we include both industry and year fixed effects in the regression. Standard errors are corrected for heteroskedasticity and are clustered at the firm level. A detailed definition of all variables is summarized in Appendix A.

TABLE 1 Summary statistics.

Variables	(1) Observations	(2) Mean	(3) Standard deviation	(4) Min	(5) Max	(6) Q1	(7) Median	(8) Q3
$Log(TC)_t$	4617	7.180	0.942	5.024	9.448	6.516	7.150	7.822
TC_t (in millions)	4617	2.044	2.225	0.151	12.677	0.676	1.274	2.496
$Delta_t$ (in millions)	4558	0.191	0.569	0.000	4.339	0.018	0.044	0.115
CC_Age_t	4617	58.880	3.972	42.000	74.330	56.330	59.000	61.500
CC_UAI_t	4617	38.050	5.856	26.000	86.000	35.000	35.000	38.670
$CC\_Experience_t$	4617	0.353	0.264	0.000	1.000	0.200	0.333	0.500
CC_Tenure_t	4617	1.186	0.547	0.000	2.937	0.906	1.238	1.526
$CC\_Age\_Dissimilarity_t$	4617	4.804	2.475	0.000	19.090	3.000	4.438	6.309
CC_Indep_t	4617	0.936	0.144	0.000	1.000	1.000	1.000	1.000
CC_Size_t	4617	3.876	1.086	2.000	11.000	3.000	4.000	4.000
CC_Female_t	4617	0.150	0.180	0.000	0.667	0.000	0.000	0.250
$CC\_British_t$	4617	0.816	0.250	0.000	1.000	0.667	1.000	1.000
$CEO\_CC\_Appointment_t$	4617	0.602	0.379	0.000	1.000	0.250	0.667	1.000
$CEO\_Pay\_Slice_t$	4617	0.418	0.149	0.025	0.964	0.309	0.403	0.523
CEO_Tenure_t	4617	1.328	1.104	0.000	3.723	0.742	1.504	2.067
CEO_First_t	4617	0.128	0.334	0.000	1.000	0.000	0.000	0.000
CEO_Female_t	4617	0.029	0.168	0.000	1.000	0.000	0.000	0.000
CEO_Age_t	4617	52.230	6.492	33.000	81.000	48.000	52.000	56.000
$Board\_Size_t$	4617	8.971	2.590	3.000	23.000	7.000	9.000	10.000
$Board\_Indep_t$	4617	0.625	0.122	0.143	0.929	0.556	0.625	0.714
$Size_{t-1}$	4617	20.990	1.890	17.060	26.720	19.730	20.750	21.980
$Tobin'sQ_{t-1}$	4617	1.701	1.046	0.671	7.542	1.058	1.375	1.943
$Volatility_{t-1}$	4617	0.295	0.102	0.133	0.617	0.221	0.276	0.346
$Stock\ Return_{t-1}$	4617	0.176	0.541	−0.788	2.956	−0.126	0.112	0.368
ROA_{t-1}	4617	0.062	0.088	−0.316	0.333	0.025	0.062	0.103
$Leverage_{t-1}$	4617	0.342	0.250	0.000	1.672	0.127	0.337	0.504

Note: This table presents the summary statistics for the main input variables.

4.2 | Summary statistics

Table 1 reports the summary statistics for CEO total compensation, CEO delta, age-related variables, CC members' attributes, CEO attributes, board characteristics, and firm-specific variables for the FTSE 350 firms. The average (median) age of the CC members is 58.88 (59.00). The average (median) age of the CEO is 52.23 (52.00), which is about 7 years younger than the average age of the CC members. Across the sample, about 63% of directors are non-executive directors and 94% of CC members are independent.

5 | RESULTS

5.1 | Age of CC members and CEO compensation

Table 2 reports the results from Equation (1) and our analysis of the relationship between the age of the CC members, *CC_Age*; CEO total compensation, *Log*(*TC*); and pay–performance sensitivity, *Delta*. Columns (1) and (3) report ordinary least squares (OLS) estimation of Equation (1) using *Log*(*TC*) and *Delta*, respectively. Columns (2) and (4) report the same regressions as columns (1) and (3) but with year and firm fixed effects. In all our analyses, the *t* statistics are calculated based on standard errors clustered by firm. We find that the coefficient of *CC_Age* is negative and significant when the dependent variable is *Log*(*TC*), indicating that CEO total compensation is negatively associated with the age of the CC members. Our results are not only statistically but also economically significant. Specifically, a 1-standard deviation increase in *CC_Age*, holding other variables at their sample mean values, decreases the CEO's total compensation by 3.3%. Further, we find a strong and positive relation between the age of the CC members and *Delta*, suggesting that CEO pay sensitivity to stock performance is positively associated with the age of the CC members. In short, the findings in Table 2 support the narrative that older CC members are more likely to grant lower CEO total compensation and to design CEO compensation packages to be more sensitive to firm performance.

TABLE 2 The age of CC members and CEO compensation.

Dependent variables	(1) $Log(TC)_t$	(2) $Log(TC)_t$	(3) $Delta_t$	(4) $Delta_t$
CC_Age_t	−0.007**	−0.006*	0.006*	0.006***
	(−1.989)	(−1.755)	(1.938)	(2.860)
CC_UAI_t	−0.001	0.001	0.006*	−0.001
	(−0.278)	(0.342)	(1.805)	(−0.671)
$CC\_Experience_t$	0.151***	0.016	−0.022	−0.036*
	(3.127)	(0.443)	(−0.607)	(−1.761)
CC_Tenure_t	−0.011	0.002	−0.021	−0.002
	(−0.449)	(0.105)	(−0.721)	(−0.139)
$CC\_Age\_Dissimilarity_t$	−0.001	0.002	0.007	0.003
	(−0.143)	(0.465)	(1.442)	(1.023)
CC_Indep_t	0.110	0.115	0.054	0.010
	(1.255)	(1.331)	(0.787)	(0.213)
CC_Size_t	0.060***	0.020	−0.031**	−0.007
	(4.356)	(1.604)	(−2.571)	(−0.813)
CC_Female_t	0.070	0.004	−0.018	−0.019
	(0.854)	(0.060)	(−0.240)	(−0.506)
$CC\_British_t$	0.018	0.068	−0.056	−0.033
	(0.211)	(0.890)	(−0.601)	(−0.777)
$CEO\_CC\_Appointment_t$	0.055	0.002	−0.071	0.054*
	(0.961)	(0.043)	(−1.134)	(1.889)
$CEO\_Pay\_Slice_t$	3.677***	3.452***	0.078	0.134**
	(26.979)	(29.445)	(0.447)	(2.159)
CEO_First_t	−0.096**	−0.016	0.126***	0.021
	(−2.512)	(−0.501)	(3.126)	(0.928)
CEO_Tenure_t	0.012	0.076***	0.115***	0.015
	(0.464)	(3.648)	(3.531)	(1.034)
CEO_Age_t	−0.006***	−0.011***	0.005	0.003
	(−2.782)	(−4.629)	(1.327)	(1.115)
CEO_Female_t	−0.061	0.040	−0.093***	−0.013
	(−0.731)	(0.616)	(−2.910)	(−0.840)
$Board\_Indep_t$	−1.936***	−1.807***	0.141	0.001
	(−10.872)	(−10.746)	(0.629)	(0.009)
$Board\_Size_t$	0.124***	0.104***	0.003	0.014**
	(13.495)	(12.678)	(0.341)	(2.304)
$Size_{t-1}$	0.258***	0.213***	0.033**	0.058**
	(16.729)	(7.774)	(2.435)	(2.563)
$Tobin's\ Q_{t-1}$	0.085***	0.020*	0.049***	0.032***
	(4.198)	(1.780)	(3.284)	(3.435)
$Volatility_{t-1}$	−0.350**	−0.022	0.056	0.055
	(−2.172)	(−0.109)	(0.445)	(0.518)
$Stock\ Return_{t-1}$	0.025*	0.037***	0.003	0.009
	(1.852)	(2.973)	(0.276)	(1.340)
ROA_{t-1}	0.349**	0.099	0.230**	0.094*
	(2.538)	(0.899)	(2.448)	(1.738)
$Leverage_{t-1}$	−0.058	−0.012	−0.166**	−0.074
	(−0.826)	(−0.148)	(−2.542)	(−1.543)

(Continues)

TABLE 2 (Continued)

Dependent variables	(1) $Log(TC)_t$	(2) $Log(TC)_t$	(3) $Delta_t$	(4) $Delta_t$
Constant	0.197	1.393**	−1.664***	−1.747***
	(0.433)	(2.275)	(−4.428)	(−3.957)
Observations	4617	4617	4558	4558
Adjusted R^2	0.731	0.590	0.176	0.098
Firm fixed effects	No	Yes	No	Yes
Industry fixed effects	Yes	No	Yes	No
Year fixed effects	Yes	Yes	Yes	Yes

Note: This table reports the regression results of CEO total compensation, *Log*(*TC*), and CEO delta (*Delta*) on the age of the CC members (*CC_Age*). The sample covers firm-year observations with non-missing values for all variables during 2002–2017. All the economic determinant variables are lagged by 1 year. Columns (1) and (3) report the panel regression results of *Log*(*TC*) and *Delta* on the *CC_Age*, respectively. Columns (2) and (4) report the regression results of *Log*(*TC*) and *Delta* on the *CC_Age* with firm fixed effects, respectively. Reported in parentheses are *t* values, based on robust standard errors clustered by firm. See Appendix A for detailed definitions of all variables.

***Statistically significant at the 1% level.

**Statistically significant at the 5% level.

*Statistically significant at the 10% level.

Turning to control variables, we find that the signs and significance levels of the other determinants of CEO compensation are generally consistent with our expectations and the earlier literature (Chalmers et al., 2006; Core et al., 1999). A CEO in their first year with a given company receives a lower level of total compensation but a higher pay-performance sensitive package, reflecting the firm's lack of knowledge of the newly appointed CEO's ability. The coefficients of board size and CC size are positive and significant for the level of CEO compensation. The sign of the coefficient of CC size for CEO delta is negative. Contrary to our prediction, the average number of other board seats that CC members hold is positively associated with *Log*(*TC*) and negatively related to *Delta*. This indicates that CC members' experience does not lead to better monitoring outcomes. However, as suggested by Fich and Shivdasani (2006), the number of other board seats held by directors could be an indicator of the busyness of directors, and the busier the CC members, the less effective their monitoring. Both board size and firm size have a positive and significant impact on the level of CEO compensation, suggesting that large and complex firms pay their CEOs higher total compensation. It is worth noting that all the performance measures, namely, the accounting-based return on asset (ROA), the market-based stock return, and firm growth opportunity measured by *Tobin's Q*, are positively and significantly associated with the level of CEO compensation. This is in line with findings in prior studies (Hartzell & Starks, 2003; Ozkan, 2011). Also in line with previous literature, the leverage ratio has a negative effect on CEO compensation. Further, we report that the risk measure—stock volatility—has a negative impact on CEO total compensation but a positive impact on CEO pay–performance sensitivity.

Surprisingly, most of other CC members' characteristics do not have significant influences on CEO compensation, although other studies have found significant influences on firms' decisions. For example, Goergen et al. (2015) find that the age dissimilarity between chair and CEO increases board monitoring; Serfling (2014) find that age is associated with CEO's risk-taking behavior; Bugeja et al. (2016) and Vafeas (2003) show that CEO compensation is associated with gender diversity of the CC; and D. A. Carter et al. (2003) and Carter et al. (2010) find that directors' ethnicity have influence on firm performance. A possible interpretation of the finding that neither *CC_UAI* or *CC_Age_Dissimilarity* affects CEO compensation is that age is the dominant factor, and our analysis does not capture these more subtle influences.

Taken together, our findings suggest that the age of CC members matters for CEO total compensation and pay–performance sensitivity. Older CCs tend to pay less compensation to their CEOs and increase the CEO pay sensitivity to stock performance.

5.2 | Alternative measures

Overall, the evidence provided so far indicates an impact of CC members' age on the level of CEO total compensation and CEO delta. In this section, we explore this further with alternative definitions of CEO compensation, as used in the literature. First, we redefine the CEO total compensation as the CEO compensation scaled by total assets (*TC_AT*) and re-estimate Equation (1). Column (1) of Table 3 reports the regression results. The estimated coefficient of *CC_Age* is negative and statistically significant. Then, we employ an alternative measure for CEO compensation, excess pay, developed in the prior literature (Croci et al., 2012; Ertimur et al., 2011; Ferri & Maber, 2013) to examine the effect of age on curbing excess CEO pay. Excess pay (*Excess_TC*) is measured as the difference between actual CEO pay and the predicted CEO pay, and a high value is regarded as a possible sign of poor governance (e.g., Core et al., 1999). Based on our argument that older CC members may enforce higher monitoring intensity—a sign of good governancea—we predict that the age of the

TABLE 3 The age of CC members and CEO compensation: alternative measures.

Dependent variables	(1) TC_AT_t	(2) $Excess\_TC_t$	(3) $Log(TC)_t$	(4) $Delta_t$
CC_Age_t	−0.000*	−0.010***		
	(−1.869)	(−2.778)		
$Chairman\_Age_t$			−0.003*	0.003**
			(−1.888)	(2.462)
CC_UAI_t	0.000	−0.002	−0.002	0.006*
	(0.106)	(−0.408)	(−0.380)	(1.826)
$CC\_Experience_t$	0.000*	0.084*	0.140***	−0.014
	(1.942)	(1.678)	(2.865)	(−0.391)
CC_Tenure_t	0.000	−0.021		
	(0.434)	(−0.817)		
$Chairman\_Tenure_t$			0.001	−0.007
			(0.071)	(−0.859)
$CC\_Age\_Dissimilarity_t$	0.000	0.002	−0.001	0.007
	(1.182)	(0.317)	(−0.109)	(1.416)
CC_Indep_t	−0.000	0.031	0.126	0.044
	(−0.693)	(0.353)	(1.426)	(0.630)
CC_Size_t	−0.000	0.054***	0.064***	−0.034***
	(−1.445)	(3.831)	(4.549)	(−2.716)
CC_Female_t	−0.000	−0.058	0.119	−0.016
	(−0.214)	(−0.688)	(1.469)	(−0.216)
$CC\_British_t$	−0.000	0.084	−0.045	−0.047
	(−0.720)	(0.946)	(−0.500)	(−0.526)
$CEO\_CC\_Appointment_t$	0.000	0.046	0.084*	−0.066
	(0.307)	(0.778)	(1.721)	(−1.375)
$CEO\_Pay\_Slice_t$	0.000***	3.554***	3.739***	0.007
	(5.626)	(25.555)	(26.874)	(0.044)
CEO_First_t	−0.000	−0.100**	−0.073*	0.107***
	(−0.882)	(−2.566)	(−1.901)	(3.029)
CEO_Tenure_t	−0.000*	0.019	0.014	0.108***
	(−1.730)	(0.731)	(0.607)	(3.921)
CEO_Age_t	0.000	−0.007***	−0.007***	0.005
	(0.401)	(−2.883)	(−2.715)	(1.243)
CEO_Female_t	−0.000	−0.062	−0.066	−0.097***
	(−0.349)	(−0.726)	(−0.784)	(−3.063)
$Board\_Indep_t$	−0.000***	−2.077***	−1.928***	0.164
	(−3.677)	(−11.658)	(−10.486)	(0.698)
$Board\_Size_t$	0.000***	0.090***	0.129***	−0.001
	(5.049)	(11.908)	(13.904)	(−0.146)
$Size_{t-1}$	−0.000***		0.250***	0.033**
	(−7.874)		(15.968)	(2.483)
$Tobin's\ Q_{t-1}$	0.000***		0.073***	0.045***
	(3.002)		(3.634)	(3.203)
$Volatility_{t-1}$	0.000***		−0.296*	0.050
	(4.642)		(−1.809)	(0.387)
$Stock\ Return_{t-1}$	−0.000***		0.023*	−0.000
	(−3.143)		(1.676)	(−0.041)

(Continues)

TABLE 3 (Continued)

Dependent variables	(1) TC_AT_t	(2) $Excess\_TC_t$	(3) $Log(TC)_t$	(4) $Delta_t$
ROA_{t-1}	−0.000**		0.325**	0.222**
	(−2.122)		(2.328)	(2.348)
$Leverage_{t-1}$	−0.000		−0.039	−0.160**
	(−0.017)		(−0.560)	(−2.429)
Constant	0.000***	−0.168	0.003	−1.405***
	(6.028)	(−0.569)	(0.008)	(−4.458)
Observations	4617	4617	4419	4379
Adjusted R^2	0.336	0.381	0.727	0.165
Industry fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes

Note: This table reports the regression results of CEO compensation on the age of the CC members with alternative measures for CEO compensation and the age of the CC members. Columns (1) and (2) report the regression results of the impact of the CC members' age (*CC_Age*) on two alternative measures of CEO compensation, that is, scaled total compensation (*TC_AT*) and CEO excess compensation (*Excess_TC*). *TC_AT* is the ratio of CEO compensation to the total assets; *Excess_TC* is the residual component of CEO total compensation that cannot be predicted by economic determinants. Columns (3) and (4) report the regression results of CEO total compensation, *Log*(TC), and CEO delta (*Delta*) on an alternative measure of the age of the CC members, that is, the age of the chairman of the CC (*Chairman_Age*), respectively. The sample covers firm-year observations with non-missing values for all variables during 2002–2017. All the economic determinant variables are lagged by 1 year. The coefficients of the Fama–French 12 industry and year fixed effects are suppressed for brevity in the respective columns. Reported in parentheses are *t* values, based on robust standard errors clustered by firm. See Appendix A for detailed definitions of all variables.

***Statistically significant at the 1% level.

**Statistically significant at the 5% level.

*Statistically significant at the 10% level.

CC members will be negatively associated with CEO excess pay. We employ excess pay to re-examine our overarching hypotheses. Specifically, we split CEO pay into two components: a predicted component that would be expected based on economic determinants and a residual component labeled "excess pay."[9] We replace the dependent variable from model (1) — $Log(TC)$ — with CEO excess total compensation— *Excess_TC*. Column (2) of Table 3 reports the results. Consistent with our prediction, it shows that the age of CC members is negatively and significantly correlated with excess CEO pay.

In addition, we examine whether our results are robust to an alternative measure of *CC_Age*—the age of the CC chairman, *Chairman_Age*. The chair plays a key role as she/he presides over the committee, leads the committee's discussions, and is likely to be the most influential decision maker on the committee (Goergen et al., 2015). Therefore, *Chairman_Age* can capture both the strongest presentation of CC age effect and the potential concern that age might be capturing a power effect. We re-estimate our baseline regressions model in columns (1) and (3) of Table 2 by replacing *CC_Age* with *Chairman_Age* and *CC_Tenure* with *Chairman_Tenure*. Column (3) of Table 3 reports the results with CEO total compensation as the dependent variable. The coefficient of *Chairman_Age* is negative and statistically significant. Column (4) of Table 3 reports the results with CEO delta as the dependent variable. The coefficient of *Chairman_Age* is positive and statistically significant. These results suggest that older CCs decrease total CEO compensation and increase CEO pay sensitivity to stock performance. Overall, our results remain robust to these alternative definitions of CEO compensation and the alternative measures of the age of CC members.

5.3 | Endogeneity issues

So far, our main analyses suggest that the age of CC members is negatively associated with CEO total compensation and positively associated with CEO delta. However, the potential endogeneity between the age of CC members and CEO compensation may arise because of the following reasons. First, we recognize that, like most studies of this type, although we have included the firm-specific control variables suggested by the literature, our study may suffer from unobservable omitted variable problems. For example, corporate culture, informal social norms, firm traditions, and conventional recognition of value may simultaneously determine how CC members are selected and how CEO compensation is determined. To give a specific example, a firm with a traditionally conservative culture may tend to choose older CC members and pay less equity-based compensation. If CC "culture" affects CEO compensation and is also associated with the age of CC members, then our estimate of the effect of age will be biased. Second, given that firms usually do not dramatically change their compensation strategies, CEO compensation can be highly autocorrelated over years. We conduct two tests to alleviate such endogeneity concerns and to provide more evidence on the causal relation

TABLE 4 The age of CC members and CEO compensation: two-stage least squares (2SLS).

Dependent variables	(1) $Log(TC)_t$	(2) $Delta_t$
Predicted CC_Age$_t$	−0.025***	0.008**
	(−4.532)	(2.291)
CC_UAI$_t$	0.001	0.004***
	(0.352)	(2.888)
CC_Experience$_t$	0.175***	0.003
	(4.588)	(0.126)
CC_Tenure$_t$	0.009	−0.048***
	(0.411)	(−2.879)
CC_Age_Dissimilarity$_t$	0.000	0.009***
	(0.088)	(2.951)
CC_Indep$_t$	0.101	0.024
	(1.474)	(0.634)
CC_Size$_t$	0.052***	−0.030***
	(5.013)	(−4.380)
CC_Female$_t$	0.002	0.018
	(0.034)	(0.347)
CC_British$_t$	0.072	0.110***
	(0.990)	(3.265)
CEO_CC_Appointment$_t$	0.005	−0.104***
	(0.102)	(−3.048)
CEO_Pay_Slice$_t$	3.775***	−0.237***
	(34.376)	(−2.754)
CEO_First$_t$	−0.014	0.087***
	(−0.364)	(3.815)
CEO_Tenure$_t$	0.050***	0.100***
	(2.683)	(6.710)
CEO_Age$_t$	−0.002	0.005***
	(−1.363)	(3.796)
CEO_Female$_t$	−0.065	−0.046***
	(−1.142)	(−2.591)
Board_Indep$_t$	−1.930***	0.214**
	(−15.920)	(2.081)
Board_Size$_t$	0.124***	0.002
	(18.186)	(0.523)
Size$_{t-1}$	0.290***	0.023***
	(28.469)	(4.109)
Tobin's Q$_{t-1}$	0.075***	0.052***
	(5.406)	(6.237)
Volatility$_{t-1}$	−0.223**	0.118*
	(−1.982)	(1.837)
Stock Return$_{t-1}$	0.025	0.002
	(1.500)	(0.166)
ROA$_{t-1}$	0.223	0.326***
	(1.558)	(4.461)
Leverage$_{t-1}$	−0.085**	−0.114***
	(−1.976)	(−3.571)
Constant	0.135	−1.552***
	(0.347)	(−6.601)
Observations	4617	4558
Adjusted R^2	0.731	0.150
Industry fixed effects	Yes	Yes
Year fixed effects	Yes	Yes
F-statistic	286.506***	279.071***

Note: This table reports the 2SLS regression results of the impact of CC member age (*CC_Age*) on CEO total compensation, *Log*(*TC*), and CEO delta (*Delta*). The sample covers firm-year observations with non-missing values for all variables during 2002–2017. At the first stage, we use the industry median value of CC member age as an instrument for *CC_Age*. Columns (1) and (2) present the results of second stage regressions where the independent variables of interest are predicted value: *Predicted CC_Age*. *F*-statistics are the statistics from the *F*-test of the joint significance of instruments. All the economic determinant variables are lagged by 1 year. The coefficients of the Fama–French 12 industry and year fixed effects are suppressed for brevity in the respective columns. Reported in parentheses are *t* values, based on robust standard errors clustered by firm. See Appendix A for detailed definitions of all variables.

***Statistically significant at the 1% level.

**Statistically significant at the 5% level.

*Statistically significant at the 10% level.

between the age of CC members and CEO compensation. First, we employ a 2SLS approach to mitigate potential endogeneity. An instrument ought to capture the variation in *CC_Age* but not directly affect CEO compensation (only indirectly via CC age). We use the median of *CC_Age* of firms in the same Fama–French 12 industry and size quartile as an instrument for *CC_Age*.

Table 4 reports the second-stage regressions estimating Equation (1) with the independent variable of interest replaced by the predicted value from the first-stage regressions. The estimated coefficient of *CC_Age* remains negative and statistically significant in column (1) when the dependent variable is *Log*(*TC*). The estimated coefficient of *CC_Age* continues to be positive and statistically significant in column (2) when the dependent variable is *Delta*. Comparing the *F*-statistics with the critical values of Stock and Yogo (2005) for the weak instrument test, we are able to reject the null hypothesis that our instrument is weak.

Gormley and Matsa (2014) recommend implementing a high-dimensional fixed effects model to mitigate potential endogeneity concerns caused by unobserved heterogeneity across firms and time-varying heterogeneity across industries. We follow their advice and conduct our analyses with high-dimensional fixed effects models. In columns (1) and (2) of Table 5, we re-estimate the OLS regressions for *Log*(*TC*) and *Delta* and control for unobserved, time-invariable firm characteristics and time-varying industry effects (firm and year × Fama–French 12 industry dummies). Consistent with the

TABLE 5 The age of CC members and CEO compensation: high-dimensional fixed effects.

Dependent variables	(1) $Log(TC)_t$	(2) $Delta_t$
CC_Age_t	−0.006**	0.006***
	(−2.425)	(4.779)
CC_UAI_t	0.001	−0.002
	(0.254)	(−1.467)
$CC\_Experience_t$	0.008	−0.043***
	(0.252)	(−2.828)
CC_Tenure_t	0.013	−0.001
	(0.812)	(−0.121)
$CC\_Age\_Dissimilarity_t$	0.003	0.003**
	(0.899)	(2.195)
CC_Indep_t	0.116**	0.009
	(2.125)	(0.331)
CC_Size_t	0.019**	−0.007
	(2.050)	(−1.555)
CC_Female_t	−0.025	−0.022
	(−0.461)	(−0.812)
$CC\_British_t$	0.081	−0.040
	(1.403)	(−1.358)
CEO_First_t	0.007	0.061***
	(0.188)	(3.354)
CEO_Tenure_t	3.458***	0.129***
	(48.374)	(3.516)
CEO_Age_t	−0.025	0.020
	(−0.900)	(1.413)
CEO_Female_t	0.075***	0.013
	(4.823)	(1.645)
$CEO\_CC\_Appointment_t$	−0.010***	0.003***
	(−6.623)	(3.649)
$CEO\_Pay\_Slice_t$	0.069	−0.021
	(1.333)	(−0.791)
$Board\_Indep_t$	−1.785***	0.014
	(−16.373)	(0.256)
$Board\_Size_t$	0.102***	0.013***
	(17.785)	(4.546)
$Size_{t-1}$	0.213***	0.060***
	(12.978)	(7.159)
$Tobin's\ Q_{t-1}$	0.011	0.032***
	(1.008)	(6.000)
$Volatility_{t-1}$	0.113	0.008
	(0.815)	(0.109)
$Stock\ Return_{t-1}$	0.035***	0.010*
	(3.027)	(1.710)
ROA_{t-1}	0.085	0.086**
	(1.009)	(2.011)
$Leverage_{t-1}$	−0.028	−0.081***
	(−0.530)	(−3.050)
Constant	1.895***	−1.752***
	(4.802)	(−8.738)
Observations	4600	4541
Adjusted R^2	0.838	0.754
Firm fixed effects	Yes	Yes
Industry fixed effects × year fixed effects	Yes	Yes

Note: This table reports regression results of the impact of CC members' age (*CC_Age*) on CEO total compensation, *Log*(*TC*), and CEO delta (*Delta*) with high-dimensional fixed effects model estimation. We control for the firm and interacted industry-year fixed effects. The sample covers firm-year observations with non-missing values for all variables during 2002–2017. All the economic determinant variables are lagged by 1 year. The coefficients of the Fama–French 12 industry and year fixed effects are suppressed for brevity in the respective columns. Reported in parentheses are *t* values, based on robust standard errors clustered by firm. See Appendix A for detailed definitions of all variables.

***Statistically significant at the 1% level.

**Statistically significant at the 5% level.

*Statistically significant at the 10% level.

results reported in Table 2, the estimated coefficient of *CC_Age* is negative and statistically significant at the 5% level with *Log*(*TC*) as the dependent variable and positive and statistically significant at the 1% level with CEO *Delta* as the dependent variable. Our concerns over unobserved omitted variables are greatly relieved given that the main results are robust by these two methods.

5.4 | Ethical influences and monitoring intensity

5.4.1 | Alternative ethical influences

In this section, we further investigate whether the observed association between the age of CC members and CEO compensation is likely to result from the higher ethical standards of older directors. If it is the ethical attitude/standards driving the association between age and compensation, we would expect the culturally rooted ethical belief of the CC members to matter (for compensation), in so far as individual's ethical standards and their heritage of ethical belief are related. We believe they are related because inherited beliefs and values may be persistent (Ellahie et al., 2017). We may also observe that the effects are enhanced (or reduced) in a setting where ethical attention is more (or less) needed. To test these two scenarios, we first classify our sample of firms according to the CPI attributable to a CC member and a firm's environmental responsibility score. Then we conduct sub-sample analyses to investigate whether the impact of CC

members' age on CEO compensation is affected by variations in these ethics measures.

Our first proxy, CPI[10] (which scores and ranks countries/territories based on how corrupt a country's public sector is perceived to be by experts and business executives), uses a scale of 0 to 100, where 0 is *highly corrupt* and 100 is *very clean*. This is a composite index, a combination of 13 surveys and assessments of corruption, collected by a variety of reputable institutions[11] and widely used in the literature (e.g., DeBacker et al., 2015; Fisman & Miguel, 2007; Liu, 2016). Liu (2016) documents that corruption norms are persistent by showing that corruption attitudes inherited from one or more generations earlier can still impact behavior today. Given the persistence of cultural heritage, we investigate the possibility that inherited corruption norms may undermine the effect of age resulting from ethical attitudes improving with age. Therefore, the age effect, if driven by ethical attitude, will be weaker or diminished when it is undermined by inherited corruption norms. We first find the country-level CPI index according to each CC member's last name which is matched to their country origin, then we calculate the average CPI of the CC. Firms with a CC CPI above or equal to (below) the median are classified as those with a low (or high) level of perceived corruption. Panel A of Table 6 shows that the coefficients of *CC_Age* are statistically significant only in the sub-sample with low levels of perceived corruption. This indicates that the age effect is likely due to ethical attitude/standards.

Our second proxy, an environmental responsibility score, is from Thomson Reuters' Asset4 database. This score integrates 70 key performance indicators, based on 126 data points. The Asset4 glossary explains that it reflects how well a company uses best management practices to avoid environmental risks and capitalize on environmental opportunities in order to generate long-term shareholder value. The metric is based on a numerical scale ranging from 100% (*good performance*) to 0% (*bad performance*). Firms with an environmental responsibility score above or equal to (or below) the median are classified as responsible (or irresponsible) in terms of environmental issues. Presumably, we should observe that more ethical CC members would exert more control on CEO compensation in firms with low environmental responsibility scores, because they feel affronted by the firm not being "green." Panel B of Table 6 shows that the coefficients of *CC_Age* are statistically significant only in the less environmentally responsible sub-samples, suggesting that age effects play a significant role when ethical attention is more needed. Consistent with our

TABLE 6 The age of CC members and CEO compensation: alternative ethical influences.

	$Log(TC)_t$		$Delta_t$	
	<Median (1)	≥Median (2)	<Median (3)	≥Median (4)
Panel A: Corruption Perceptions Index				
CC_Age_t	−0.004	−0.008*	−0.001	0.008**
	(−0.810)	(1.782)	(−0127)	(2.185)
All controls	Yes	Yes	Yes	Yes
Observations	801	923	788	914
Adjusted R^2	0.686	0.671	0.135	0.115
Industry fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Panel B: Environmental responsibility score				
CC_Age_t	−0.010**	−0.002	0.006***	0.008*
	(2.071)	(−0.391)	(2.657)	(1.897)
All controls	Yes	Yes	Yes	Yes
Observations	2302	2315	2267	2291
Adjusted R^2	0.698	0.681	0.130	0.094
Industry fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes

Note: This table reports the cross-sectional relation between the CC members' age (*CC_Age*) on CEO total compensation, *Log*(*TC*), and CEO delta (*Delta*) by taking alternative ethical influences into consideration. The sample covers firm-year observations with non-missing values for all variables during 2002–2017. In Panels A and B, we divide our main sample into two sub-samples based on the medians of Corruption Perceptions Index and firm-level environmental responsibility score, respectively. The ≥median (<median) sub-samples include firm-year observations with above (below)-median corresponding variables. All the economic determinant variables are lagged by 1 year. The coefficients of the Fama–French 12 industry and year fixed effects are suppressed for brevity in the respective columns. Reported in parentheses are *t* values, based on robust standard errors clustered by firm. See Appendix A for detailed definitions of all variables.

***Statistically significant at the 1% level.

**Statistically significant at the 5% level.

*Statistically significant at the 10% level.

assumptions, we do find that age effects are contingent on alternate ethical effects, suggesting that ethical attitude/standards are likely to be the mechanism through which older CC members fulfill their fiduciary duty more effectively.

5.4.2 | External and internal governance quality

In this section, we divide our full sample into two sub-samples based on the median of external monitoring and internal corporate governance quality. Then we conduct sub-sample analyses to investigate whether the relation between the age of CC members and CEO total compensation and delta can be explained by the variations in these important firm characteristics. We compare the coefficients of *CC_Age* across the corresponding two partitions rather than using interaction terms. This allows the coefficients of our control variables to vary across the sub-samples (DeFond et al., 2015). Table 7 reports the results of our sub-sample analyses. The control variables are the same as those reported in Table 2.

First, if older CC members are more committed to their monitoring role, which in turn reduces CEO total compensation and increases CEO pay–performance sensitivity, then this effect is likely to be more pronounced in firms subject to a weaker external monitoring environment. Intense monitoring by institutional investors may exert pressure on executives (Hermalin, 2005). We classify firms into strong and weak monitoring sub-samples using institutional ownership, *IO*, which is the percentage of shares outstanding held by institutional investors.[12] Firms with *IO* above or equal to (or below) the median are classified as those with strong (or weak) external monitoring. For regressions with *Log*(*TC*) as the dependent variables, columns (1) and (2) of Panel A in Table 7 show that the coefficients of *CC_Age* remain negative but are statistically significant only in the weak external monitoring partitions. For regressions with *Delta* as the dependent variables, columns (3) and (4) of Panel A in Table 7 show that the coefficients of *CC_Age* remain positive, similar to the result for *Log*(*TC*), but statistically significant only in the weak external monitoring partitions. In addition, the absolute value of the estimated coefficients of *CC_Age* is much greater in weak external monitoring sub-samples than in the corresponding strong external monitoring sub-samples. Taken as a whole, our findings indicate that the impact of *CC_Age* on CEO compensation is contingent on external monitoring quality. Age effects are more likely to be observed when external monitoring is more needed.

TABLE 7 Differential impact of compensation committee (CC) members' age on CEO compensation: governance monitoring mechanisms.

	$Log(TC)_t$		$Delta_t$	
	<Median (1)	≥Median (2)	<Median (3)	≥Median (4)
Panel A: Institutional ownership				
CC_Age_t	−0.009*	−0.003	0.011*	0.003
	(−1.707)	(−0.724)	(1.807)	(0.561)
All controls	Yes	Yes	Yes	Yes
Observations	2306	2311	2267	2291
Adjusted R^2	0.735	0.730	0.177	0.155
Industry fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Panel B: Corporate governance score				
CC_Age_t	−0.009*	−0.004	0.008*	0.008
	(−1.771)	(−0.875)	(1.869)	(1.062)
All controls	Yes	Yes	Yes	Yes
Observations	2306	2311	2269	2289
Adjusted R^2	0.671	0.694	0.165	0.190
Industry fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes

Note: This table reports the cross-sectional relation between the CC members' age (*CC_Age*) on CEO total compensation, *Log*(*TC*), and CEO delta (*Delta*) under different governance monitoring mechanisms into consideration. The sample covers firm-year observations with non-missing values for all variables during 2002–2017. In Panels A and B, we divide our main sample into two sub-samples based on the medians of institutional ownership and corporate governance score, respectively. The ≥median (<median) sub-samples include firm-year observations with above (below)-median corresponding variables. All the economic determinant variables are lagged by 1 year. The coefficients of the Fama–French 12 industry and year fixed effects are suppressed for brevity in the respective columns. Reported in parentheses are *t* values, based on robust standard errors clustered by firm. See Appendix A for detailed definitions of all variables.

***Statistically significant at the 1% level.

**Statistically significant at the 5% level.

*Statistically significant at the 10% level.

Second, when firms lack effective and transparent governance monitoring mechanisms, we expect to observe more managerial entrenchment practices. If top older CC members function as the complement of internal governance in curbing managerial entrenchment practices, we posit that the relation between *CC_Age* and CEO compensation is stronger for firms with poor-quality governance monitoring mechanisms. We use *Governance Score*, retrieved from Thomson Reuters' Asset4 database, as a proxy for overall corporate governance quality. *Governance Score* captures the degree to which a firm's systems and processes guarantee that its members and board executives act in the best interests of its shareholders in envisioning long-term operations. This measure reflects the level of leadership team transparency with stakeholders. Prior research finds that increased transparency is associated with high governance results, for example, increased earnings quality and a lower level of earnings management (Xie et al., 2003). Firms with a *Governance Score* above or equal to (or below) the median are classified as those with strong (weak) internal corporate governance. Panel B of Table 7 presents the relation between *CC_Age* and *Log*(*TC*) and *Delta* in high and low *Governance Score* sub-samples. Consistent with our assumption, columns (1) and (2) of Panel B in Table 7 show that the coefficients of *CC_Age* remain negative for both sub-samples with *Log*(*TC*) as the dependent variable. However, the coefficients are statistically significant only in the low *Governance Score* sub-sample. Columns (3) and (4) of Panel B in Table 7 show that the coefficients of *CC_Age* remain positive for both sub-samples with *Delta* as the dependent variable but are statistically significant only in the low *Governance Score* sub-sample. In addition, the absolute value of the estimated coefficients of *CC_Age* is much greater in the weak internal corporate governance sub-samples than in the corresponding strong internal corporate governance sub-samples.

5.4.3 | Financial constraints

Given our hypotheses on the relation between age of CC members and CEO compensation (that older CC members will demonstrate greater commitment to their fiduciary duties and increase monitoring intensity), in this section, we use financial constraints as an additional setting to differentiate between firms with relatively high and low monitoring needs. To some extent, financial constraints are deemed to play a disciplinary role in monitoring managers (e.g., Harford

TABLE 8 The age of compensation committee (CC) members and CEO compensation: financial constraints.

	$Log(TC)_t$		$Delta_t$	
	<Median (1)	≥Median (2)	<Median (3)	≥Median (4)
Panel A: Dividend payout				
CC_Age_t	−0.004	−0.011**	0.003	0.015***
	(−0.733)	(−2.361)	(1.181)	(3.502)
All controls	Yes	Yes	Yes	Yes
Observations	2313	2304	2268	2290
Adjusted R^2	0.712	0.755	0.083	0.147
Industry fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Panel B: Firm size				
CC_Age_t	−0.004	−0.013**	0.004*	0.013***
	(−0.805)	(−2.282)	(1.769)	(4.157)
All controls	Yes	Yes	Yes	Yes
Observations	2357	2260	2327	2231
Adjusted R^2	0.625	0.706	0.091	0.128
Industry fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes

Note: This table reports the cross-sectional relation between the CC members' age (*CC_Age*) on CEO total compensation, *Log*(*TC*), and CEO delta (*Delta*) under different conditions of financial constraints. The sample covers firm-year observations with non-missing values for all variables during 2002–2017. In Panels A and B, we divide our main sample into two sub-samples based on the medians of dividend payout and firm size, respectively. The ≥median (<median) sub-samples include firm-year observations with above (below)-median corresponding variables. All the economic determinant variables are lagged by 1 year. The coefficients of the Fama–French 12 industry and year fixed effects are suppressed for brevity in the respective columns. Reported in parentheses are *t* values, based on robust standard errors clustered by firm. See Appendix A for detailed definitions of all variables.

***Statistically significant at the 1% level.

**Statistically significant at the 5% level.

*Statistically significant at the 10% level.

et al., 2008; Luo, 2011). Managers with limited access to the external financing market have an incentive not to waste valuable internal cash, and this may mitigate agency problems. But shareholders of financially less-constrained firms may tend to be more concerned with improving the internal monitoring of managers because of the lack of such a disciplinary function.

If the negative association between the age of the CC members and *Log*(*TC*) and the positive association between the age of the CC members and *Delta* are caused by improved monitoring intensity, then both effects should be more pronounced in firms with more free cash flow. Thus, unconstrained firms have a higher likelihood of having more resources and free cash flow under the control of CEOs. We use two proxies for financial constraint. The first proxy, dividend payout ratio, is defined as the ratio of dividends and common stock repurchases to operating income, motivated by the idea that low-payout firms have insufficient internal cash flow to fund investments and thus have to rely on external sources (Fazzari et al., 1988). The second proxy, firm size, is the natural logarithm of total assets. Gertler and Gilchrist (1994) use firm size as a measure of financial constraint based on the argument that small firms are more vulnerable to capital market imperfections. We classify firms into financially constrained and financially unconstrained sub-samples, using the median value of dividend payout ratio and firm size. Firms with a dividend payout ratio and firm size above or equal to (or below) the median are classified as financially unconstrained (or constrained).

The influence of financial constraints can be clearly seen in Table 8. The coefficients of *CC_Age* remain negative for both sub-samples, with *Log*(*TC*) as the dependent variable. However, the coefficients are statistically significant only in the financially unconstrained sub-samples. The coefficients of *CC_Age* remain positive for both sub-samples with CEO *Delta* as the dependent variable but are statistically significant only in the financially unconstrained sub-samples. In addition, the absolute value of the estimated coefficients of *CC_Age* is much greater in the financially unconstrained sub-sample than in the corresponding financially constrained sub-sample.

5.5 | Alternative explanations and additional analyses

5.5.1 | Reputational effects: an alternative explanation

A possible explanation for the role of CC members' age on CEO compensation could be from reputational effects, because reputation may be closely related to age. Masulis and Mobbs (2014), Masulis and Zhang (2019), and subsequent research show that reputational effects may affect the extent to which directors fulfill their monitoring and advising roles. Given that the number of directorships held by an individual director is likely to be correlated with the talent and reputation

TABLE 9 The age of compensation committee (CC) members and CEO compensation: reputational effects.

	Panel A: Majority of CC members have only one directorship				Panel B: Age weighted on the number of outside directorships	
	$Log(TC)_t$		$Delta_t$			
	Yes (1)	No (2)	Yes (3)	No (4)	$Log(TC)_t$	$Delta_t$
CC_Age_t	0.003	−0.008*	0.005*	0.008*		
	(0.700)	(−2.230)	(2.119)	(2.692)		
$Weighted\_Age_t$					−0.010**	0.008*
					(−2.425)	(1.696)
All controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1668	2949	1632	2926	4581	4525
Adjusted R^2	0.474	0.524	0.107	0.116	0.731	0.157
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes

Note: This table reports the regression results of the impact of CC members' age on CEO total compensation, *Log*(*TC*), and CEO delta (*Delta*) by taking CC members' reputational effects into consideration. The sample covers firm-year observations with non-missing values for all variables during 2002–2017. In Panel A, we divide our main sample into two sub-samples based on whether the majority of CC members hold only one directorship in the focal firm. The yes (no) sub-samples include firm-year observations with less (more) than 50% of CC members holding only one directorship. In Panel B, we report the regression results of CEO total compensation, *Log*(*TC*), and CEO delta (*Delta*) on an alternative measure of the age of the CC members, that is, *Weighted_Age*, in which each CC member's age is proportionately weighted based on the number of outside directorships he holds. All the economic determinant variables are lagged by 1 year. The coefficients of the Fama–French 12 industry and year fixed effects are suppressed for brevity in the respective columns. Reported in parentheses are *t* values, based on robust standard errors clustered by firm. See Appendix A for detailed definitions of all variables.

***Statistically significant at the 1% level.

**Statistically significant at the 5% level.

*Statistically significant at the 10% level.

of the director (Adams et al., 2010), we follow the literature (Flickinger et al., 2016; He & Huang, 2011) and treat the number of directorships that CC members hold as an indicator of their status or prestige. Specifically, we take two approaches to address the concern that our findings may be driven by CC members' reputation rather than age.

First, we divide our sample into two sub-samples based on whether the majority of CC members hold only one directorship, which is in the focal firm, and run the main regressions for the two sub-samples separately. Arguably, a director may hold only one directorship due to having other substantial commitments, such as serving as a senior executive (officer) of another firm (institute). So we should observe a more pronounced relation in the single-directorship group than in the multiple-directorship group if the reputation effect indeed drives our finding. However, we find the opposite for the *Log*(*TC*) and no significant difference for the *Delta*. The results are reported in Panel A of Table 9. To further corroborate our findings, we then construct a variable, *Weighted_Age*, the weighted average age of the CC members, in which each CC member's age is proportionately weighted based on the number of outside directorships he holds, and re-estimate our baseline regression model in columns (1) and (3) of Table 2 by replacing *CC_Age* with *Weighted_Age*. In Panel B of Table 9, we report the regression results of employing *Weighted_Age* as the test variable. We find that the coefficients of *Weighted_Age* remain statistically significant. Assuming the number of directorships is related to CC members' reputation, the evidence suggests that it is less likely that directors' reputational effects confound our results.

5.5.2 | Additional control for CC members' cultural heritage

The prior literature finds that cultural traits influence an individual's values, beliefs, and preferences (Byrne & Bradley, 2007). For example, Kanagaretnam et al. (2014) find that individualism is negatively related to accounting conservatism and positively related to risk-taking in the banking industry. An et al. (2018) and Dang et al. (2019) find that firms located in countries with higher levels of individualism have a higher stock price crash risk. Jakob and Nam (2017) show that higher masculinity and individualism are significantly associated with less negative abnormal market reactions prior to official sovereign debt rating downgrade announcements. One of the key findings of our paper is that the age of CC members is negatively associated with CEO total compensation and positively associated with CEO delta. To see if the age effects are incremental to the potential influence from CC members' culture heritage, we re-estimate our main regression models with a full set of control variables for CC members' cultural heritage. Specially, we consider Hofstede's "other" cultural dimensions, in addition to uncertainty avoidance (UAI) (Hofstede et al., 2010), which we already have in our main model (as a proxy for risk aversion attitude). These "other" variables include the country-level Hofstede power distance index, PDI (the extent to which less powerful members of organizations and institutions accept and expect power to be distributed unequally); country-level Hofstede individualism index, IDV (the extent to which people feel independent, as opposed to being interdependent members of larger wholes); country-level Hofstede masculinity index, MAS (the extent to which the use of force is endorsed socially); country-level Hofstede long-term orientation index, LTO (the extent to which a society shows a pragmatic future-oriented perspective rather than a conventional historical short-term point of view); and country-level Hofstede indulgence index, IVR (societies that allow relatively free gratification of basic and natural human drives related to enjoying life and having fun). The measurement of these variables is similar to that of *CC_UAL* with the adaption of employing the respective index for each cultural dimension developed by Hofstede et al. (2010). The relevant results are presented in Table 10. Consistent with our main findings, we find that the estimated coefficients of *CC_Age* are negative and statistically significant with the *Log*(*TC*) as the dependent variable and positive and statistically significant with *Delta* as the dependent variable, even after controlling for CC members' cultural heritage.

TABLE 10 The age of compensation committee (CC) members and CEO compensation: additional controls for CC members' cultural heritage.

Dependent variables	(1) $Log(TC)_t$	(2) $Delta_t$
CC_Age_t	−0.008**	0.007***
	(−2.134)	(3.226)
CC_PDI_t	0.007	−0.006
	(1.296)	(−1.057)
CC_IDV_t	0.013***	−0.002
	(2.970)	(−0.296)
CC_MAS_t	0.004	0.002
	(1.022)	(0.392)
CC_LTO_t	−0.003	−0.004
	(−0.730)	(−0.892)
CC_IVR_t	−0.005	−0.009
	(−0.601)	(−0.869)
Observations	4611	4552
Adjusted R^2	0.735	0.161
All controls	Yes	Yes
Industry fixed effects	Yes	Yes
Year fixed effects	Yes	Yes

Note: This table reports the regression results of CEO total compensation, *Log*(*TC*), and CEO delta (*Delta*) on the age of the CC members (*CC_Age*) controlling for additional characteristics of CC members' cultural heritage. The sample covers firm-year observations with non-missing values for all variables during 2002–2017. All the economic determinant variables are lagged by 1 year. Reported in parentheses are *t* values, based on robust standard errors clustered by firm. See Appendix A for detailed definitions of all variables.

***Statistically significant at the 1% level.

**Statistically significant at the 5% level.

*Statistically significant at the 10% level.

6 | CONCLUSION

Our study focuses on whether age has a significant effect on CCs' monitoring intensity, proxied by the level of CEO compensation and CEO pay–performance sensitivity. We find that such an effect does exist and present evidence to suggest that the likely reason is that older CC members exhibit higher ethical standards and are more committed to their fiduciary duties, which in turn increases their scrutiny of CEO compensation and CEO performance. We find that older CC members curb the level of CEO compensation and increase CEO pay–performance sensitivity. Our findings are robust to a wide range of potential confounding effects and alternative influences. Supporting our arguments, we find our results are mainly driven by those firms for which more intense monitoring is needed.

Our findings contribute to research on CEO compensation and governance monitoring activities by identifying age, a largely overlooked demographic factor in the corporate governance literature, as an important factor that affects CEO compensation monitoring efficiency. These findings have practical implications.

First, the 2018 UK Corporate Governance Code promotes consideration of the social and ethnic backgrounds, and cognitive and personal strengths, of the composition of the board. Our study, as one of the first, on the effect of CC members' age, provides pertinent evidence that is consistent with the Code. It suggests that age, along with other characteristics such as education, expertise, and independence, matters in terms of influencing monitoring activity. We believe that the insights from this study can be generalized to systems outside the UK because the UK Corporate Governance Code is emulated worldwide.

Second, our study contributes to the debate on whether the boardroom should be "the one place in business where executives don't have to worry about being judged too old."[13] On the one hand, older directors are believed to bring knowledge, experience, social networks, and perhaps greater time commitment to the board; on the other hand, shareholders have expressed concerns about "boardroom aging." For example, some activist investors have contested the waiving of the mandatory retirement age rule for directors, and some firms have had to announce the retirement of some older directors under pressure from shareholders.[14] Our analysis provides an angle from the standpoint of ethical standards and shows that, all else being equal, older directors are more likely to show greater commitment to their fiduciary duties than their younger counterparts are. Age would appear to be a relevant factor when reforming corporate governance.

The findings in our study naturally come with some caveats. Our analysis is based on FTSE 350 companies in the United Kingdom, and the inference from our findings may not be generalizable to small companies or companies in different countries where directors may generally be younger or older than the directors in our sample. Therefore, although we find older CC members tend to curb excessive CEO compensation and maintain better pay–performance sensitivity, care needs to be exercised in drawing conclusions for different-sized companies or other countries. Our study is also limited to a study of the effect of the age of CC members on the level of compensation and pay–performance sensitivity. It may well be that the CC members are sensitive to other stakeholder interests in their deliberations, such as employee well-being and environmental conservation, and that the age of the CC members has a role to play in this regard. We suspect an investigation into these issues may prove fruitful but leave this for future research.

ACKNOWLEDGMENTS

The authors thank the two anonymous reviewers for their helpful comments and constructive suggestions.

CONFLICT OF INTEREST STATEMENT

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

DATA AVAILABILITY STATEMENT

Data is publicly available and extracted from the below data sources:

Datastream: FTSE350 indexed constituents and their accounting and financial market data.

Boardex: CEO compensation data, CEO attributes, board characteristics and compensation committee characteristics.

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NOTES

[1] The Financial Reporting Council. 2018 UK Corporate Governance Code, July 16, 2018. Extracted from https://www.frc.org.uk/getattachment/88bd8c45-50ea-4841-95b0-d2f4f48069a2/2018-UK-Corporate-Governance-Code-FINAL.pdf.

[2] Machiavellianism, a construct widely used in social psychology, describes individuals who are ambitious, strategic, manipulative, amoral, and capable of delaying gratification (Collison et al., 2018).

[3] See directors' duties under the Companies Act 2006 in the United Kingdom. https://www.legislation.gov.uk/ukpga/2006/46/contents.

[4] See, for example, Pepper, A. (2009). *Flawed economics means your CEO is overpaid*. https://www.forbes.com/sites/londonschoolofeconomics/2019/01/10/flawed-economics-means-your-ceo-is-overpaid/#6b2a703f7a22.

[5] It is worth noting that Masulis et al. (2020) examine the relationship between the directors' age for the overall board and some monitoring activities based on a sample of S&P 1500 companies in the United States. Their directors are significantly older than directors in our sample. For example, approximately 70% of all the independent directors are older than 65 in their sample while only 25% (Q3) of the CC members are just older than 61.5 in our sample. Therefore, the decline of cognitive ability associated with aging may be less of a concern in our setting.

[6] Although we cannot entirely avoid survivorship bias in our sample, we believe that constructing our sample in this way mitigates survivorship bias more effectively than any other way.

[7] We use three directorships as a threshold because both the mean and median values of the directorships that a director in the

compensation committee hold are close to 3 (2.62 and 2.50, respectively) in our sample. Applying three directorships as a threshold thus can result in a roughly even split between experienced and non-experienced outside directors. In response to an anonymous reviewer's suggestion, we also measure the *CC_Experibebchuence* by using the average value of the number of board seats for each director in each CC, and untabulated results show that our main findings remain unchanged by applying this alternative measure of *CC_Experience*.

[8] Prior literature using US data proxies CEO power through the pay slice of the CEO out of the top five executives (e.g., Bebchuk et al., 2011). However, we are unable to obtain the top five executives' compensation for a large sample of UK firms. Therefore, we follow Veprauskaite and Adams (2013) to calculate CEO pay slice as the percentage of the sum of all directors' total compensation.

[9] Following prior literature, the model for predicted pay is as follows:

$$y_{it} = \beta_0 + \sum \beta_l Economic\ Characteristics_{it-1} + \text{year dummy} + \text{industry dummy} + \varepsilon_{it}. \quad (2)$$

The economic characteristics are the same as those used in Equation (1). Excess pay is equal to total pay minus the predicted total pay from Equation (2).

[10] CPI was developed by Transparency International. Our CPI data start from 2012 because a new methodology was introduced to develop the CPI in 2012.

[11] https://images.transparencycdn.org/images/2020_CPI_FAQs_ENv2.pdf

[12] Institutional holdings data are from FactSet/LionShares.

[13] "The one place it's OK to be old is in the boardroom," August 21, 2015, Bloomberg.com.

[14] See the detailed information on those reports from *The Wall Street Journal*, "Funds Seek Occidental Seats," August 2, 2010, and "Two Coca-Cola Directors to Retire Amid Board Renovation," February 19, 2015.

REFERENCES

Adams, R. B., Hermalin, B. E., & Weisbach, M. S. (2010). The role of boards of directors in corporate governance: A conceptual framework and survey. *Journal of Economic Literature*, *48*(1), 58–107. https://doi.org/10.1257/jel.48.1.58

Agrawal, A., & Chen, M. A. (2017). Boardroom brawls: An empirical analysis of disputes involving directors. *Quarterly Journal of Finance*, *7*(3), 1750006. https://doi.org/10.1142/S2010139217500069

An, Z., Chen, Z., Li, D., & Xing, L. (2018). Individualism and stock price crash risk. *Journal of International Business Studies*, *49*(9), 1208–1236. https://doi.org/10.1057/s41267-018-0150-z

Anderson, R. C., & Bizjak, J. M. (2003). An empirical examination of the role of the CEO and the compensation committee in structuring executive pay. *Journal of Banking & Finance*, *27*(7), 1323–1348. https://doi.org/10.1016/S0378-4266(02)00259-5

Andreou, P. C., Louca, C., & Petrou, A. P. (2017). CEO age and stock price crash risk. *Review of Finance*, *21*(3), 1287–1325. https://doi.org/10.1093/rof/rfw056

Arlow, P. (1991). Personal characteristics in college students' evaluations of business ethics and corporate social responsibility. *Journal of Business Ethics*, *10*(1), 63–69. https://doi.org/10.1007/BF00383694

Barnett, J. H., & Karson, M. J. (1989). Managers, values, and executive decisions: An exploration of the role of gender, career stage, organizational level, function, and the importance of ethics, relationships and results in managerial decision-making. *Journal of Business Ethics*, *8*(10), 747–771. https://doi.org/10.1007/BF00383775

Bebchuk, L. A., Cremers, K. J. M., & Peyer, U. C. (2011). The CEO pay slice. *Journal of Financial Economics*, *102*(1), 199–221. https://doi.org/10.1016/j.jfineco.2011.05.006

Bebchuk, L. A., & Fried, J. M. (2004). *Stealth compensation via retirement benefits* (No. w10742). National Bureau of Economic Research.

Bebchuk, L. A., & Fried, J. M. (2006). Pay without performance: Overview of the issues. *Academy of Management Perspectives*, *20*(1), 5–24. https://doi.org/10.5465/amp.2006.19873407

Bebchuk, L. A., & Fried, J. M. (2009). *Pay without performance: The unfulfilled promise of executive compensation*. Harvard University Press.

Bebchuk, L. A., Grinstein, Y., & Peyer, U. C. (2010). Lucky CEOs and lucky directors. *Journal of Finance*, *65*(6), 2363–2401. https://doi.org/10.1111/j.1540-6261.2010.01618.x

Becker, G. S. (1996). *Accounting for tastes*. Harvard University Press. https://doi.org/10.4159/9780674020658

BenAmar, W., Francoeur, C., Hafsi, T., & Labelle, R. (2013). What makes better boards? A closer look at diversity and ownership. *British Journal of Management*, *24*(1), 85–101. https://doi.org/10.1111/j.1467-8551.2011.00789.x

Blau, F. D., & Kahn, L. M. (2017). The gender wage gap: Extent, trends, and explanations. *Journal of Economic Literature*, *55*(3), 789–865. https://doi.org/10.1257/jel.20160995

Borkowski, S. B., & Ugras, Y. J. (1998). Business students and ethics: A meta-analysis. *Journal of Business Ethics*, *17*(11), 1117–1127. https://doi.org/10.1023/A:1005748725174

Brady, F. N., & Wheeler, G. E. (1996). An empirical study of ethical predispositions. *Journal of Business Ethics*, *15*(9), 927–940. https://doi.org/10.1007/BF00705573

Bugeja, M., Matolcsy, Z., & Spiropoulos, H. (2016). The association between gender-diverse compensation committees and CEO compensation. *Journal of Business Ethics*, *139*(2), 375–390. https://doi.org/10.1007/s10551-015-2660-y

Byrne, G. J., & Bradley, F. (2007). Culture's influence on leadership efficiency: How personal and national cultures affect leadership style. *Journal of Business Research*, *60*(2), 168–175. https://doi.org/10.1016/j.jbusres.2006.10.015

Carter, D. A., D'Souza, F., Simkins, B. J., & Simpson, W. G. (2010). The gender and ethnic diversity of US boards and board committees and firm financial performance. *Corporate Governance: An International Review*, *18*(5), 396–414. https://doi.org/10.1111/j.1467-8683.2010.00809.x

Carter, D. A., Simkins, B. J., & Simpson, W. G. (2003). Corporate governance, board diversity, and firm value. *Financial Review*, *38*(1), 33–53. https://doi.org/10.1111/1540-6288.00034

Chalmers, K., Koh, P.-S., & Stapledon, G. (2006). The determinants of CEO compensation: Rent extraction or labour demand? *The British Accounting Review*, *38*(3), 259–275. https://doi.org/10.1016/j.bar.2006.01.003

Chan, R. Y. K., Cheng, L. T. W., & Szeto, R. W. F. (2002). The dynamics of guanxi and ethics for Chinese executives. *Journal of Business Ethics*, *41*(4), 327–336. https://doi.org/10.1023/A:1021230831161

Chhaochharia, V., & Grinstein, Y. (2009). CEO compensation and board structure. *The Journal of Finance*, *64*(1), 231–261. https://doi.org/10.1111/j.1540-6261.2008.01433.x

Collison, K. L., Vize, C. E., Miller, J. D., & Lynam, D. R. (2018). Development and preliminary validation of a five factor model measure of Machiavellianism. *Psychological Assessment*, *30*(10), 1401–1407. https://doi.org/10.1037/pas0000637

Conyon, M. J., Hass, L. H., Vergauwe, S., & Zhang, Z. (2019). Foreign experience and CEO compensation. *Journal of Corporate Finance*, *57*, 102–121. https://doi.org/10.1016/j.jcorpfin.2017.12.016

Core, J. E., Holthausen, R. W., & Larcker, D. F. (1999). Corporate governance, chief executive officer compensation, and firm performance. *Journal of Financial Economics*, *51*(3), 371–406. https://doi.org/10.1016/S0304-405X(98)00058-0

Croci, E., Gonenc, H., & Ozkan, N. (2012). CEO compensation, family control, and institutional investors in Continental Europe. *Journal of Banking & Finance*, *36*(12), 3318–3335. https://doi.org/10.1016/j.jbankfin.2012.07.017

Cyert, R. M., Kang, S.-H., & Kumar, P. (2002). Corporate governance, takeovers, and top-management compensation: Theory and evidence. *Management Science*, *48*(4), 453–469. https://doi.org/10.1287/mnsc.48.4.453.205

Daily, C. M., Johnson, J. L., Ellstrand, A. E., & Dalton, D. R. (1998). Compensation committee composition as a determinant of CEO compensation. *Academy of Management Journal*, *41*(2), 209–220. https://doi.org/10.2307/257103

Dang, T. L., Faff, R., Luong, H., & Nguyen, L. (2019). Individualistic cultures and crash risk. *European Financial Management*, *25*(3), 622–654. https://doi.org/10.1111/eufm.12180

Dao, M., Huang, H.-W., & Zhu, J. (2013). The effects of audit committee members' age and additional directorships on the cost of equity capital in the USA. *The European Accounting Review*, *22*(3), 607–643. https://doi.org/10.1080/09638180.2012.739823

Das, S., Gong, J. J., & Li, S. (2020). The effects of accounting expertise of board committees on the short-and long-term consequences of financial restatements. *Journal of Accounting, Auditing and Finance*, 0148558X20934943. https://doi.org/10.2139/ssrn.3614088

Dawson, L. M. (1997). Ethical differences between men and women in the sales profession. *Journal of Business Ethics*, *16*(11), 1143–1152. https://doi.org/10.1023/A:1005721916646

DeBacker, J., Heim, B., & Tran, A. (2015). Importing corruption culture from overseas: Evidence from corporate tax evasion in the United States. *Journal of Financial Economics*, *117*(1), 122–138. https://doi.org/10.1016/j.jfineco.2012.11.009

DeFond, M. L., Hung, M., Li, S., & Li, Y. (2015). Does mandatory IFRS adoption affect crash risk? *The Accounting Review*, *90*(1), 265–299. https://doi.org/10.2308/accr-50859

Deshpande, S. P. (1997). Managers' perception of proper ethical conduct: The effect of sex, age, and level of education. *Journal of Business Ethics*, *16*(1), 79–85. https://doi.org/10.1023/A:1017917420433

Edmans, A., Gabaix, X., & Jenter, D. (2017). Executive compensation: A survey of theory and evidence. In B. E. Hermalin & M. S. Weisbach (Eds.), *The handbook of the economics of corporate governance* (Vol. 1) (pp. 383–539). North-Holland. https://doi.org/10.1016/bs.hecg.2017.11.010

Ellahie, A., Tahoun, A., & Tuna, İ. (2017). Do common inherited beliefs and values influence CEO pay? *Journal of Accounting and Economics*, *64*(2–3), 346–367. https://doi.org/10.1016/j.jacceco.2017.09.002

Ertimur, Y., Ferri, F., & Muslu, V. (2011). Shareholder activism and CEO pay. *Review of Financial Studies*, *24*(2), 535–592. https://doi.org/10.1093/rfs/hhq113

Fazzari, S., Glenn Hubbard, R., & Petersen, B. (1988). Investment, financing decisions, and tax policy. *The American Economic Review*, *78*(2), 200–205.

Fernandes, N., Ferreira, M. A., Matos, P., & Murphy, K. J. (2013). Are US CEOs paid more? New international evidence. *The Review of Financial Studies*, *26*(2), 323–367. https://doi.org/10.1093/rfs/hhs122

Ferri, F., & Maber, D. A. (2013). Say on pay votes and CEO compensation: Evidence from the UK. *Review of Finance*, *17*(2), 527–563. https://doi.org/10.1093/rof/rfs003

Fich, E. M., & Shivdasani, A. (2006). Are busy boards effective monitors? *The Journal of Finance*, *61*(2), 689–724. https://doi.org/10.1111/j.1540-6261.2006.00852.x

Fisman, R., & Miguel, E. (2007). Corruption, norms, and legal enforcement: Evidence from diplomatic parking tickets. *Journal of Political Economy*, *115*(6), 1020–1048. https://doi.org/10.1086/527495

Flickinger, M., Wrage, M., Tuschke, A., & Bresser, R. (2016). How CEOs protect themselves against dismissal: A social status perspective. *Strategic Management Journal*, *37*(6), 1107–1117. https://doi.org/10.1002/smj.2382

Gertler, M., & Gilchrist, S. (1994). Monetary policy, business cycles, and the behavior of small manufacturing firms. *The Quarterly Journal of Economics*, *109*(2), 309–340. https://doi.org/10.2307/2118465

Goergen, M., Limbach, P., & Scholz, M. (2015). Mind the gap: The age dissimilarity between the chair and the CEO. *The Journal of Corporate Finance*, *35*, 136–158. https://doi.org/10.1016/j.jcorpfin.2015.08.011

Gormley, T. A., & Matsa, D. A. (2014). Common errors: How to (and not to) control for unobserved heterogeneity. *The Review of Financial Studies*, *27*(2), 617–661. https://doi.org/10.1093/rfs/hht047

Gormley, T. A., Matsa, D. A., & Milbourn, T. (2013). CEO compensation and corporate risk: Evidence from a natural experiment. *Journal of Accounting and Economics*, *56*(2–3), 79–101. https://doi.org/10.1016/j.jacceco.2013.08.001

Guiso, L., Sapienza, P., & Zingales, L. (2006). Does culture affect economic outcomes? *Journal of Economic Perspectives*, *20*(2), 23–48. https://doi.org/10.1257/jep.20.2.23

Guiso, L., Sapienza, P., & Zingales, L. (2009). Cultural biases in economic exchange? *The Quarterly Journal of Economics*, *124*(3), 1095–1131. https://doi.org/10.1162/qjec.2009.124.3.1095

Guiso, L., Sapienza, P., & Zingales, L. (2015). Corporate culture, societal culture, and institutions. *American Economic Review*, *105*(5), 336–339. https://doi.org/10.1257/aer.p20151074

Hagendorff, J., & Vallascas, F. (2011). CEO pay incentives and risk-taking: Evidence from bank acquisitions. *Journal of Corporate Finance*, *17*(4), 1078–1095. https://doi.org/10.1016/j.jcorpfin.2011.04.009

Hambrick, D. C., Cho, T. S., & Chen, M.-J. (1996). The influence of top management team heterogeneity on firms' competitive moves. *Administrative Science Quarterly*, *41*, 659–684. https://doi.org/10.2307/2393871

Hambrick, D. C., & Mason, P. A. (1984). Upper echelons: The organization as a reflection of its top managers. *Academy of Management Review*, *9*(2), 193–206. https://doi.org/10.2307/258434

Harford, J., Mansi, S. A., & Maxwell, W. F. (2008). Corporate governance and firm cash holdings in the US. *Journal of Financial Economics*, *87*(3), 535–555. https://doi.org/10.1016/j.jfineco.2007.04.002

Harris, O., Karl, J. B., & Lawrence, E. (2019). CEO compensation and earnings management: Does gender really matters? *Journal of Business Research*, *98*(2019), 1–14. https://doi.org/10.1016/j.jbusres.2019.01.013

Hartzell, J. C., & Starks, L. T. (2003). Institutional investors and executive compensation. *The Journal of Finance*, *58*(6), 2351–2374. https://doi.org/10.1046/j.1540-6261.2003.00608.x

He, J., & Huang, Z. (2011). Board informal hierarchy and firm financial performance: Exploring a tacit structure guiding boardroom interactions. *Academy of Management Journal*, *54*(6), 1119–1139. https://doi.org/10.5465/amj.2009.0824

Hermalin, B. E. (2005). Trends in corporate governance. *The Journal of Finance*, *60*(5), 2351–2384. https://doi.org/10.1111/j.1540-6261.2005.00801.x

Hermanson, D. R., Tompkins, J. G., Veliyath, R., & Ye, Z. (2012). The compensation committee process. *Contemporary Accounting Research*, *29*(3), 666–709. https://doi.org/10.1111/j.1911-3846.2011.01118.x

Hill, C. W., & Phan, P. (1991). CEO tenure as a determinant of CEO pay. *Academy of Management Journal*, *34*(3), 701–717. https://doi.org/10.2307/256413

Hofstede, G., Hofstede, G. J., & Minkov, M. (2010). *Cultures and organizations: Software of the mind* (3rd ed.). McGraw-Hill.

Huang, H.-W., Rose-Green, E., & Lee, C.-C. (2012). CEO age and financial reporting quality. *Accounting Horizons*, *26*(4), 725–740. https://doi.org/10.2308/acch-50268

Huang, Q., Jiang, F., Lie, E., & Que, T. (2017). The effect of labor unions on CEO compensation. *Journal of Financial and Quantitative Analysis*, *52*(2), 553–582. https://doi.org/10.1017/S0022109017000072

Jakob, K., & Nam, Y. (2017). Do cultures influence abnormal market reactions before official sovereign debt rating downgrade announcements? *Journal of International Financial Markets Institutions and Money*, *47*, 65–75. https://doi.org/10.1016/j.intfin.2016.11.008

Jensen, M. C. (1993). The modern industrial revolution, exit, and the failure of internal control systems. *The Journal of Finance*, *48*(3), 831–880. https://doi.org/10.1111/j.1540-6261.1993.tb04022.x

Kanagaretnam, K., Lim, C. Y., & Lobo, G. J. (2014). Influence of national culture on accounting conservatism and risk-taking in the banking industry. *The Accounting Review*, *89*(3), 1115–1149. https://doi.org/10.2308/accr-50682

Kosnik, R. D. (1990). Effects of board demography and directors' incentives on corporate greenmail decisions. *Academy of Management Journal*, *33*, 129–150. https://doi.org/10.2307/256355

Laux, C., & Laux, V. (2009). Board committees, CEO compensation, and earnings management. *The Accounting Review*, *84*(3), 869–891. https://doi.org/10.2308/accr.2009.84.3.869

Liu, X. (2016). Corruption culture and corporate misconduct. *Journal of Financial Economics*, *122*(2), 307–327. https://doi.org/10.1016/j.jfineco.2016.06.005

Luo, M. (2011). A bright side of financial constraints in cash management. *Journal of Corporate Finance*, *17*(5), 1430–1444. https://doi.org/10.1016/j.jcorpfin.2011.07.001

Malsch, B., Tremblay, M.-S., & Gendron, Y. (2012). Sense-making in compensation committees: A cultural theory perspective. *Organization Studies*, *33*(3), 389–421. https://doi.org/10.1177/0170840611433993

Masulis, R. W., & Mobbs, S. (2014). Independent director incentives: Where do talented directors spend their limited time and energy? *Journal of Financial Economics*, *111*(2), 406–429. https://doi.org/10.1016/j.jfineco.2013.10.011

Masulis, R. W., Wang, C., Xie, F., & Zhang, S. (2020). *Directors: Older and wiser, or too old to govern?* (Finance Working Paper 584). European Corporate Governance Institute (ECGI).

Masulis, R. W., & Zhang, E. J. (2019). How valuable are independent directors? Evidence from external distractions. *Journal of Financial Economics*, *132*(3), 226–256. https://doi.org/10.1016/j.jfineco.2018.02.014

McPherson, M., Smith-Lovin, L., & Cook, J. M. (2001). Birds of a feather: Homophily in social networks. *Annual Review of Sociology*, *27*, 415–444. https://doi.org/10.1146/annurev.soc.27.1.415

Mudrack, P. E. (1989). Age-related differences in Machiavellianism in an adult sample. *Psychological Reports*, *64*(3 suppl), 1047–1050. https://doi.org/10.2466/pr0.1989.64.3c.1047

Murphy, K. J. (1999). Executive compensation. In O. C. Ashenfelter & D. Card (Eds.), *Handbook of labor economics* (Vol. 3) (pp. 2485–2563). Elsevier. https://doi.org/10.1016/S1573-4463(99)30024-9

Neeley, C. R., & Boyd, N. G. (2010). The influence of executive compensation on employee behaviors through precipitating events. *Journal of Managerial Issues*, *22*(4), 546–559. https://doi.org/10.2307/25822530

Newman, H. A., & Mozes, H. A. (1999). Does the composition of the compensation committee influence CEO compensation practices? *Financial Management*, *28*(3), 41–53. https://doi.org/10.2307/3666182

O'Reilly, C. A. III, Caldwell, D. F., & Barnett, W. P. (1989). Work group demography, social integration, and turnover. *Administrative Science Quarterly*, *34*, 21–37. https://doi.org/10.2307/2392984

Oxelheim, L., & Randøy, T. (2003). The impact of foreign board membership on firm value. *Journal of Banking and Finance*, *27*, 2369–2392. https://doi.org/10.1016/S0378-4266(02)00395-3

Ozkan, N. (2011). CEO compensation and firm performance: An empirical investigation of UK panel data. *European Financial Management*, *17*(2), 260–285. https://doi.org/10.1111/j.1468-036X.2009.00511.x

Pan, Y., Siegel, S., & Wang, T. Y. (2017). Corporate risk culture. *Journal of Financial Quantitative Analysis*, *52*, 2327–2367. https://doi.org/10.1017/S0022109017000771

Pfeffer, J. (1981). Understanding the role of power in decision making. In J. M. Shafritz & J. S. Ott (Eds.), *Classics of organization theory* (pp. 137–154).

Pfeffer, J. (1985). Organizational demography: Implications for management. *California Management Review*, *28*(1), 67–81. https://doi.org/10.2307/41165170

Piketty, T. (2014). *Capital in the 21st century*. Harvard University Press. https://doi.org/10.4159/9780674369542

Piketty, T., & Saez, E. (2003). Income inequality in the U.S. 1913–1998. *Quarterly Journal of Economics*, *118*(1), 1–39. https://doi.org/10.1162/00335530360535135

Rhodes, S. R. (1983). Age-related differences in work attitudes and behavior: A review and conceptual analysis. *Psychological Bulletin*, *93*(2), 328–367. https://doi.org/10.1037/0033-2909.93.2.328

Rost, K., & Weibel, A. (2013). CEO pay from a social norm perspective: The infringement and reestablishment of fairness norms. *Corporate Governance: An International Review*, *21*(4), 351–372. https://doi.org/10.1111/corg.12018

Ruegger, D., & King, E. W. (1992). A study of the effect of age and gender upon student business ethics. *Journal of Business Ethics*, *11*(3), 179–186. https://doi.org/10.1007/BF00871965

Serfling, M. A. (2014). CEO age and the riskiness of corporate policies. *Journal of Corporate Finance*, *25*, 251–273. https://doi.org/10.1016/j.jcorpfin.2013.12.013

Shi, W., Connelly, B. L., Mackey, J. D., & Gupta, A. (2019). Placing their bets: The influence of strategic investment on CEO pay-for-performance. *Strategic Management Journal*, *40*(12), 2047–2077. https://doi.org/10.1002/smj.3050

Smith, C. W. Jr., & Watts, R. L. (1992). The investment opportunity set and corporate financing, dividend, and compensation policies. *Journal of Financial Economics*, *32*(3), 263–292. https://doi.org/10.1016/0304-405X(92)90029-W

Stock, J. H., & Yogo, M. (2005). Testing for weak instruments in linear IV regression. *Identification and inference for econometric models: Essays in honor of Thomas Rothenberg*. https://ssrn.com/abstract=1734933

Sun, J., & Cahan, S. (2009). The effect of compensation committee quality on the association between CEO cash compensation and accounting performance. *Corporate Governance: An International Review*, *17*(2), 193–207. https://doi.org/10.1111/j.1467-8683.2008.00726.x

Sun, J., Cahan, S. F., & Emanuel, D. (2009). Compensation committee governance quality, chief executive officer stock option grants, and future firm performance. *Journal of Banking & Finance*, *33*(8), 1507–1519. https://doi.org/10.1016/j.jbankfin.2009.02.015

Sundaram, R. K., & Yermack, D. L. (2007). Pay me later: Inside debt and its role in managerial compensation. *The Journal of Finance*, *62*(4), 1551–1588. https://doi.org/10.1111/j.1540-6261.2007.01251.x

Tajfel, H. (Ed.). (1978). *Differentiation between social groups: Studies in the social psychology of intergroup relations*. Academic Press.

Terpstra, D. E., Rozell, E. J., & Robinson, R. K. (1993). The influence of personality and demographic variables on ethical decisions related to insider trading. *The Journal of Psychology*, *127*(4), 375–389. https://doi.org/10.1080/00223980.1993.9915573

Trautmann, S. T., Van De Kuilen, G., & Zeckhauser, R. J. (2013). Social class and (un) ethical behavior: A framework, with evidence from a large population sample. *Perspectives on Psychological Science*, *8*(5), 487–497. https://doi.org/10.1177/1745691613491272

Vafeas, N. (2003). Length of board tenure and outside director independence. *Journal of Business Finance & Accounting*, *30*(7/8), 1043–1064. https://doi.org/10.1111/1468-5957.05525

Veprauskaite, E., & Adams, M. (2013). Do powerful chief executives influence the financial performance of UK firms? *The British Accounting Review*, *45*(3), 229–241. https://doi.org/10.1016/j.bar.2013.06.004

Vroom, V. H., & Pahl, B. (1971). Relationship between age and risk taking among managers. *Journal of Applied Psychology*, *55*(5), 399–405. https://doi.org/10.1037/h0031776

Westphal, J. D., & Zajac, E. J. (1995). Who shall govern? CEO/board power, demographic similarity, and new director selection. *Administrative Science Quarterly*, *40*, 60–83. https://doi.org/10.2307/2393700

Wilhelm, P. G. (1993). Application of distributive justice theory to the CEO pay problem: Recommendations for reform. *Journal of Business Ethics*, *12*, 469–482. https://doi.org/10.1007/BF01666561

Xie, B., Davidson, W. N. III, & DaDalt, P. J. (2003). Earnings management and corporate governance: The role of the board and the audit committee. *Journal of Corporate Finance*, *9*(3), 295–316. https://doi.org/10.1016/S0929-1199(02)00006-8

Yermack, D. (1996). Higher market valuation of companies with a small board of directors. *Journal of Financial Economics*, *40*(2), 185–211. https://doi.org/10.1016/0304-405X(95)00844-5

Yermack, D. (1997). Good timing: CEO stock option awards and company news announcements. *The Journal of Finance*, *52*(2), 449–476. https://doi.org/10.1111/j.1540-6261.1997.tb04809.x

Yim, S. (2013). The acquisitiveness of youth: CEO age and acquisition behaviour. *Journal of Financial Economics*, *108*(1), 250–273. https://doi.org/10.1016/j.jfineco.2012.11.003

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How to cite this article: Li, Y., Clements, M., Padgett, C., & Zhang, X.-Y. (2023). Does the age of compensation committee members matter for CEO compensation? *Corporate Governance: An International Review*, 1–25. https://doi.org/10.1111/corg.12560

APPENDIX A: DEFINITION OF VARIABLES.

Variable	Definition
Log(TC)	The natural logarithm of the sum of all CEO compensation: base salary, annual bonus, equity-linked, pension, and others
Delta	The pound change in the CEO's personal firm-based wealth with respect to a 1% change in the stock price, in millions
TC_AT	The ratio of CEO total compensation to total assets
Excess_TC	The residual component of CEO total pay that cannot be predicted by economic determinants
CC_Age	The average age of the compensation committee members
Chairman_Age	The age of the chairman of the compensation committee in years
Chairman_Tenure	The natural logarithm of the number of years the chairman of the compensation committee has been serving in the current role
Weighted_Age	The weighted average age of the compensation committee members, in which each compensation committee member's age is proportionately weighted based on the number of outside directorships he holds
CC_UAI	The average uncertainty avoidance index of compensation committee members according to each member's country origin. The uncertainty avoidance index is the country-level uncertainty avoidance index developed by Hofstede et al. (2010)
CC_Experience	The percentage of compensation committee members who sit on over three public boards
CC_Tenure	The natural logarithm of the average number of years that the compensation committee members have been serving on the compensation committee
CC_Age_Dissimilarity	The standard deviation of the gap between the age of compensation committee members and the age of the CEO
CC_Indep	The percentage of compensation committee members who are independent
CC_Size	The total number of compensation committee members
CC_Female	The percentage of compensation committee members who are female
CC_British	The percentage of compensation committee members who are British
CEO_CC_Appointment	The ratio of the number of compensation committee members appointed after the incumbent CEO came into power over the total number of the compensation committee members
CEO_Pay_Slice	The ratio of CEO total compensation to the sum of all directors' total compensation
CEO_First	Dummy variable coded 1 if it is the CEO's first year of service at that firm, 0 otherwise
CEO_Age	The age of the CEO in years
CEO_Tenure	The natural logarithm of the number of years the CEO has been serving in the role as CEO
CEO_Female	An indicator variable that equals 1 if a CEO is female, 0 otherwise
Board_Size	The total number of directors on the board
Board_Indep	The ratio of the number of non-executive directors to the total number of directors
Size	The natural logarithm of total assets
Tobin's Q	The market to book value of assets
Volatility	Annualized standard deviation of daily stock returns for the fiscal year
Stock Return	Holding period stock return over the fiscal year
ROA	The ratio of net income to average total assets
Leverage	The ratio of total liabilities to total assets
CC_PDI	The average Power Distance Index of compensation committee members according to each member's country origin. The Power Distance Index is the country-level Power Distance Index developed by Hofstede et al. (2010)
CC_IDV	The average Individualism Index of compensation committee members according to each member's country origin. The Individualism Index is the country-level Individualism Index developed by Hofstede et al. (2010)
CC_MAS	The average Masculinity Index of compensation committee members according to each member's country origin. The Masculinity Index is the country-level Masculinity Index developed by Hofstede et al. (2010)
CC_LTO	The average Long-term Orientation Index of compensation committee members according to each member's country origin. The Long-term Orientation Index is the country-level Long-term Orientation Index developed by Hofstede et al. (2010)
CC_LVR	The average Indulgence Versus Restraint Index of compensation committee members according to each member's country origin. The Indulgence Versus Restraint Index is the country-level Indulgence Versus Restraint Index developed by Hofstede et al. (2010)