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Chair–CEO age dissimilarity and firm value – evidence from China

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Abstract

Purpose – This study examines how age dissimilarity between the Chairman and Chief Executive Officer influences firm value. We also explore whether board monitoring intensity changes with the age dissimilarity between the Chair and CEO and whether it moderates the relationship between their age dissimilarity and firm value.

Design/methodology/approach – We test our hypothesis by analysing 37,200 firm-year observations from 3,870 unique Chinese Stock Exchange-listed firms (2001–2021) using OLS, 2SLS Heckman and PSM methods.

Findings – We find that higher age dissimilarity in firms is associated with decreased firm value. Additionally, increased age dissimilarity between the Chair and CEO is linked to lower board meeting frequency (low board monitoring intensity), negatively impacting firm value. This effect is more pronounced in firms with higher agency conflict, low concentration, dispersed ownership and non-SOE. Our findings are consistent and robust across alternative measures and endogeneity tests.

Research limitations/implications – Our findings stress the policy importance of increasing board meeting frequency to enhance internal monitoring, mitigating potential negative impacts on firm value from age dissimilarity in top leadership roles.

Originality/value – Our novel research emphasizes the unique influence of age diversity in top management roles (Chair and CEO) on firm strategy, coordination and communication – an understudied aspect of corporate governance. Our findings clarify the distinct impact of this factor on overall firm value.

Keywords Age dissimilarity, Chair and CEO, Firm value, Board monitoring intensity, SOE, Agency problem, China

Paper type Research paper

1. Introduction

This study investigates whether age dissimilarity between the Chairman (Chair) and Chief Executive Officer (CEO) affects firm value. Further, we examine whether board monitoring intensity varies depending on the age dissimilarity between the Chair and CEO. Finally, we investigate whether the board monitoring intensity moderates the association between Chair and CEO age dissimilarity and firm value. The Upper Echelon Theory (UET) proposes that the personal characteristics of top managers, including their age, can significantly impact organisational outcomes. Empirical research based on UET evidence that top management team (TMT) attributes affect financial reporting quality (Habib and Hossain, 2013), strategic decision-making (Amason and Sapienza, 1997) and firm performance (Wang *et al*., 2016). The age of the Chair and CEO indicates their wealth of experience and cognitive abilities, which

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may directly or indirectly impact individual work attitudes, behaviours, and values (Li *et al*., 2008). Therefore, it is increasingly important to understand the impact of age dissimilarity on firms (Rabl and Triana, 2014). Given the critical role of the Chair and CEO individuals in shaping the firm's strategy, their age dissimilarity may be a crucial element to consider.

The impact of the Chair-CEO age dissimilarity on firm value is a topic that has received limited attention in existing academic research. A harmonious relationship between the Chair and CEO increases the alignment of interests, promoting the maximisation of firm value and personal benefits (Li and Roberts, 2017). Goergen *et al*. (2015) assert that the Chair-CEO age dissimilarity can lead to cognitive conflict, resulting in more effective board oversight and higher firm value in Germany. At the same time, Zhou *et al*. (2019) reiterate that the Chair-CEO age dissimilarity can reduce excessive risk-taking between firms. Moreover, the Chair-CEO age dissimilarity could lead to conflict in the decision-making process, such as task conflict and relationship conflict (Amason, 1996). Task conflict positively impacts team performance, while relationship conflict negatively impacts team performance (Jehn, 1997; Simons and Peterson, 2000). Both types of conflict are destructive to firm performance (De Dreu and Weingart, 2003). Task conflict has a far less positive impact on enterprises than relationship conflict's negative impact (Korsgaard *et al*., 2008), even if conflict management methods are used (Choi and Cho, 2011).

However, previous studies on the Chair-CEO age dissimilarity (Goergen *et al*., 2015; Zhou *et al*., 2019) are conducted based on western developed economies. The cultural background of Chinese listed firms significantly differs from that of firms in developed economies, and such differences in cultural backgrounds may lead to conflicts in cognitive styles among individuals (Chow, 2023). For individual culture, the Confucian values emphasise respect for elders and authority figures, which may lead to a more hierarchical power structure within Chinese listed firms, called "paternalistic leadership" (Farh *et al*., 2014). It combines strong discipline and authority with benevolence and moral integrity, which are couched in a "personalistic" atmosphere and are common in Chinese listed firms (Farh and Cheng, 2000). This may make the relationship between the Chair and CEO age dissimilarity and firm value in Chinese listed firms more complex than in Western firms. On the other hand, emerging market business cultures are relatively risk-averse because these markets used to be closed economies with less competition between firms. Therefore, firms rarely engage in risk-taking investments (Gilpin, 2000). Thus, the applicability of conclusions based on Western advanced economies has yet to be explored to a large extent in emerging markets. Additionally, the way conflicts are addressed may vary across different cultural backgrounds. Westerners tend to confront conflicts directly, while Asians tend to use avoidance to handle conflicts (Tse *et al*., 1994; Weldon and Jehn, 2018), especially in Chinese firms (Chen *et al*., 2005). Many cross-cultural management studies show these differences because many Asians are collectivists (Triandis, 1990), and their values may lead to an emphasis on harmony and conflict resolution to maintain relationships (Morris *et al*., 1998).

Further, we analyse how firm monitoring influences the relationship between Chair-CEO age dissimilarities and firm value. We argue that board meetings are one of the critical strategies to monitor top management. When there is high trust among the TMT, task conflict is unlikely to lead to relationship conflict between the TMT (Simons and Peterson, 2000). Based on the "similarity attraction" phenomenon, Chairs and CEOs with low age dissimilarity are more likely to share information frequently and have stronger trust, leading to more frequent board meetings. Due to cultural differences, Chinese managers are more inclined to avoid conflict than their Western counterparts (Fu *et al*., 2008; Morris *et al*., 1998). Therefore, the Chair and CEO will avoid conflict escalation by reducing social connections, which will decrease the frequency of board meetings and firm performance.

Amidst competing arguments, this study asserts that the Chair-CEO age dissimilarity can impact firm value. The Chair-CEO age dissimilarity may result in power struggles and communication difficulties that impede decision-making and strategy execution (Camelo-Ordaz *et al*., 2014; De Dreu and Beersma, 2005). This could stem from the divergence in

perspectives and priorities that arise from their age-related experiences, which is heterogeneity. Heterogeneity can give rise to viewpoint conflicts and affect firm value. In addition, "similarity attraction" suggests that humans tend to interact and communicate with those who share similar attributes (McPherson *et al*., 2001); such interactions would yield more positive feedback and limit the emergence of divergent and conflicting opinions. In corporate governance, the Chair-CEO age dissimilarity can decrease effective communication and increase differences in opinions, thereby hindering decision-making efficiency and creating a lack of coordination and cooperation that delays firm operations (Lee *et al*., 2014).

Using a sample of 37,200 firm-year observations in the Chinese Stock Exchange for 2001–2021, this study finds a negative association between Chair-CEO age dissimilarity and firm value. Chair and CEO age dissimilarity could increase relationship conflict and reduce the frequency of board meetings and the efficiency of business operations (Lee *et al*., 2014). Regarding economic significance, a 1% increase in the Chair-CEO age dissimilarity reduces the firm's value by 0.5%. Also, we find a negative association between the Chair-CEO age dissimilarity and board monitoring intensity. Results show that board monitoring intensity negatively moderates the effect of Chair and CEO age dissimilarity on firm value. Afterwards, based on a cross-sectional analysis, firms with higher free cash flow face more severe agency conflicts (Gugler and Yurtoglu, 2003), which exacerbates the negative impact of Chair and CEO age dissimilarity on firm value. In a low industry concentration business environment, firms have higher market competitiveness but lower profitability (Pahi and Yadav, 2022), which worsens the negative impact of Chair and CEO age dissimilarity on firm value. We find that Chair and CEO age dissimilarity has a more significant negative effect on firm value in firms with dispersed ownership. The negative impact of Chair and CEO age dissimilarity on firm value in SOEs is insignificant compared to non-SOEs. The results still hold after controlling the impact of management committee meetings. Regarding the endogeneity concern, our results regarding Heckman's two-stage least squares and propensity score matching are robust.

The contribution of this paper is multi-fold. Firstly, the paper enriches the emerging research on the influence of Chair and CEO age dissimilarity on firm value and board monitoring intensity in the Chinese market. In addition, this study contributes to the very scarce literature on the effects of cooperation and conflict between the Chair and CEO. Thus far, extant research has primarily relied on the UET analysis, whereas this study incorporates "similarity attraction" theory, heterogeneity, age effect, cohort effect, social identity theory, social psychology theories, and socioemotional selectivity theory. Furthermore, this study contributes to future SOE-related research by including a comparison analysis between State-Owned Enterprises (SOE) and non-SOE in the cross-sectional analysis. An important implication of this study is that firms should consider aligning age diversity within top management to mitigate conflicts and enhance communication, thereby improving decision-making and firm value. For regulators and professional organizations, the study implies that governance frameworks and guidelines should account for the potential impact of leadership age diversity on firm performance. Regulators may recommend or encourage age alignment within top management to foster better communication and decision-making. Additionally, professional bodies could guide best practices for managing leadership dynamics, particularly in firms with significant age dissimilarity, to ensure more effective governance and oversight. These recommendations could help enhance corporate governance standards and improve overall firm performance.

This introduction is followed by a literature review and the development of hypotheses in Section 2. Section 3 discusses the methodology and sample selection process. Section 4 discusses empirical results and robustness tests. Finally, section 5 summarises and concludes this study.

2. Literature review and hypothesis development

2.1 Demographics, age and age dissimilarity

The evolving TMT workforce, with an increasing presence of young members, has raised attention to age-related dynamics. Demographic factors like age, tenure, experience, education,

nationality, and gender significantly influence behaviour and decision-making (Hambrick and Mason, 1984; Keck, 1997; Patzelt *et al*., 2008; Heenipellage *et al*., 2022; Kamran *et al*., 2023; Nielsen and Nielsen, 2013; Tonoyan and Olson-Buchanan, 2023). Age is a crucial basis for group classification, impacting team dynamics. Age dissimilarity in TMTs can manifest as Age Effects and Cohort Effects, influencing decision-making and strategic direction (Taylor, 1975). Older chairpersons, with more management experience, make accurate judgements and perform supervisory duties effectively (Hambrick *et al*., 2015). Age dissimilarity may impact the power dynamic between the CEO and Chair, leading to interpersonal conflicts, especially if the Chair is older than the CEO (Rahim, 2002).

2.2 Impact of internal coordination and conflict on firm performance

Effective internal coordination and cooperation are critical for team performance, impacting firm outcomes. In the strategic decision-making process, conflicts within senior management teams are inevitable due to complexity and uncertainty (Simons and Peterson, 2000). Internal conflict is characterised by cognitive versus affective conflicts and task versus relationship conflicts (Amason, 1996; Jehn, 1997; Parayitam and Dooley, 2009). Task conflict, fostering diverse opinions, is theoretically positive for team performance (Mooney *et al*., 2007). However, empirical evidence varies, with some studies showing negative or insignificant correlations (De Dreu and Weingart, 2003; De Wit *et al*., 2012). Relationship conflict, fuelled by dissimilarity, harms team performance (Parayitam and Dooley, 2009). Age dissimilarity, particularly between Chairs and CEOs, may hinder personal connection and information sharing, leading to biased decision-making and ineffective performance (Gruenfeld *et al*., 1996). Both conflict types negatively impact firm performance, with relationship conflict potentially overshadowing the positive effects of task conflict (De Dreu and Weingart, 2003). Conflict management interventions addressing the root causes of relationship conflict may indirectly manage task conflict (Choi and Cho, 2011).

Nevertheless, both types of conflict can negatively impact firm performance (De Dreu and Weingart, 2003). Korsgaard *et al*. (2008) note that task conflict has a weak or non-existent impact beyond relationship conflict when examining both task conflict and relationship conflict in firms simultaneously. Moreover, the negative effects of relationship conflict on business performance may overshadow the positive effects of task conflict (De Dreu and Weingart, 2003). Therefore, conflict management interventions that focus on addressing the root causes of relationship conflict may indirectly lead to the management of task conflict (Choi and Cho, 2011).

2.3 Age dissimilarity and firm value

Resource dependence theory demonstrates that dissimilarity can affect firm performance (Pfeffer and Salancik, 2015). Tanikawa *et al.* (2017) utilised the socioemotional selectivity theory [1] to investigate the impact of TMT age dissimilarity on a firm's financial performance. Goergen *et al*. (2015) extended this investigation to explore the relationship between the Chair-CEO age dissimilarity and firm value. However, research on TMT age dissimilarity and firm value have produced conflicting theoretical arguments and mixed findings, with studies reporting a positive relationship (Kilduff *et al*., 2000), negative relationship (Ozer, 2010), and non-significant relationship (Nielsen and Nielsen, 2013).

Ning *et al*. (2022) have demonstrated a positive correlation between diverse boards and comparability of financial reports, which suggests that the age dissimilarity of the board can promote the achievement of corporate objectives and effectively enhance the quality of financial reporting (Hsieh *et al*., 2018; Thomsen and Conyon, 2012). Zhou *et al*. (2019) find that Chair and CEO age dissimilarity can positively affect bank loan portfolio risk. Similarly, Goergen *et al*. (2015) believe that Chair and CEO age dissimilarity can cause conflict, leading to improved decision-making quality and enterprise value. Some studies classify conflict resulting from age dissimilarity as task conflict, suggesting that age dissimilarity is a resource

of information, knowledge, and professional experience (Williams and O'Reilly, 1998). From an information and decision-making standpoint, the cognitive conflict within the board caused by age dissimilarity could improve a firm's moral development (Labelle *et al*., 2010), earnings quality (Hoang *et al*., 2017), and decision-making quality (Adams and Ferreira, 2007). Besides, lower Chair-CEO age dissimilarity is associated with weak corporate governance and lower firm value in US firms (Lee *et al*., 2014) and large French firms (Nguyen, 2012). Agency theory (Jensen, 1986) suggests that the Chair may not effectively monitor the CEO, as the trust and loyalty inherent in friendship can undermine the objectivity and willingness if the board is too friendly toward the CEO (Khedmati *et al*., 2020). This concept is referred to as a "friendly board", which argues that a "friendly board" increases agency conflicts and information asymmetry, ultimately reducing firm value (Aebi *et al*., 2012). However, as noted by Milliken and Martins (1996), team heterogeneity with some aspects being beneficial and others detrimental. Some studies find a negative association between age diversity, corporate social responsibility disclosure (Khan *et al*., 2019), and earning management (Komal *et al*., 2023). Scholars also confirm the heterogeneity of executives' views on risk, caution, and wealth, which makes knowledge sharing more difficult (Stahl *et al*., 2010), and is more likely to cause internal conflicts within the group during the decision-making process, resulting in a lack of attraction or even rejection which hinders the effectiveness of board meetings and weakens a firm's profitability (Abt and Knyphausen-Aufseß, 2017).

Based on the "similarity-attraction" phenomena, McPherson *et al*. (2001) state the negative association between TMT members' demographic diversity and firm performance. Individuals like to associate with similar people since it assures greater input while reducing the possibility of discrepancies and various perspectives. As a result, the Chair and CEO's resemblance can help them to receive more favourable feedback and reduce disputes during communication (Lee *et al*., 2014). Directors of similar ages may have similar experiences, attitudes, opinions, and beliefs, which improves the operational efficiency and effectiveness of the organisation (age effect) (Wagner *et al*., 1984). In contrast, dissimilarity ages could heighten cognitive conflict and lead to relational conflict. According to social identity theory, group identification (cohort effect) is key to influencing commitment and motivation (Tajfel and Turner, 1979), while group differences could lead to social fragmentation (Guillaume *et al*., 2012). Diversity can impede collaboration among senior management (Schmid and Mitterreiter, 2020). Homogeneity may increase communication, foster successful working relationships, and promote team cohesiveness, which is favourably connected with team performance. TMTs' internal consistency improves in avoiding internal setbacks and enables them to make good strategic decisions rapidly (Hambrick and Mason, 1984). Thus, TMTs with high age similarity among members will have higher collaboration efficiency and frequency, resulting in timely business decisions and increased firm value. Further, in executing corporate strategy, TMTs' commitment to decision consistency is crucial for corporate performance (Pitcher and Smith, 2001).

Social categorisation (Knapp *et al*., 2011) and the similarity-attraction paradigm (Byrne, 1997) suggest that the Chair-CEO age dissimilarity negatively affects firm value. The categorisation of subgroups based on similarities and differences in work groups results in forming in-groups and out-groups, and people are more willing to cooperate with the former. Cooperation frequency and efficiency are stronger among TMT members with high age similarity than those with low similarity based on age effects, cohort effects, and UET. Furthermore, the greater the Chair-CEO age dissimilarity, the slower the decision-making process, leading to untimely business decisions and reduced firm value (Van Knippenberg and Schippers, 2007). Therefore, the Chair-CEO age dissimilarity may result in reduced communication, lower frequency of information sharing, and more communication errors, leading to poor business decision-making and a decrease in firm value (Williams and O'Reilly, 1998). Based on these studies, we developed the following hypothesis:

H1. Age dissimilarity between the Chair and CEO affect firm value.

2.4 Age dissimilarity and board monitoring intensity

Board monitoring intensity is crucial to corporate governance, as it ensures that the board of directors can effectively oversee top management's actions and protect shareholders' interests. Age dissimilarity is one factor that has been shown to impact board functioning and monitoring intensity, particularly in the context of Chair and CEO relationships. Age dissimilarity can bring various perspectives and experiences to the boardroom, improving decision-making and reducing groupthink. On the other hand, age dissimilarity can also lead to communication difficulties and conflicts due to generational differences and varying experience levels. Based on the "similarity-attraction" phenomena, interactions and frequency of interpersonal relationships are higher among people with similarities (McPherson *et al*., 2001). Age dissimilarity between the Chair and CEO could negatively affect board monitoring intensity, leading to a power struggle and undermining the board's effectiveness, specifically when the Chair and CEO have a significant age dissimilarity and career horizon. Also, the Chair may be less (or more) willing or able to challenge the CEO and hold the other accountable for their actions. This can lead to a lack of oversight and a lower monitoring intensity. Therefore, the following hypothesis is proposed based on the above discussion:

H2. Age dissimilarity between the Chair and CEO affects the board monitoring intensity.

2.5 Age dissimilarity, firm value and board monitoring intensity

Board monitoring intensity significantly impacts firm operations and performance (Jaffar and Abdul-Shukor, 2016). Empirical Research indicates that increased monitoring is associated with improved performance, helping identify and rectify issues promptly and deterring misconduct (Vafeas, 1999). However, excessive monitoring may hinder innovation and risk-taking, which are crucial for long-term growth (Adams and Mehran, 2005). A highly effective board can navigate challenges of age diversity, leveraging its benefits like diverse opinions and in-depth discussions. Effective boards ensure age diversity contributes to decision-making and strategy creation, enhancing firm performance and value. In contrast, less effective boards overseeing senior management may amplify age diversity drawbacks, leading to conflicts and poor decision-making, negatively affecting firm value. Enhancing board monitoring efficiency could impact the relationship between age diversity and firm value. Increased board meeting frequency may improve communication and collaboration, particularly for chairs and CEOs with significant age dissimilarity, leading to better decision-making and improved firm performance (Ntim and Osei, 2011). Yet, it could also escalate conflicts, especially if age dissimilarity is large, potentially harming firm performance and value (Adams and Ferreira, 2007). Therefore, we develop the following hypothesis:

H3. Board monitoring intensity moderates the association between Chair and CEO age dissimilarity and firm value.

3. Research methodology

3.1 Measurement of firm value (FV)

We employ two widely used firm value measures, namely Tobin's Q *(TOBINQ)* and Market-to-Book ratio *(MKTBK)* (Hilliard and Zhang, 2015; Sucuahi and Cambarihan, 2016). *TOBINQ* is defined as the market capitalisation plus the difference between the book value of total assets and the book value of equity, all divided by the book value of total assets. If Tobin's Q is greater than 1, it suggests that the firm is perceived to have higher growth potential and firm value because the asset's market value is more than its replacement cost and vice versa. In comparison, the market-to-book ratio is another widely used measure of firm value. A higher *MKTBK* suggests greater perceived firm value and growth potential, as the market value of the

firm's equity is more than the book value suggests. This study measures *MKTBK*, the share price divided by the net book value per share.

3.2 Measurement of Chair-CEO age dissimilarity (GAP)

Empirical research does not show any consensus on the measure of age dissimilarity. Therefore, we consider several measures for Chair and CEO age dissimilarity consistent with the existing literature (Goergen *et al*., 2015; Zhou *et al*., 2019; Zhu *et al*., 2021). This study uses two variables to measure the dissimilarity between the age of the Chair and the CEO. *GAPS* is the age dissimilarity between the Chair and CEO, calculated as the Chair's age minus the CEO's age. The purpose is to test whether the Chair is older or younger than the CEO. *GAPU* is the absolute value of *GAPS*. This variable captures the age difference between the Chair and CEO, regardless of who is older. In addition, *GAPSQU* is the squared *GAPS* used to test whether the regression model has a non-linear relationship (Younsi and Bechtini, 2020).

3.3 Measurement of board monitoring intensity (BMI)

We use two proxies to measure board monitoring intensity. Studies have shown that the number of board meetings indicates board monitoring intensity (Brick and Chidambaran, 2010). Therefore, we follow prior studies (Goergen *et al*., 2015) and use board meetings *(BMEET)* to measure board monitoring intensity, defined as the sum of board meetings and the number of conferences held by the board during the fiscal year (Adams and Mehran, 2005). Following Brick and Chidambaran (2010), we use another proxy *(LNBMEET)*, the natural logarithm of the number of board meetings per year, to measure board monitoring intensity.

3.4 Measurement of control variables

Following Brick and Chidambaran (2010), we control for several Chair characteristics, CEO characteristics, supervisory board characteristics, and firm characteristics that may affect FV and BMI.

Chair and CEO characteristics include the Chair and CEO's different gender *(DIFGEN)*, different educational backgrounds *(DIFEDU)*, cultural differences *(DIFNAT)*, and length of time working together *(JONTENU)*. Following Andres *et al.* (2014), we measure their corresponding power through the replacement *(CHANGE1/CHANGE2)* and the tenure *(TENURE1/TENURE2)* of the Chair and CEO (Kaplan *et al*., 2012). All of these are used to measure the possibility of tacit understanding or conflict between the Chair and CEO. Supervisory board characteristics include Board size *(BODSIZE)*, which refers to the number of directors on the board. Board age *(BODAGE)* refers to the average age of board members. CV Board Age *(CVBA)* controls for age diversity on the board committee and supervisory board. These variables have also impacted firm value (Brick and Chidambaran, 2010; Yermack, 1996).

Firm characteristics include firm size *(FSIZE)*, leverage *(LEVER)*, beta coefficient *(BETA)*, stock volatility *(STOCKVOL)* [2], sales growth *(SALEGR)*, R&D expenses (*R&D*), the ratio of capital expenditure *(CapEx/TA)*, firm listing age *(FIRMAGE)*, and the family firm *(FFIRM)* (Audretsch *et al*., 2013; Bouslah *et al*., 2018; Burney *et al*., 2021; Custódio and Metzger, 2014; Dittmann *et al*., 2010; Le *et al*., 2006; Peng and Jiang, 2010; Popov and Ongena, 2011). Following Goergen *et al*. (2015), this study also includes a set of management committee characteristics that may affect the dependent variable as an additional control for models. As an essential part of the TMT, the board of supervisors plays a supervisory role on the board of directors and the CEO. Management committee characteristics include the management board committee size *(MBSIZE)*, the average tenure of management board committee members *(MBTENU)*, the age of the management

board committee members *(CVMBA)*, and the supervisory board size *(SBSIZE)* (Vafeas, 1999). We refer to Appendix for further details on the variable definitions and the sources.

3.5 Empirical model

In H1, we examine the association of Chair and CEO age dissimilarity and firm value. The following Ordinary Least Square (OLS) regression tests the H1.

$$\begin{aligned} FV_{i,t} = {} & \beta_0 + \beta_1 GAP_{i,t} + \beta_2 DIFEDU_{i,t} + \beta_3 DIFGEN_{i,t} + \beta_4 DIFNAT_{i,t} + \beta_5 JONTENU_{i,t} \\ & + \beta_6 TENURE1_{i,t} + \beta_7 CHANGE1_{i,t} + \beta_8 TENURE2_{i,t} + \beta_9 CHANGE2_{i,t} \\ & + \beta_{10} BODAGE_{i,t} + \beta_{11} BODSIZE_{i,t} + \beta_{12} CVBA_{i,t} + \beta_{13} LEVER_{i,t} + \beta_{14} CapEx/TA_{i,t} \\ & + \beta_{15} FFIRM_{i,t} + \beta_{16} FIRMAGE_{i,t} + \beta_{17} R\&D_{i,t} + \beta_{18} SALEGR_{i,t} + \beta_{19} FSIZE_{i,t} \\ & + \beta_{20} BETA_{i,t} + \beta_{21} STOCKVOL_{i,t} + \beta_{22} CVMBA_{i,t} + \beta_{23} MBSIZE_{i,t} + \beta_{24} MBTENU_{i,t} \\ & + \beta_{25} SBSIZE_{i,t} + INDUSTRY + YEAR + \varepsilon_{i,t} \end{aligned} \tag{1}$$

To test H1, the primary variable of interest is $\beta_1 GAP_{i,t}$. $GAP_{i,t}$ is the proxy for the age dissimilarity between the Chair and CEO. As shown in Section 3.2, we consider two different measures of age dissimilarity: *GAPS* and *GAPU*. Firm value is the dependent variable in H1. This study uses two primary measures of firm value (*FV*), such as Tobin's Q *(TOBINQ)* and Market-to-Book ratio *(MKTBK)*. In equation (1), a positive (negative) coefficient of $\beta_1 GAP_{i,t}$ will indicate that age dissimilarity increases (decreases) firm value.

In H2, we posit that the age dissimilarity between the Chair and CEO will likely affect the firm's monitoring needs. Therefore, to test H2, we develop the following OLS regression model is developed:

$$\begin{aligned} BMI_{i,t} = {} & \gamma_0 + \gamma_1 GAP_{i,t} + \gamma_2 DIFEDU_{i,t} + \gamma_3 DIFGEN_{i,t} + \gamma_4 DIFNAT_{i,t} + \gamma_5 JONTENU_{i,t} \\ & + \gamma_6 TENURE1_{i,t} + \gamma_7 CHANGE1_{i,t} + \gamma_8 TENURE2_{i,t} + \gamma_9 CHANGE2_{i,t} \\ & + \gamma_{10} BODAGE_{i,t} + \gamma_{11} BODSIZE_{i,t} + \gamma_{12} CVBA_{i,t} + \gamma_{13} LEVER_{i,t} + \gamma_{14} CapEx/TA_{i,t} \\ & + \gamma_{15} FFIRM_{i,t} + \gamma_{16} FIRMAGE_{i,t} + \gamma_{17} R\&D_{i,t} + \gamma_{18} SALEGR_{i,t} + \gamma_{19} FSIZE_{i,t} \\ & + \gamma_{20} BETA_{i,t} + \gamma_{21} STOCKVOL_{i,t} + \gamma_{22} CVMBA_{i,t} + \gamma_{23} MBSIZE_{i,t} \\ & + \gamma_{24} MBTENU_{i,t} + \gamma_{25} SBSIZE_{i,t} + INDUSTRY + YEAR + \varepsilon_{i,t} \end{aligned} \tag{2}$$

In H2, the primary variable of interest is $\gamma_1 GAP_{i,t}$. A positive association on $\gamma_1 GAP_{i,t}$ will indicate that age dissimilarity increases board monitoring intensity and vice versa. As shown in Section 3.3, we use *BMEET* and *LNBMEET* to measure the intensity of the board monitoring. We conduct both OLS and Poisson regression equations to test H2. Consistent with Goergen *et al.* (2015), the Poisson regression equation is an appropriate regression model for a variable measured on count data, such as *BMEET* (Hayat and Higgins, 2014).

In H3, we hypothesise that board monitoring intensity moderates the association between Chair and CEO age dissimilarity and firm value. We develop the following OLS regression model to examine the H3:

$$FV_{i,t} = \alpha_0 + \alpha_1 GAP_{i,t} + \alpha_2 BMI_{i,t} + \alpha_3 GAP_{i,t} * BMI_{i,t} + \alpha_4 DIFEDU_{i,t} + \alpha_5 DIFGEN_{i,t} + \alpha_6 DIFNAT_{i,t} + \alpha_7 JONTENU_{i,t} + \alpha_8 TENURE1_{i,t} + \alpha_9 CHANGE1_{i,t} + \alpha_{10} TENURE2_{i,t} + \alpha_{11} CHANGE2_{i,t} + \alpha_{12} BODAGE_{i,t} + \alpha_{13} BODSIZE_{i,t} + \alpha_{14} CVBA_{i,t} + \alpha_{15} LEVER_{i,t} + \alpha_{16} CapEx/TA_{i,t} + \alpha_{17} FFIRM_{i,t} + \alpha_{18} FIRMAGE_{i,t} + \alpha_{19} R\&D_{i,t} + \alpha_{20} SALEGR_{i,t} + \alpha_{21} FSIZE_{i,t} + \alpha_{22} BETA_{i,t} + \alpha_{23} STOCKVOL_{i,t} + INDUSTRY + YEAR + \varepsilon_{i,t} \quad (3)$$

The primary variable of interest is $\alpha_3 GAP_{i,t} * BMI_{i,t}$. When α_1 is a positive coefficient, a positive association on α_3 would suggest that an increase in the board monitoring intensity could promote the positive impact of the Chair and CEO's age dissimilarity on firm value (positive moderator). In contrast, a negative association on α_3 could indicate that an increase in the board monitoring intensity would negatively moderate the positive effect of the Chair and CEO's age dissimilarity on firm value (negative moderator). Conversely, when α_1 is a positive coefficient, a positive association of α_3 could suggest that an increase in the intensity of board monitoring would reduce the negative impact of the Chair and CEO age dissimilarity on firm value (negative moderator; weakening the main effect), while a negative association on α_3 would suggest that an increase in the intensity of board monitoring would enhance the negative impact of the Chair and CEO age dissimilarity on firm value (negative moderator). In addition, this positive association on $\alpha_2 BMI_{i,t}$ would suggest that firm value could increase with higher board monitoring intensity (Wang *et al*., 2018).

3.6 Sample selection and distribution

This study extracts the relevant financial and firm governance data of 5,049 Chinese listed firms from 1998 to 2021 from the China Stock Market & Accounting Research Database (CSMAR) (Du and Boateng, 2015), we drop the missing firm-year observations. Table 1 illustrates the sample selection process. After calculating the data for some firm-specific financial variables, we exclude 3,134 observations from 1998 to 2000, which are not part of the study period. In addition, we exclude missing values and outliers in the remaining sample data. Following Fang *et al*. (2021), we excluded financial institutes (SIC codes between J66 to J69), because of their unique regulatory environments. The final sample of this study is 37,200 firm-year observations from 3,870 unique firms. All the continuous variables are winsorised, top and bottom, at a 1% level to rule out any potential biases from outliers. Table 2 reports a

Table 1. Sample selection procedure

Selection process	Observations
Total observations produced from 1998 to 2021	56,478
Drop: observations produced from 1998 to 2000	(3,134)
	53,344
Drop: observations with missing data on Chair and CEO age (7,986), gender (3,597), tenure ($N = 152$), Tobin's Q ($N = 1,566$), board meeting ($N = 36$), sales ($N = 413$) and R&D expenses ($N = 741$)	(14,491)
	38,853
Drop: missing industry code & SIC codes between J66-J69 (financial institutes)	(1,653)
Total sample (2001 to 2021)	*37,200*

Source(s): Authors' own calculation

Table 2. Industry distribution

SIC code	Industry	*N*	%
A1-A4	Agriculture	614	1.65
A5; B06-B11; C13	Mining	1,474	3.96
C14-C15	Food manufacturing	979	2.63
C17-C24	Machine manufacturing	2,048	5.51
C25-C28	Chemical manufacturing	5,684	15.28
C29-C43	Metal and non-metal	14,873	39.98
D44-D46	Utility	1,379	3.71
E47-E50	Construction	931	2.50
F51-F52	Retailing	2,264	6.09
G53-G60	Transport	1,290	3.47
H61-H62	Hotel	158	0.42
I63-I65	IT	2,092	5.62
K70; L71	Real estate	1,865	5.01
L72; M73-M75	Business and research service	668	1.80
N77-N78; O79-O81	Other service	475	1.28
Q83	Health service	66	0.18
R85-R86	Press	340	0.91
Total		*37,200*	

Source(s): Authors' own calculation

distribution of samples based on industry classification. We follow the SIC code of CSMAR to classify the firms consistent with the prior study (Xie *et al.*, 2021). The sample is well distributed. Sample observations of this study include a total of 17 industries. As an economic pillar industry in the Chinese market, industrial products account for the majority of the sample in this study.

4. Empirical results

4.1 Descriptive statistics

Table 3 reports the descriptive statistics of all the variables used in this study. The mean (median) of *TOBINQ*, *MKTBK*, *NAVPS*, and *MKTVAL* are 2.45(1.87), 3.12(3.11), 4.40(3.75) and 22.65(22.50). Sample firms hold an average of 11.84 board meetings *(BMEET)* annually. Most CEOs are younger than Chairs. The *GAPS (GAPU)* mean is 3.59 (5.94) years, ranging from 0 to 28. A total of 6% of the sample firm-year has a 20-year age gap between Chair and CEO *(GAP20)*, and the mean of *GAP15 (GAP10)* is 12% (24%) of the sample firm. The mean age of the Chair and CEO is 52.15 (48.56) years. Regarding control variables, 84% of the Chairs and CEOs have different educational backgrounds. A total of 8% of the sample firm-year observations have gender diversity. Finally, 43% of the sample firms are SOE firms, and 20% have a majority shareholder with over 50% ownership.

4.2 Mean difference test

Table 4 reports the results of the difference in mean for all the variables for the lower age dissimilarity (*GAPU* ≤ median) and higher age dissimilarity (*GAPU* > median) categories. Firm value is lower, and the board meets less frequently when the Chair and CEO's age dissimilarity is higher. The findings are consistent across all the measures of firm value. Also, differences in Chair and CEO education *(DIFEDU)*, nationality *(DIFNAT)*, and gender diversity *(DIFGEN)* are greater within the group of firms with higher Chair and CEO age dissimilarity (*GAPU* > median). The reported variables are statistically significant at the 10% level. This result tentatively supports our hypothesis.

Table 3. Descriptive statistics

Variable	Mean	S.D.	P25	P50	P75	Skewness	Kurtosis
TOBINQ	2.45	1.79	1.34	1.87	2.86	2.56	11.09
MKTBK	3.12	0.05	3.08	3.11	3.15	0.69	3.45
NAVPS	4.40	3.07	2.50	3.75	5.55	2.30	13.88
MKTVAL	22.65	1.08	21.89	22.50	23.24	0.82	3.99
BMEET	11.84	4.98	8.00	11.00	14.00	1.03	4.15
LNBMEET	2.16	0.39	1.95	2.20	2.40	0.02	2.93
GAPS	3.59	8.15	0.00	1.00	8.00	0.75	4.04
GAPU	5.94	6.75	0.00	4.00	9.00	1.38	4.43
GAPSQU	80.85	153.73	0.00	16.00	81.00	2.85	11.24
GAP20	0.06	0.23	0.00	0.00	0.00	3.77	15.21
GAP15	0.12	0.32	0.00	0.00	0.00	2.40	6.74
GAP10	0.24	0.42	0.00	0.00	0.00	1.24	2.54
GAP5	0.46	0.50	0.00	0.00	1.00	0.17	1.03
DIFEDU	0.84	0.37	1.00	1.00	1.00	−1.85	4.42
DIFGEN	0.08	0.27	0.00	0.00	0.00	3.19	11.20
DIFNAT	0.02	0.13	0.00	0.00	0.00	7.38	55.43
JONTENU	3.05	2.94	0.92	2.08	4.17	1.44	4.51
CHANGE1	0.01	0.11	0.00	0.00	0.00	8.80	78.36
TENURE1	4.23	3.49	1.50	3.25	6.00	1.04	3.39
CHANGE2	0.01	0.10	0.00	0.00	0.00	10.32	107.42
TENURE2	3.57	3.23	1.17	2.58	4.92	1.27	3.89
BODAGE	50.38	3.91	47.78	50.44	53.00	−0.08	2.79
BODSIZE	8.83	1.84	8.00	9.00	9.00	0.73	4.69
CVBA	0.16	0.05	0.12	0.15	0.19	0.27	2.61
CVMBA	0.13	0.05	0.09	0.13	0.16	0.54	3.11
MBSIZE	1.78	0.36	1.61	1.79	2.08	−0.24	3.17
MBTENU	3.23	1.59	2.08	3.00	4.17	0.67	3.22
SBSIZE	1.27	0.28	1.10	1.10	1.61	1.04	3.18
LEVER	0.46	0.22	0.29	0.45	0.61	0.40	3.19
CapEx/TA	0.05	0.08	0.01	0.05	0.09	−0.19	4.36
FFIRM	0.59	0.49	0.00	1.00	1.00	−0.37	1.14
FIRMAGE	9.48	6.53	4.00	8.00	14.00	0.60	2.36
R&D	0.01	0.03	0.00	0.00	0.00	6.37	100.33
SALEGR	0.19	0.53	−0.03	0.11	0.28	4.07	26.76
FSIZE	21.94	1.30	21.02	21.77	22.67	0.74	3.83
BETA	1.13	0.28	0.96	1.13	1.29	0.13	4.10
STOCKVOL	0.46	0.54	0.09	0.27	0.60	2.01	7.27

Note(s): All the variables are defined in Appendix
Source(s): Authors' own calculation

4.3 Correlation analysis

Table 5 presents the Pearson correlations between the dependent and independent variables included in the baseline regression. The test variables *GAPU* and *TOBINQ*, *MKTBK*, *NAVPS*, and *MKTVAL* are all significantly and negatively correlated (correlation coefficients −0.04, −0.03, −0.04, −0.03, $p < 0.01$, respectively). In addition, the test variables *GAPU* and *BMEET*, and *LNBMEET* are also significantly and negatively correlated (correlation coefficients of −0.04, −0.02, $p < 0.01$). This provides univariate support for the negative correlation between the Chair and CEO age dissimilarity and firm value and monitoring intensity, respectively. Similarly, *GAPS* is also significantly negatively correlated with all dependent variables. Firms with a longer co-work time between Chair and CEO *(JONTENU)*, firms with high *R&D*, and firms with high capital expenditures *(CapEx/TA)* have better performance and weaker board monitoring intensity (Full table in Appendix). Firms with high sales growth rates *(SALEGR)* correlate positively with firm value and monitoring intensity.

Table 4. Mean difference test

Variables	GAPU ≤ median	GAPU > median	Mean difference	*t*-statistics
TOBINQ	2.532	2.330	0.202	10.935***
LNTOBINQ	0.788	0.721	0.067	12.329***
MKTBK	3.120	3.119	0.001	2.512**
NAVPS	4.528	4.219	0.309	9.748***
MKTVAL	22.655	22.632	0.023	1.991**
BMEET	11.860	11.820	0.040	0.792*
LNBMEET	2.169	2.144	0.025	6.076***
GAPS	0.371	8.299	−7.928	−88.056***
GAPSQU	5.248	191.554	−186.306	−118.095***
DIFEDU	0.834	0.848	−0.014	−3.723***
DIFNAT	0.012	0.025	−0.013	−8.721***
DIFGEN	0.060	0.100	−0.040	−13.593***
JONTENU	3.374	2.577	0.797	26.771***
CHANGE1	0.010	0.016	−0.005	−4.323***
TENURE1	4.133	4.367	−0.234	−6.257***
CHANGE2	0.008	0.011	−0.003	−2.807***
TENURE2	3.851	3.171	0.680	20.423***
BODAGE	50.336	50.450	−0.115	−2.783***
BODSIZE	8.709	9.010	−0.301	−15.519***
CVBA	0.150	0.164	−0.014	−27.260***
LEVER	0.450	0.466	−0.016	−7.094***
CapEx/TA	0.046	0.048	−0.002	−2.988
FFIRM	0.612	0.559	0.053	10.246***
FIRMAGE	9.336	9.699	−0.362	−5.295***
R&D	0.012	0.008	0.004	12.626***
SALEGR	0.200	0.184	0.016	2.937***
FSIZE	21.925	21.964	−0.039	−2.856***
BETA	1.140	1.114	0.026	8.995***
STOCKVOL	0.449	0.467	−0.018	−3.055***
CVMBA	0.129	0.134	−0.006	−10.091***
MBSIZE	1.780	1.772	0.009	2.246**
MBTENU	3.253	3.199	0.054	3.231***
SBSIZE	1.253	1.290	−0.036	−12.343***

Note(s): *t* statistics in parentheses. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$, NAVPS: $N = 22{,}049$ (GAPU ≤ median); $N = 15{,}076$ (GAPU > median). All the variables are defined in Appendix
Source(s): Authors' own calculation

4.4 Regression analysis

This section uses the empirical model presented in section 3.1 to test the hypotheses, using sample data for OLS linear regression and Poisson regression analysis.

4.4.1 Chair-CEO age dissimilarity and firm value - H1. Table 6 reports the results of the OLS regression for H1. In the H1, we examine the association between Chair and CEO age dissimilarity and firm value. Column (1) only includes the control variables. In columns (2) and (3), we examine the impact of age dissimilarity *(GAPS, GAPU)* on the firm value *(TOBINQ)*. Columns (5) and (6) report the impact of age dissimilarity *(GAPS, GAPU)* on the alternative measure of firm value *(MKTBK)*. There is a sensitivity test in columns (4) and (7), both *GAPU* and *GAPSQU* are taken in the regression (Haans *et al*., 2016). We examine whether the association between Chair and CEO age dissimilarity and firm value has a non-linear relationship in columns (4) and (7). Finally, columns (8) and (9) illustrate whether the results are still available in a complex working environment.

Consistent with the expectation, the association between *GAPS* and *GAPU* on *TOBINQ* shows a negative coefficient (−0.003, −0.005; *t*-value = −3.854, −4.202; $p < 0.01$), which

Table 5. Correlations coefficient: dependent and independent variables

Variables		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
TOBINQ	(1)	–												
MKTBK	(2)	*−0.02*	–											
NAVPS	(3)	*−0.16*	*0.36*	–										
MKTVAL	(4)	*−0.11*	*0.95*	*0.34*	–									
LNBMEET	(5)	*−0.04*	*0.27*	*0.06*	*0.25*	–								
BMEET	(6)	*−0.04*	*0.17*	*0.02*	*0.17*	*0.79*	–							
GAPS	(7)	*−0.03*	0.00	*0.01*	0.00	*−0.04*	*−0.03*	–						
GAPU	(8)	*−0.04*	*−0.03*	*−0.04*	*−0.03*	*−0.04*	*−0.02*	*0.67*	–					
GAPSQU	(9)	*−0.01*	*−0.04*	*−0.01*	*−0.04*	*−0.04*	*−0.03*	*0.68*	*0.93*	–				
GAP20	(10)	0.00	*−0.03*	0.01	*−0.03*	*−0.03*	*−0.04*	*0.55*	*0.68*	*0.85*	–			
GAP15	(11)	0.00	*−0.05*	*−0.02*	*−0.05*	*−0.04*	*−0.03*	*0.57*	*0.79*	*0.86*	*0.69*	–		
GAP10	(12)	*−0.02*	*−0.04*	*−0.03*	*−0.04*	*−0.04*	−0.01	*0.56*	*0.84*	*0.75*	*0.45*	*0.65*	–	
GAP5	(13)	*−0.06*	0.00	*−0.05*	0.00	*−0.03*	0.00	*0.44*	*0.77*	*0.55*	*0.27*	*0.39*	*0.61*	–

Note(s): All the variables are defined in Appendix. Italic indicates significance at the 1% level. This table reports the pairwise correlations between the variables used in the baseline regression. Correlation coefficients are reported for the dependent and independent variables only for the sake of brevity
Source(s): Authors' own calculation

Table 6. Chair-CEO age dissimilarity and firm value

	(1) TOBINQ	(2) TOBINQ	(3) TOBINQ	(4) TOBINQ	(5) MKTBK	(6) MKTBK	(7) MKTBK	(8) TOBINQ	(9) MKTBK	(10) VIF
GAPS		−0.003***			−0.000***			−0.003***	−0.000***	1.14
		(−3.854)			(−3.517)			(−3.973)	(−3.476)	
GAPU			−0.005***	−0.007**		−0.000***	−0.000**			1.14
			(−4.202)	(−2.480)		(−4.341)	(−2.520)			
GAPSQU				0.000			0.000			8.62
				(0.805)			(0.757)			
DIFEDU	−0.026	−0.026	−0.024	−0.024	−0.001**	−0.001**	−0.001**	−0.023	−0.001**	1.18
	(−1.113)	(−1.112)	(−1.035)	(−1.018)	(−2.400)	(−2.319)	(−2.308)	(−1.013)	(−2.245)	
DIFGEN	0.011	0.014	0.021	0.022	0.000	0.000	0.000	0.009	0.000	1.03
	(0.491)	(0.608)	(0.894)	(0.947)	(0.505)	(0.801)	(0.853)	(0.367)	(0.419)	
DIFNAT	0.274***	0.274***	0.289***	0.290***	0.004***	0.004***	0.004***	0.277***	0.004***	1.02
	(3.799)	(3.776)	(3.968)	(3.984)	(4.859)	(5.060)	(5.083)	(3.827)	(4.946)	
JONTENU	0.047***	0.046***	0.041***	0.041***	0.001***	0.001***	0.001***	0.044***	0.001***	6.34
	(8.792)	(8.562)	(7.465)	(7.255)	(10.987)	(9.865)	(9.609)	(8.311)	(10.613)	
CHANGE1	0.012	0.013	0.018	0.019	0.000	0.000	0.001	0.020	0.001	1.05
	(0.190)	(0.202)	(0.278)	(0.292)	(0.616)	(0.697)	(0.714)	(0.306)	(0.767)	
TENURE1	−0.036***	−0.033***	−0.032***	−0.032***	−0.000***	−0.000***	−0.000***	−0.022***	−0.000***	3.31
	(−11.490)	(−10.719)	(−10.048)	(−9.996)	(−10.171)	(−9.787)	(−9.727)	(−7.446)	(−6.372)	
CHANGE2	0.055	0.055	0.056	0.056	0.000	0.000	0.000	0.038	0.000	1.04
	(0.692)	(0.699)	(0.708)	(0.717)	(0.499)	(0.509)	(0.518)	(0.486)	(0.231)	
TENURE2	−0.026***	−0.027***	−0.025***	−0.025***	−0.000***	−0.000***	−0.000***	−0.019***	−0.000***	4.67
	(−5.202)	(−5.351)	(−4.846)	(−4.799)	(−5.899)	(−5.403)	(−5.342)	(−3.844)	(−3.863)	
BODAGE	0.007***	0.008***	0.008***	0.008***	0.000*	0.000*	0.000*	0.011***	0.000***	1.41
	(2.619)	(2.907)	(2.903)	(2.892)	(1.862)	(1.880)	(1.869)	(3.777)	(2.995)	
BODSIZE	−0.000	−0.000	0.000	0.000	0.000*	0.000*	0.000*	0.001	0.000**	1.13
	(−0.071)	(−0.007)	(0.069)	(0.105)	(1.666)	(1.746)	(1.765)	(0.177)	(2.167)	
CVBA	−0.257	−0.179	−0.097	−0.114	−0.001	0.001	0.000	−0.172	−0.001	1.21
	(−1.537)	(−1.089)	(−0.577)	(−0.668)	(−0.252)	(0.274)	(0.176)	(−1.055)	(−0.458)	
LEVER	−0.206**	−0.210**	−0.210**	−0.210**	−0.007***	−0.007***	−0.007***	−0.217**	−0.007***	1.41
	(−2.263)	(−2.315)	(−2.309)	(−2.299)	(−6.505)	(−6.484)	(−6.472)	(−2.389)	(−6.591)	
CapEx/TA	2.256***	2.259***	2.263***	2.262***	0.033***	0.033***	0.033***	2.263***	0.034***	1.13
	(10.354)	(10.370)	(10.363)	(10.362)	(12.444)	(12.431)	(12.421)	(10.383)	(12.547)	

(*continued*)

Table 6. Continued

	(1) TOBINQ	(2) TOBINQ	(3) TOBINQ	(4) TOBINQ	(5) MKTBK	(6) MKTBK	(7) MKTBK	(8) TOBINQ	(9) MKTBK	(10) VIF
FFIRM	0.068***	0.068***	0.069***	0.068***	0.001**	0.001**	0.001**	0.073***	0.001**	1.67
	(2.831)	(2.809)	(2.876)	(2.781)	(2.206)	(2.267)	(2.196)	(3.050)	(2.273)	
FIRMAGE	−0.001	−0.001	−0.001	−0.000	−0.000***	−0.000***	−0.000***	−0.000	−0.000***	1.70
	(−0.230)	(−0.298)	(−0.226)	(−0.196)	(−4.696)	(−4.627)	(−4.625)	(−0.169)	(−4.116)	
R&D	5.540***	5.530***	5.509***	5.509***	0.089***	0.089***	0.089***	5.525***	0.088***	1.74
	(5.621)	(5.618)	(5.599)	(5.599)	(8.645)	(8.610)	(8.611)	(5.628)	(8.644)	
SALEGR	0.161***	0.161***	0.160***	0.160***	0.003***	0.003***	0.003***	0.158***	0.003***	1.05
	(5.933)	(5.933)	(5.915)	(5.918)	(8.658)	(8.645)	(8.649)	(5.743)	(8.392)	
FSIZE	−0.655***	−0.654***	−0.655***	−0.655***	0.033***	0.033***	0.033***	−0.652***	0.033***	1.84
	(−19.426)	(−19.402)	(−19.377)	(−19.374)	(96.826)	(96.651)	(96.647)	(−19.293)	(96.719)	
BETA	−0.898***	−0.898***	−0.900***	−0.900***	−0.009***	−0.009***	−0.009***	−0.895***	−0.009***	1.30
	(−7.670)	(−7.672)	(−7.708)	(−7.708)	(−5.494)	(−5.517)	(−5.518)	(−7.661)	(−5.491)	
STOCKVOL	0.671***	0.671***	0.671***	0.671***	0.009***	0.009***	0.009***	0.671***	0.009***	1.80
	(8.928)	(8.937)	(8.950)	(8.948)	(9.942)	(9.954)	(9.953)	(8.906)	(9.929)	
CVMBA								−0.238	−0.002	1.17
								(−1.458)	(−1.053)	
MBSIZE								−0.060**	0.000	1.18
								(−2.100)	(0.678)	
MBTENU								−0.050***	−0.001***	2.80
								(−5.791)	(−6.004)	
SBSIZE								0.032	−0.001**	1.34
								(1.214)	(−2.398)	
Constant	16.795***	16.754***	16.766***	16.774***	2.407***	2.407***	2.407***	16.692***	2.407***	
	(22.801)	(22.757)	(22.702)	(22.744)	(316.319)	(315.410)	(315.486)	(23.055)	(321.595)	
Industry	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Observations	37,200	37,200	37,200	37,200	37,200	37,200	37,200	37,200	37,200	
Adjusted-R^2	0.4162	0.4164	0.4165	0.4165	0.8903	0.8904	0.8904	0.4172	0.8905	
Mean VIF	–	–	–	–	–	–	–	–	–	2.88

Note(s): Table 6 reports Chair-CEO age dissimilarity and firm value (Tobin's Q & The Market-to-Book ratio). Regression (1), (2), (3), (4), and (8) report the results from the OLS regression of association between Chair-CEO Age dissimilarity and *TOBINQ*. Regression (5), (6), (7), and (9) report the results of the association between Chair-CEO age dissimilarity and alternative measures of firm performance *(MKTBK)*. Column (10) reports the Variance Inflation Factor (VIF). *t*-statistics in parentheses. *$p < 0.10$, **$p < 0.05$, ***$p < 0.01$. Robust *t*-statistics (in parentheses) are based on standard errors clustered by industry and year. All the variables are defined in Appendix

Source(s): Authors' own calculation

indicates that firm value reduces due to the Chair and CEO age dissimilarity. The economic significance of the findings suggests that a 1% increase in the Chair and CEO age dissimilarity causes a corresponding 0.5% reduction in the firm's value. Also, we examine the impact of Chair and CEO age dissimilarity on the *MKTBK* and find that the association of both *GAPS* and *GAPU* are negative (coefficient = −0.0000337 & −0.0000616, *t*-value = −3.517 & −4.341) and the findings are statistically significant at a 1% level. There is a non-linear effect of Chair-CEO age dissimilarity on firm value. Column (4) shows the coefficient for *GAPU* is significantly negative, while the coefficient for *GAPSQU* is not statistically significant (−0.007, *t*-value = −2.480, $p < 0.05$; 0.0001001, *t*-value = 0.805, $p > 0.10$). Column (7) also shows similar results. The original inference remains unchanged when models include the four proxies *(CVMBA, MBSIZE, MBTENU, SBSIZE)* that reflect management board committee characteristics as additional control variables in columns (8) and (9). In other words, the significant negative associated relationship between Chair and CEO age dissimilarity and firm value are not impacted by the involvement of a firm's management board committee.

Regarding the control variables, we find that a firm with a Chair and CEO from different nationalities *(DIFNAT)* and a firm with higher average age of board members *(BODAGE)* positively affects firm value. Firms with higher capital investment (*CapEx/TA*), higher R&D investment *(R&D)*, and higher sales growth *(SALEGR)* increase firm value. Also, we find that family firms *(FFIRM)* have higher firm value (Bebchuk *et al*., 2009; Custódio and Metzger, 2014; Dittmann *et al*., 2010). Overall, we find that a negative coefficient between Chair and CEO age dissimilarity and firm value suggests an age dissimilarity between the Chair and CEO has a negative consequence on firm value. Thus supports H1.

4.4.2 Chair-CEO age dissimilarity and board monitoring intensity - H2. Table 7 reports the results of H2. Column (1) shows the control variables on the board monitoring intensity. In columns (2), (3), (4), and (5), we examine the impact of age dissimilarity *(GAPS, GAPU)* on the board monitoring intensity (*BMEET* and *LNBMEET*). Finally, columns (6) and (7) examine the influence of Chair and CEO age dissimilarity on board monitoring intensity, including several additional attributes of management board committee members *(CVMBA, MBSIZE, MBTENU, SBSIZE)*.

In contrast with prior research (Goergen *et al*., 2015), the results indicate that the association between *GAPS* and *GAPU* on *BMEET* presents a significantly negative association (coefficient = −0.001, −0.001; *t*-value = −4.301, −4.412; $p < 0.01$). Similarly, we examine the impact of Chair and CEO age dissimilarity on the *LNBMEET* and find the association of both *GAPS* and *GAPU* a negative coefficient (−0.001, −0.001; *t*-value = −5.406 & −4.837) and the findings are statistically significant at a 1% level. Specifically, columns (1) and (2) show that for every 1% increase in the age dissimilarity between the Chair and CEO, the strength of internal monitoring decreases at 0.1% accordingly. After adding additional characteristics of management board committee members in columns (6) and (7), Chair and CEO age dissimilarity still has a significant negative impact on board monitoring intensity (*BMEET* and *LNBMEET*). The significant negative relationship associated with the Chair and CEO's age dissimilarity and the board monitoring intensity is not affected regardless of whether the firm's management board committee members are involved. Thus, H2 is supported.

4.4.3 Chair-CEO age dissimilarity, firm value, and board monitoring intensity - H3. Table 8 shows the results for H3. We test whether the effect of the association between Chair and CEO age dissimilarity and firm value is related to board monitoring intensity. Therefore, we use *TOBINQ* and *MKTBK* as proxies for FV; we infirm *BMEET_median* or *LNBMEET_median* as proxies for BMI; we use *GAPS* as proxies for GAP. *BMEET_median (LNBMEET_median)* refers to a dummy variable of value 1 assigned if the value of *BMEET (LNBMEET)* is higher than the median and 0 otherwise. This variable's 1(0) values mean that BMI is relatively stronger (weaker). The primary interest variable is the interaction term between GAP and BMI (i.e. *GAPS*BMEET_median, GAPS*LNBMEET_median*). Columns (1) and (2) of Table 8 show the results of a moderation test using *TOBINQ* to measure firm value. Consistent with the

Table 7. Chair-CEO age dissimilarity and board monitoring intensity

Variables	(1) BMEET	(2) BMEET	(3) BMEET	(4) LNBMEET	(5) LNBMEET	(6) BMEET	(7) LNBMEET
GAPS		−0.001***		−0.001***		−0.001***	−0.001***
		(−4.301)		(−5.406)		(−3.856)	(−4.677)
GAPU			−0.001***		−0.001***		
			(−4.412)		(−4.837)		
DIFEDU	0.017	0.017**	0.017***	0.020***	0.021***	0.018***	0.022***
	(0.013)	(2.570)	(2.644)	(3.723)	(3.807)	(2.923)	(4.122)
DIFGEN	0.002	0.003	0.005	0.004	0.006	0.004	0.005
	(0.005)	(0.570)	(0.850)	(0.702)	(0.962)	(0.632)	(0.900)
DIFNAT	0.056***	0.055***	0.060***	0.038***	0.042***	0.058***	0.041***
	(0.011)	(3.759)	(4.081)	(2.692)	(2.967)	(4.016)	(2.944)
JONTENU	−0.001	−0.001	−0.003*	−0.004**	−0.005***	−0.003**	−0.005***
	(0.002)	(−0.990)	(−1.763)	(−2.565)	(−3.288)	(−2.016)	(−3.708)
CHANGE1	0.053***	0.053**	0.054**	0.054***	0.056***	0.058***	0.060***
	(0.020)	(2.465)	(2.529)	(3.481)	(3.542)	(2.700)	(3.905)
TENURE1	−0.002	−0.001	−0.001	−0.001	−0.001	0.007***	0.006***
	(0.001)	(−0.893)	(−0.838)	(−1.479)	(−1.533)	(6.753)	(5.876)
CHANGE2	0.056***	0.056***	0.056***	0.038**	0.038**	0.043**	0.025
	(0.016)	(2.882)	(2.880)	(2.181)	(2.173)	(2.214)	(1.489)
TENURE2	−0.008***	−0.008***	−0.007***	−0.006***	−0.006***	−0.002	−0.000
	(0.002)	(−6.718)	(−6.155)	(−6.501)	(−5.668)	(−1.500)	(−0.423)
BODAGE	−0.011***	−0.011***	−0.011***	−0.012***	−0.012***	−0.009***	−0.010***
	(0.001)	(−16.115)	(−16.212)	(−19.749)	(−19.968)	(−13.280)	(−16.597)
BODSIZE	−0.011***	−0.010***	−0.010***	−0.012***	−0.012***	−0.010***	−0.012***
	(0.002)	(−9.359)	(−9.314)	(−11.157)	(−11.135)	(−9.389)	(−11.312)
CVBA	0.123*	0.152***	0.167***	0.202***	0.215***	0.078**	0.121***
	(0.069)	(3.983)	(4.302)	(5.481)	(5.849)	(2.020)	(3.236)
LEVER	0.163***	0.161***	0.162***	0.205***	0.206***	0.158***	0.202***
	(0.017)	(10.933)	(10.977)	(13.816)	(13.824)	(10.801)	(13.721)
CapEx/TA	−0.403***	−0.402***	−0.402***	−0.487***	−0.487***	−0.389***	−0.472***
	(0.024)	(−12.886)	(−12.873)	(−16.121)	(−16.111)	(−12.433)	(−15.562)

(*continued*)

Table 7. Continued

Variables	(1) BMEET	(2) BMEET	(3) BMEET	(4) LNBMEET	(5) LNBMEET	(6) BMEET	(7) LNBMEET
FFIRM	0.075***	0.075***	0.076***	0.076***	0.076***	0.075***	0.074***
	(0.008)	(13.809)	(13.845)	(13.180)	(13.237)	(13.373)	(12.625)
FIRMAGE	−0.002***	−0.002***	−0.002***	−0.000	−0.000	−0.001***	0.001***
	(0.001)	(−4.660)	(−4.514)	(−0.421)	(−0.249)	(−2.657)	(2.601)
R&D	−0.081	−0.085	−0.089	−0.117	−0.122	−0.126	−0.166
	(0.217)	(−0.557)	(−0.586)	(−0.844)	(−0.873)	(−0.865)	(−1.261)
SALEGR	0.033***	0.033***	0.032***	0.042***	0.041***	0.030***	0.039***
	(0.009)	(7.589)	(7.484)	(10.533)	(10.448)	(6.984)	(9.933)
FSIZE	0.080***	0.080***	0.080***	0.075***	0.075***	0.077***	0.072***
	(0.005)	(28.720)	(28.677)	(23.315)	(23.254)	(27.086)	(21.544)
BETA	0.015*	0.015	0.014	0.023**	0.022**	0.016	0.023***
	(0.009)	(1.540)	(1.481)	(2.558)	(2.488)	(1.636)	(2.591)
STOCKVOL	0.025***	0.025***	0.025***	0.036***	0.036***	0.026***	0.037***
	(0.004)	(4.461)	(4.469)	(6.799)	(6.793)	(4.554)	(7.092)
CVMBA						0.128***	0.152***
						(3.315)	(4.403)
MBSIZE						0.049***	0.065***
						(8.114)	(10.222)
MBTENU						−0.037***	−0.035***
						(−16.649)	(−18.509)
SBSIZE						−0.035***	−0.059***
						(−4.279)	(−7.944)
Constant	1.120***	1.104***	1.112***	0.684***	0.693***	1.059***	0.655***
	(0.130)	(14.867)	(15.020)	(9.176)	(9.329)	(14.023)	(8.592)
Industry	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	37,200	37,200	37,200	37,200	37,200	37,200	37,200
Adjusted-R^2	–	–	–	0.2101	0.2100	–	0.2233

Note(s): Table 7 reports the Chair-CEO age dissimilarity and board monitoring intensity (Board meetings). Columns (1), (2), (3), and (6) report the results from the Poisson regression of association between Chair-CEO Age dissimilarity and *BMEET*. Columns (4), (5), and (7) report the results from the OLS regression of association between Chair-CEO Age dissimilarity and *LNBMEET*. *t*-statistics in parentheses. *$p < 0.10$, **$p < 0.05$, ***$p < 0.01$. Robust *t*-statistics (in parentheses) are based on standard errors clustered by industry and year. All the variables are defined in Appendix

Source(s): Authors' own calculation

Table 8. Interaction effects of Chair-CEO age dissimilarity and board monitoring intensity on firm value (moderation effects)

Variables	(1) TOBINQ	(2) TOBINQ	(3) MKTBK	(4) MKTBK
GAPS	−0.004***	−0.004***	−0.000***	−0.000***
	(−3.881)	(−4.228)	(−3.883)	(−3.798)
BMEET_median	0.072***		0.001***	
	(3.877)		(6.473)	
*GAPS*BMEET_median*	0.003*		0.000**	
	(1.662)		(2.385)	
LNBMEET_median		0.079***		0.002***
		(4.604)		(8.358)
*GAPS*LNBMEET_median*		0.003**		0.000**
		(2.167)		(2.118)
Controls	Yes	Yes	Yes	Yes
Constant	16.823***	16.851***	2.408***	2.409***
	(22.717)	(22.888)	(315.754)	(318.096)
Industry	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes
Observations	37,200	37,200	37,200	37,200
Adjusted-R^2	0.4168	0.4169	0.8905	0.8906

Note(s): Table 8 reports the interactive effects of the Chair-CEO age dissimilarity and board monitoring intensity on firm value (Tobin's Q) (Moderation effects). *t*-statistics in parentheses. *$p < 0.10$, **$p < 0.05$, ***$p < 0.01$. Robust *t*-statistics (in parentheses) are based on standard errors clustered by industry and year. All the variables are defined in Appendix

Source(s): Authors' own calculation

results in 4.4.1, the values of coefficient α1 in columns (1) and (2) are both −0.004, which is significant at the 1% level (*t*-value = −3.881 & −4.228). Also, the association of both *BMEET_median* and *LNBMEET_median has* a positive coefficient (0.072, 0.079; *t*-value = 3.877 & 4.604), and the findings are statistically significant at a 1% level. Importantly, in these two columns, the coefficients for the variables (i.e. *GAPS*BMEET_median* and *GAPS*LNBMEET_median*) are positive in columns (1) and (2), respectively and are statistically significant at the 10% and 5% levels. Similarly, we performed substitution tests on columns (1), and (2), respectively, and replaced the variable TOBINQ, which measures the value of the firm, with *MKTBK* (columns (3), (4)), keeping the moderator and independent variables unchanged. Similar to columns (1), and (2), *GAPS*BMEET_median* and *GAPS*LNBMEET_median* still maintain a significant positive correlation with *MKTBK*. As a result, the moderating effect of board monitoring intensity as a moderating variable again proves to be significant. Therefore, Chair and CEO age dissimilarity has a greater effect on firm value in firms with lower internal monitoring intensity, and firm performance is reduced due to the generation problem and cognitive washout between Chair and CEO. Thus, the results support H3.

4.5 Additional robustness tests

4.5.1 Alternative measure of firm value. We use Net Asset Value Per Share *(NAVPS)* and Market Value *(MKTVAL)* as alternative measures for *TOBINQ* and *MKTBK* to check the robustness of the findings (Andrikopoulos *et al*., 2022; Huang and Lu, 2022). The higher the *NAVPS* of a firm, the more assets the shareholders own (Li and Xia, 2013). *MKTVAL* can directly reflect the level of firm value (Black and Kim, 2012). We re-estimated equation (1). Table 9 shows the measurement results using alternative measures of firm value. Columns (1) and (2) examine the associations of *NAVPS*, *MKTVAL*, and *GAPS*, respectively. Columns (3)

Table 9. Chair-CEO age dissimilarity and firm value (alternative measure)

Variables	(1) NAVPS	(2) MKTVAL	(3) NAVPS	(4) MKTVAL	(5) MKTVAL
GAPS	−0.004**	−0.001***			
	(−2.231)	(−3.543)			
GAPU			−0.011***	−0.001***	−0.002**
			(−5.867)	(−4.804)	(−2.456)
Controls	Yes	Yes	Yes	Yes	Yes
Constant	−19.774***	6.666***	−19.788***	6.670***	6.672***
	(−27.170)	(43.179)	(−27.009)	(43.044)	(42.955)
Industry	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes
Observations	37,125	37,200	37,125	37,200	37,200
Adjusted-R^2	0.3229	0.8763	0.3233	0.8764	0.8764

Note(s): Table 9 reports the Chair-CEO age dissimilarity and firm value (using alternative measures). *t*-statistics in parentheses. *$p < 0.10$, **$p < 0.05$, ***$p < 0.01$. Robust *t*-statistics (in parentheses) are based on standard errors clustered by industry and year. All the variables are defined in Appendix
Source(s): Authors' own calculation

and (4) examine the associations of *NAVPS*, *MKTVAL*, and *GAPU*, respectively. Column (5) shows a non-linear analysis between Chair and CEO age dissimilarity and firm value involving *MKTBK*, *GAPU*, and *GAPSQU*. Overall, all findings support H1.

4.5.2 Alternative measure of Chair and CEO age dissimilarity. Following prior research, we performed additional tests using the inter-generational age gap. In line with the sociology literature, Strauss and Howe (1997), Goergen *et al*. (2015), and Zhou *et al*. (2019) used *Gap20* as the primary research variable to study firm performance in European business settings. Among listed firms in the Chinese market, SOEs have strict restrictions on the length of employment and promotion of the Chair and CEO. It is rare for the Chair and CEO's age dissimilarity to exceed 20 years old. Zhu *et al*. (2021) used *Gap10* as the primary research variable to study the Chinese market. We combined these two classification methods and broadened them. We shortened the inter-generational age dissimilarity to 5 years as the dividing line and used the four different age dissimilarity dummy variables of Chair and CEO *Gap20/15/10/5 (GAP20/GAP15/GAP10/GAP5)* as the alternative measures of Chair and CEO age dissimilarity. These four dummy variables are used to more comprehensively and accurately test the influence trends of different age dissimilarity between the Chair and CEO on firm value and board monitoring intensity. We re-estimated equation (1) and equation (2).

Table 10 Panel A shows the relationship between the Chair and CEO inter-generational age dissimilarity *(GAP20/15/10/5)* with the primary firm value proxies *TOBINQ* (columns (1) to (4)) and *MKTBK* (columns (5) to (8)). The *GAP20*, *GAP15*, *GAP10*, and *GAP5* coefficients consistently maintained significant negative associations in all the above models (*p*-values level at the 1% level). As with the previous findings, all findings support H1.

After that, Panel B shows the association between the Chair and CEO inter-generational age gap *(GAP20/15/10/5)* with the primary board monitoring intensity proxies *BMEET* (columns (1) to (4)) and *LNBMEET* (columns (5) to (8)). As expected, whether it is the Poisson regression of columns (1) to (4) or the OLS regression of columns (5) to (8), the results are consistent with those in Table 7. The impact of the Chair and CEO age dissimilarity on the *BMEET* and *LNBMEET* is that the association of *GAP20/15/10/5* is negative, and the findings are statistically significant at a 1% or 5% level. As with the previous findings, all findings support H2. Of note, the results of all regressions after adding management board committee characteristics *(CVMBA*, *MBSIZE*, *MBTENU*, *SBSIZE)* as control variables are similar to the existing regressions' results, and the original negative significance results remain negative significant (untabulated). This suggests that the research model is broadly reasonable.

Table 10. Panel A – Chair-CEO age dissimilarity (alternative measure) and firm value

Variables	(1) TOBINQ	(2) TOBINQ	(3) TOBINQ	(4) TOBINQ	(5) MKTBK	(6) MKTBK	(7) MKTBK	(8) MKTBK
GAP20	−0.106***				−0.001***			
	(−3.217)				(−3.171)			
GAP15		−0.066***				−0.001***		
		(−2.774)				(−2.628)		
GAP10			−0.056***				−0.001**	
			(−3.193)				(−2.589)	
GAP5				−0.055***				−0.001***
				(−3.898)				(−3.906)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	16.766***	16.772***	16.775***	16.790***	2.407***	2.407***	2.407***	2.407***
	(22.714)	(22.727)	(22.728)	(22.781)	(315.471)	(315.646)	(315.814)	(316.261)
Industry	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	37,200	37,200	37,200	37,200	37,200	37,200	37,200	37,200
Adjusted-R^2	0.4164	0.4163	0.4164	0.4164	0.8903	0.8903	0.8903	0.8903

Note(s): Table 10 Panel A reports the Chair-CEO age dissimilarity (using alternative measures) and firm value. *$p < 0.10$, **$p < 0.05$, ***$p < 0.01$. Robust *t*-statistics (in parentheses) are based on standard errors clustered by industry and year. All the variables are defined in Appendix

Source(s): Authors' own calculation

Panel B – Chair-CEO age dissimilarity (alternative measure) and board monitoring intensity

	(1) BMEET	(2) BMEET	(3) BMEET	(4) BMEET	(5) LNBMEET	(6) LNBMEET	(7) LNBMEET	(8) LNBMEET
GAP20	−0.053***				−0.055***			
	(−5.167)				(−6.818)			
GAP15		−0.026***				−0.022***		
		(−3.814)				(−3.679)		

(*continued*)

Table 10. Continued

	Panel B – Chair-CEO age dissimilarity (alternative measure) and board monitoring intensity							
	(1) BMEET	(2) BMEET	(3) BMEET	(4) BMEET	(5) LNBMEET	(6) LNBMEET	(7) LNBMEET	(8) LNBMEET
GAP10			−0.012**				−0.010**	
			(−2.467)				(−2.376)	
GAP5				−0.011***				−0.009**
				(−2.722)				(−2.345)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	1.107***	1.111***	1.116***	1.119***	0.686***	0.693***	0.698***	0.701***
	(14.919)	(15.014)	(15.066)	(15.165)	(9.229)	(9.331)	(9.401)	(9.455)
Industry	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	37,200	37,200	37,200	37,200	37,200	37,200	37,200	37,200
Adjusted-R^2					0.2104	0.2098	0.2096	0.2096

Note(s): Table 10 Panel B reports the age dissimilarity (Alternative measure) and board monitoring intensity (board meetings). Models (1), (2), (3), (4) report the results from the Poisson regression of association between *GAP20/15/10/5* and *BMEET*. Models (5), (6), (7), (8) report the results from the OLS regression of association between *GAP20/15/10/5* and *LNBMEET*. *t*-statistics in parentheses. *$p < 0.10$, **$p < 0.05$, ***$p < 0.01$. Robust *t*-statistics (in parentheses) are based on standard errors clustered by industry and year. All the variables are defined in Appendix

Source(s): Authors' own calculation

4.5.3 Does agency conflict affect the association between age dissimilarity and firm value?. To further validate the conclusions drawn in 4.4.1, this study conducts a cross-sectional analysis of the firm's operating status and financial characteristics (Goergen *et al*., 2015). We attempt to distinguish between the firm's operating status and the financial characteristics through a comparative analysis of four sub-samples (including agency conflicts, market competitiveness, ownership concentration, and state ownership attribute). To obtain more concise and accurate results, Table 11 lists the regression coefficients of the two main independent variables, *GAPS* and *GAPU*, involved in this study. The main indicator of firm value used in the study is *TOBINQ*.

Whether agency conflicts could influence the association between age dissimilarity and firm value is measured by whether the firms have below-average-level free cash flow (captured by the variable FCF/TA). Firms with high free cash flow and stronger relationships between dividends and governance will also face high levels of external monitoring (threat of takeovers). This will strengthen the firm's internal governance intensity. High-intensity internal governance (board of directors, major institutional shareholders) will also increase agency conflicts among managers within the enterprise. According to agency costs and the free cash flow (FCF) hypothesis, managers can reduce free cash flow by shifting dividends to their personal interests or funding less profitable projects (Jensen, 1986). According to the rent extraction hypothesis (Gugler and Yurtoglu, 2003), the firm manager may use some means (i.e. dividend payment) to reduce the FCF controlled by major shareholders and share FCF with all shareholders in equal proportion. This behaviour could reduce the deprivation of rights of large shareholders to small shareholders (Nur and Karnen, 2014).

In Table 11, columns (1) to (4), following Wang (2010), groups free cash flows according to values greater than the median (FCF > Median; 12,140 observations) and less than or equal to the median (FCF ≤ Median; 25,060 observations). Firms with higher free cash flows have more significant agency conflict. The impact of the Chair-CEO age dissimilarity on firm value is significantly stronger in the FCF > Median group than in the FCF ≤ Median group, and all two Chair-CEO age dissimilarity indicators corresponding to the FCF > Median group are negative and significantly affected firm value. Conversely, the Chair-CEO age dissimilarity in the FCF ≤ Median group does not significantly impact firm value. Therefore, the regression findings suggest that the negative effect of the Chair-CEO age dissimilarity on firm value is only observed for those firms with higher significant agency conflict.

4.5.4 Does market competition affect the association between age dissimilarity and firm value?. Whether a firm's market competitiveness could affect the association between the Chair and CEO's age dissimilarity and firm value is measured by whether the firm belongs to an industry monopoly in the financial year (measured by the Herfindahl-Hirschman index, which is higher than the industry average in the same year). Allen and Gale (2000) argue that competition between firms may be the most effective form of firm governance compared to board monitoring mechanisms (board, institutional, and bank oversight) and external mechanisms (market controls). Pahi and Yadav (2022) show a positive association between profitability and industry concentration (HHI). Therefore, based on Harjoto *et al*. (2015), this study divides HHI into two groups: HHI > Mean (monopolistic or non-competitive enterprises) and HHI ≤ Mean (low concentration or competitive enterprises) in the product market competition.

Table 11, columns (5) and (6), show that there is no significant negative association between Chair-CEO age dissimilarity and firm value in monopolistic or non-competitive firms (HHI > Mean; 19,548 observations). However, columns (7) and (8) demonstrate that the negative impact of the Chair-CEO age dissimilarity on firm value is highly significant in low-concentration or competitive firms (HHI ≤ Mean; 17,652 observations). This suggests that the significant negative impact of the Chair-CEO age dissimilarity on firm value is limited to low-concentration or competitive firms.

Table 11. Panel A: dependent variable – TOBINQ

Variables	FCF ≤ Median Low agency conflict (1)	(2)	FCF > Median High agency conflict (3)	(4)	HHI > Mean Monopoly firms (5)	(6)	HHI ≤ Mean Competitive firms (7)	(8)
GAPS	−0.002		−0.002***		−0.002		−0.002**	
	(−1.492)		(−2.615)		(−1.839)		(−2.242)	
GAPU		−0.003		−0.004***		−0.002		−0.006***
		(−1.402)		(−3.185)		(−1.027)		(−4.556)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	18.173***	18.186***	16.410***	16.423***	17.591***	17.608***	17,652	17,652
	(21.072)	(21.085)	(21.603)	(21.559)	(16.418)	(16.356)	0.4182	0.4185
Industry	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	12,140	12,140	25,060	25,060	19,548	19,548	17,652	17,652
Adjusted-R^2	0.4472	0.4471	0.4370	0.4371	0.4570	0.4570	0.4182	0.4185

Note(s): Table 11 Panel A Columns (1) to (4) report the Chair-CEO age dissimilarity and firm value between high and low-agency firms. Table 11 Panel A Columns (5) to (8) report the Chair-CEO age dissimilarity and firm value between monopoly and competitive firms. *t-statistics* in parentheses. *$p < 0.10$, **$p < 0.05$, ***$p < 0.01$. Robust *t*-statistics (in parentheses) are based on standard errors clustered by industry and year. All the variables are defined in Appendix

Source(s): Authors' own calculation

Variables	Panel B: dependent variable – TOBINQ (contd.) Blockholder 50% = 1 (1)	(2)	Blockholder 50% = 0 (3)	(4)	SOE = 1 (5)	(6)	SOE = 0 (7)	(8)
GAPS	−0.002		−0.003***		0.000		−0.003***	
	(−0.939)		(−3.358)		(0.148)		(−3.305)	
GAPU		−0.001		−0.006***		0.003		−0.006***
		(−0.202)		(−4.400)		(1.247)		(−4.550)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

(*continued*)

Table 11. Continued

	Panel B: dependent variable – TOBINQ (contd.)							
	Blockholder 50% = 1		Blockholder 50% = 0		SOE = 1		SOE = 0	
Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Constant	12.471***	12.485***	18.368***	18.374***	13.381***	13.378***	21.162***	21.163***
	(17.642)	(17.659)	(21.665)	(21.594)	(23.624)	(23.522)	(18.358)	(18.299)
Industry	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	7,538	7,538	29,662	29,662	16,057	16,057	21,143	21,143
Adjusted-R^2	0.4212	0.4211	0.4267	0.4269	0.3923	0.3924	0.4304	0.4306

Note(s): Table 11 Panel B Column (1) to (4) report the Chair-CEO age dissimilarity and firm value between blockholders and non-blockholder firms. Table 11 Panel B Column (5) to (8) report the Chair-CEO age dissimilarity and firm value between SOE and non-SOE firms. *$p < 0.10$, **$p < 0.05$, ***$p < 0.01$. Robust *t*-statistics (in parentheses) are based on standard errors clustered by industry and year. All the variables are defined in Appendix

Source(s): Authors' own calculation

4.5.5 Does ownership concentration affect the association of age dissimilarity and firm value?. Following Goergen *et al*. (2015), whether ownership concentration could impact the association between the Chair and CEO age dissimilarity and firm value is measured by whether a shareholder holds more than 50% of the common shares outstanding in the firm. According to institutional theory, the ownership structure of a firm often affects the market behaviour of the firm (Buckley *et al*., 2018; Hoskisson *et al*., 2000). The level of decentralisation of firm control can affect firm value and board monitoring intensity (Goergen *et al*., 2015). A dispersed shareholding structure can help address issues related to controlling shareholders in a firm, but a dispersed ownership structure may invite hostile takeovers. On the other hand, compared to firms with concentrated ownership, firms with dispersed ownership are more prone to internal power struggles (He *et al*., 2023). Therefore, Lambert *et al*. (2007) show a negative correlation between a firm's equity structure concentration and its performance. On the contrary, from a managerial perspective, the higher the concentration of firm equity, the better the firm's performance (Botosan and Stanford, 2005). Therefore, an increase in the equity of major shareholders will positively impact the firm's performance.

In Table 11, Columns (9) to (12), the sample is divided into firms without major shareholders (Blockholder 50% = 0; 29,662 observations) and firms with major shareholders (Blockholder 50% = 1; 7,538 observations). When there are major shareholders in the firm, the Chair-CEO age dissimilarity does not have a significant effect on the firm value (columns (9) and (10)). On the contrary, when there is no major shareholder in the firm, the Chair-CEO age dissimilarity will have a significant impact on the firm value (columns (11) and (12)). This shows that compared with firms with concentrated ownership, the Chair-CEO age dissimilarity will more significantly negatively affect the firm value in the firms with dispersed ownership.

4.5.6 Does state ownership (SOE) affect the association of age dissimilarity and firm value?. Whether the state ownership attribute of the firm affects the association between the Chair and CEO age dissimilarity and firm value is measured by whether the firm is an SOE. Based on previous studies, this study classifies the ownership type of enterprises into two categories: SOE (state-run or state-owned holding enterprise) and non-SOE (the other enterprises) (Chen *et al*., 2011).

The literature examining whether state ownership positively or negatively impacts firm value is mixed (Sun *et al*., 2002; Wei *et al*., 2005). Existing literature suggests that state ownership harms firm value because government intervention slows down the firm's decision-making process in an increasingly competitive environment. Conversely, it has been argued that SOEs are more likely to receive preferential treatment from the government, thereby increasing their value (Blanchard and Shleifer, 2001). SOEs benefit from government support through VAT exemptions and preferential financing (Xiao and Sun, 2005). After 1979, China gradually adopted market-based economic reforms, including corporatising former SOEs. As the majority shareholder of former SOEs, the Chinese government maintained two key controls over the firms: asset disposal and mergers and acquisitions, and appointed TMTs (e.g. CEOs) of these SOEs. Non-SOEs' financing decisions are mainly based on the firm's financial situation rather than on political considerations. Chen *et al*. (2011) claim that non-SOEs' access to financial decisions depends more on the quality of financial statement information. SOEs are managed by the State-owned Assets Supervision and Administration Commission (SASAC), which acts as the board of directors, evaluates management performance, and approves investment projects. Meanwhile, performance evaluation, salary increases, and career development in SOEs often depend on political connections and the level of the SOE (Du and Boateng, 2015; Haans *et al*., 2016). Based on this, some of the problems arising from the generational gap between the Chair and CEO would be avoided more or less; for example, there would be relatively few disagreements between the two on the direction of the firm's financial decisions.

In Table 11, columns (13) to (16), the sample size of the SOEs makes up 43% (16,944), and that of non-SOEs makes up 57% (21,909). When firms are non-SOE, there is a negative

associated relationship between all independent variables *(GAPS/GAPU)* and firm value *(TOBINQ)*, and the coefficients are all negative and significant at the 1% level. However, when the firm is SOE, the empirical findings are the opposite (all coefficients are insignificant with a positive associate relationship). In SOE, the Chair-CEO age dissimilarity does not significantly affect firm value.

4.5.7 Mediation test. Thus far, this study has not determined the channel through which the Chair-CEO age dissimilarity reduces the firm value. According to the conclusion of section 4.5, this study evidences that board monitoring intensity can be tried as an intermediary channel. *LNBMEET* was chosen because previous research proved that excessive monitoring could reduce firm value (Vafeas, 1999). The reason given by Adams and Ferreira (2007) is that high-frequency board meetings increase the CEO's work pressure. However, Eluyela *et al.* (2018) confirmed that the frequency of board meetings is positively associated with firm performance, and at least four board meetings per year can ensure the stable development of firm performance. To test the mediation effect (H3) of board monitoring intensity on the association between Chair-CEO age dissimilarity and firm value, we followed the causal step mediation test method of Baron and Kenny (1986) and developed the following equations:

$$\begin{aligned} FV_{i,t} = {} & \beta_0 + \beta_1 GAP_{i,t} + \beta_2 DIFEDU_{i,t} + \beta_3 DIFGEN_{i,t} + \beta_4 DIFNAT_{i,t} + \beta_5 JONTENU_{i,t} \\ & + \beta_6 CHANGE1_{i,t} + \beta_7 TENURE1_{i,t} + \beta_8 CHANGE2_{i,t} + \beta_9 TENURE2_{i,t} \\ & + \beta_{10} BODAGE_{i,t} + \beta_{11} BODSIZE_{i,t} + \beta_{12} CVBA_{i,t} + \beta_{13} LEVER_{i,t} + \beta_{14} CapEx/TA_{i,t} \\ & + \beta_{15} FFIRM_{i,t} + \beta_{16} FIRMAGE_{i,t} + \beta_{17} R\&D_{i,t} + \beta_{18} SALEGR_{i,t} + \beta_{19} FSIZE_{i,t} \\ & + \beta_{20} BETA_{i,t} + \beta_{21} STOCKVOL_{i,t} + INDUSTRY + YEAR + \varepsilon_{i,t} \end{aligned} \tag{4.1}$$

$$\begin{aligned} M_{i,t} = {} & \gamma_0 + \gamma_1 GAP_{i,t} + \gamma_2 DIFEDU_{i,t} + \gamma_3 DIFGEN_{i,t} + \gamma_4 DIFNAT_{i,t} + \gamma_5 JONTENU_{i,t} \\ & + \gamma_6 CHANGE1_{i,t} + \gamma_7 TENURE1_{i,t} + \gamma_8 CHANGE2_{i,t} + \gamma_9 TENURE2_{i,t} \\ & + \gamma_{10} BODAGE_{i,t} + \gamma_{11} BODSIZE_{i,t} + \gamma_{12} CVBA_{i,t} + \gamma_{13} LEVER_{i,t} + \gamma_{14} CapEx/TA_{i,t} \\ & + \gamma_{15} FFIRM_{i,t} + \gamma_{16} FIRMAGE_{i,t} + \gamma_{17} R\&D_{i,t} + \gamma_{18} SALEGR_{i,t} + \gamma_{19} FSIZE_{i,t} \\ & + \gamma_{20} BETA_{i,t} + \gamma_{21} STOCKVOL_{i,t} + INDUSTRY + YEAR + \varepsilon_{i,t} \end{aligned} \tag{4.2}$$

$$\begin{aligned} FV_{i,t} = {} & \chi_0 + \chi_1 GAP_{i,t} + \chi_2 M_{i,t} + \chi_3 DIFEDU_{i,t} + \chi_4 DIFGEN_{i,t} + \chi_5 DIFNAT_{i,t} \\ & + \chi_6 JONTENU_{i,t} + \chi_7 CHANGE1_{i,t} + \chi_8 TENURE1_{i,t} + \chi_9 CHANGE2_{i,t} \\ & + \chi_{10} TENURE2_{i,t} + \chi_{11} BODAGE_{i,t} + \chi_{12} BODSIZE_{i,t} + \chi_{13} CVBA_{i,t} + \chi_{14} LEVER_{i,t} \\ & + \chi_{15} CapEx/TA_{i,t} + \chi_{16} FFIRM_{i,t} + \chi_{17} FIRMAGE_{i,t} + \chi_{18} R\&D_{i,t} + \alpha_{19} SALEGR_{i,t} \\ & + \chi_{20} FSIZE_{i,t} + \chi_{21} BETA_{i,t} + \chi_{22} STOCKVOL_{i,t} + INDUSTRY + YEAR + \varepsilon_{i,t} \end{aligned} \tag{4.3}$$

This study uses the following three-step step-by-step test of mediation channels (equations (4.1) to (4.3)). First, it was confirmed that there is a significant associated relationship between the independent variables *(GAPS, GAPU)* and the dependent variables *(TOBINQ, MKTBK)* to confirm the possibility of a mediating effect (equation (4.1)). The second step shows how changes in the independent variables *(GAPS, GAPU)* explain changes in the mediator

(LNBMEET) (equation (4.2)). Finally, it is verified that the mediator variable significantly affects the dependent variable in equation (4.3).

Table 12 reports the results of the mediation test. Table 12 Panel A reports the intermediary test results using *TOBINQ* to measure firm value. Column (1) shows that the coefficient for *GAPS* is negative and significant (total mediation effect $\beta 1$ is -0.003, $t = -3.687$, $p < 0.01$). Column (2) records a significant negative associated relationship between the Chair-CEO age dissimilarity *(GAPS)* and board monitoring intensity *(LNBMEET)*, indicating that the Chair-CEO age dissimilarity leads to a decrease in board monitoring intensity ($\gamma 1$ is -0.001, $t = -5.406$, $p < 0.01$). Column (3) shows that there is a significant positive associated relationship between *LNBMEET* and *TOBINQ* (χ^2 is 0.104, $t = 4.257$, $p < 0.01$), which means that an increase in board monitoring intensity will promote better firm performance. The value of $\gamma 1 * \chi^2$ is -0.000104, not equal to 0, and has the same sign as $\chi 1$ (-0.003). Therefore, the mediation effect is established, and $M_{i,t}$ is a partial mediation effect, accounting for 3.456% ($\gamma 1 * \chi^2 / \beta 1$). Correspondingly, when *GAPU* replaces the proxy variable of $GAP_{i,t}$, the results

Table 12. Regression results of mediation tests (mediation effects)

Panel-A - the Baron and Kenny's (1986) causal step regression results (Tobin's Q)

Variables	(1) TOBINQ	(2) LNBMEET	(3) TOBINQ	(4) TOBINQ	(5) LNBMEET	(6) TOBINQ
GAPS	−0.003***	−0.001***	−0.003***			
	(−3.854)	(−5.406)	(−3.687)			
LNBMEET			0.104***			0.104***
			(4.257)			(4.231)
GAPU				−0.005***	−0.001***	−0.005***
				(−4.202)	(−4.837)	(−4.093)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Constant	16.754***	0.684***	16.683***	16.766***	0.693***	16.694***
	(22.757)	(9.176)	(22.806)	(22.702)	(9.329)	(22.758)
Industry	Yes	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes	Yes
Observations	37,200	37,200	37,200	37,200	37,200	37,200
Adjusted-R^2	0.4164	0.2101	0.4168	0.4165	0.2100	0.4169

Panel-B - bootstrap approach results (mediation effects)

	TOBINQ (1) GAPS	(2) GAPU	MKTBK (3) GAPS	(4) GAPU
Direct effect	−0.002943	−0.005009	−0.000031	−0.000058
Indirect effect	−0.000133	−0.000149	−0.000003	−0.000004
Total effect	−0.003076	−0.005158	−0.000034	−0.000062
Indirect/total	0.043173	0.028943	0.094687	0.058289
Indirect/direct	0.045121	0.029806	0.104590	0.061897
Total/direct	1.045121	1.029806	1.104590	1.061897
LNBMEET	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes
Industry	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes
Observations	37,200	37,200	37,200	37,200

Note(s): Table 12 Panel A reports the Mediation effects Test (Baron and Kenny's (1986) causal step regression results (*GAPS*, *GAPU*, *Tobin's Q* & *LNBMEET*)). Panel B reports the Mediation effects Test using Bootstrap approach. *t-statistics* are in parentheses. *$p < 0.10$, **$p < 0.05$, ***$p < 0.01$. Robust *t*-statistics (in parentheses) are based on standard errors clustered by industry and year. All the variables are defined in Appendix
Source(s): Authors' own calculation

are consistent with *GAPS*. $M_{i,t}$ is still a partial mediation effect, accounting for 2.08%. We also performed a similar analysis using *MKTBK* as a proxy for the FV, and our findings remain consistent (untabulated for brevity).

To further check whether the indirect effect is statistically significant, we choose bootstrap as an alternative measure to strengthen the results of Barron and Kenny's three-stage mediation test (Preacher and Hayes, 2004). Table 12 Panel C reports the test results of the bootstrap approach. The mediation effect test uses two dependent variables *(TOBINQ, MKTBK)*, two independent variables *(GAPS, GAPU)* and one mediator variable *(LNBMEET)* for the mediation effect test. The bootstrap process for all groups is resampled with 5,000 repetitions. The results show that the confidence intervals of all direct effects and indirect effects do not contain 0. Therefore, tests for all groups revealed a partial mediation effect between the mediator variable and the dependent and independent variables. All mediation effect test results support H3. Therefore, the reduction of firm value by the Chair-CEO age dissimilarity is regulated through the board monitoring intensity as a part of the intermediary channel.

4.6 Endogeneity test

4.6.1 Heckman two-stage selection bias test. The sample selection may have unobservable factors that could affect the regression models used to examine the hypothesis. Since the appointment of the Chair and CEO in the firm is not randomly determined, some unobservable factors that affect the Chair-CEO age dissimilarity may cause a concern of endogeneity in the current findings. To effectively control the endogenous concerns caused by sample selection bias, we perform the Heckman (1979) test as follows:

First, following Zhu *et al*. (2021), we designed *CRG* (Cultural Revolution Generation, dummy variable set to 1 if the Chair or the CEO is at least 16 years old during the Cultural Revolution (1966–1976), and 0 otherwise.) as instrumental variables for Heckman's two-stage test. Older generations who have fully experienced this turbulent historical period (people with a sense of personal independence since 1966) will have a certain cognitive conflict with the new generation of business managers (different values and thinking patterns), which will be reflected in firm governance. This variable is related to age but not firm value and board monitoring intensity. It effectively reflects the specific characteristics of the historical background experienced by the Chair and CEO and can prevent multicollinearity between explanatory variables and inverse Mills ratio. In Table 3, the mean values of *ChairNCN* and *CEONCN* are both 0.98. Therefore, the nationality of the Chair and CEO in 98% of observations are both Chinese. This instrumental variable is available for this study sample.

Secondly, we introduced *GAPU_median* or *GAPS_median* as the dependent variable in the first stage of the model. The Inverse Mills Ratio (IMR) is calculated in the first-stage probability model and brought into the second-stage regression model as an additional independent variable to judge whether there is a sample selection problem in the original conclusion. Table 13 Panel A, column (1) shows the regression result of the first stage. We did a Logit regression with *GAPU_median*, *CRG*, and other control variables. The association coefficient between *GAPU_median* and *CRG* is positive (coefficient 1.876, t-value 57.725) and significant at the 1% level. Columns (2) to (5) show the regression results of the second-stage. The coefficient of IMR on *TOBINQ* (column (2)) is positive and not significant, while the coefficients of IMR on *MKTBK* (column (3)), *BMEET* (column (4)), and *LNBMEET* (column (5)) are significantly positive and different from 0. Therefore, there may be a sample selection problem in this study. Sample selection bias could cause the equation to overestimate the effect of Chair and CEO age dissimilarity on firm value. However, the results of columns (2) and (3) indicate that the association of *GAPU* on firm value presents a negative association, all significant at the 1% level. Meanwhile, the results of columns (4) and (5) report that the association between *GAPU* and board monitoring intensity shows a negative coefficient, and the findings are statistically significant at a 1% and 5% level. Therefore, after correcting the

Table 13. Panel A – Heckman 2SLS selection bias test

Variables	(1) GAPU_ median 1st stage	(2) TOBINQ 2nd stage	(3) MKTBK 2nd stage	(4) BMEET 2nd stage	(5) LNBMEET 2nd stage
GAPU		−0.005***	−0.000***	−0.001***	−0.001**
		(−3.616)	(−3.152)	(−3.248)	(−2.511)
CRG	1.876***				
	(57.725)				
IMR		0.013	0.000**	0.011***	0.019***
		(0.769)	(2.327)	(2.770)	(4.451)
Controls	Yes	Yes	Yes	Yes	Yes
Constant	−0.625**	16.733***	2.406***	1.083***	0.646***
	(−2.238)	(22.073)	(308.711)	(14.222)	(8.468)
Industry	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes
Observations	37,200	37,200	37,200	37,200	37,200
Adjusted-R^2/*Pseudo* R^2	0.1733	0.4165	0.8904	0.0637	0.2105

Panel B – Heckman 2SLS selection bias test

Variables	(1) GAPS_ median 1st stage	(2) TOBINQ 2nd stage	(3) MKTBK 2nd stage	(4) BMEET 2nd stage	(5) LNBMEET 2nd stage
GAPS		−0.002***	−0.000**	−0.001***	−0.001***
		(−2.798)	(−2.213)	(−3.617)	(−4.142)
CRG	1.239***				
	(40.416)				
IMR		0.063***	0.001***	0.018***	0.026***
		(2.679)	(3.697)	(3.205)	(4.764)
Controls	Yes	Yes	Yes	Yes	Yes
Constant	−1.709***	16.589***	2.404***	1.056***	0.617***
	(−7.203)	(21.646)	(305.349)	(13.586)	(7.974)
Industry	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes
Observations	37,200	37,200	37,200	37,200	37,125
Adjusted-R^2/*Pseudo* R^2	0.1292	0.4165	0.8904	0.0637	0.2106

Note(s): Table 13 Panel A (Dependent = *GAPU*) and Panel B (Dependent = *GAPS*) report the Heckman 2SLS Selection Bias Test. *t*-statistics in parentheses. Standard error clustered based on industry and year. *$p < 0.10$, **$p < 0.05$, ***$p < 0.01$. Refer to Appendix for variable definitions. Column (1) is Logit regression, columns (2), (3), and (5) are OLS regressions, and column (4) is Poisson regression
Source(s): Authors' own calculation

sample selection bias, the regression results are consistent with the previous conclusions. In addition, in Table 13 Panel B, we replaced *GAPU_median* and *GAPU* with *GAPS_median* and *GAPS*, respectively. The results obtained are similar to those of Panel A. Finally, we also find that all results remain consistent in column (1) if we use probit regression model. In summary, after correcting for sampling bias, all research results still support the hypothesis.

4.6.2 Propensity scores matching analysis. False specification of the functional form (FFM) used in OLS will likely lead to a biased estimation of research conclusions. Propensity Score Matching Analysis (PSM) can alleviate the existing FFM problem by reducing the dependence on the functional form setting. This study uses the PSM model to test self-selection bias (Rosenbaum and Rubin, 1985). Firstly, the processing variables used need to be

grouping variables. Therefore, this section introduces a new dummy variable, *GAPD*, to replace *GAPS* and *GAPU*. *GAPD* indicates whether there is an age dissimilarity between the Chair and CEO (Zhu *et al.*, 2021). Each observation in the two groups (*GAPD* = 1, treatment group; *GAPD* = 0, control group) is matched using the nearest neighbour matching rule with *TOBINQ* or *LNBMEET* as the outcome variable. The PSM results are reported in Table 14.

Table 14 demonstrates the matched sample's proper balance between treatment and control groups. First, the bias of most variables is less than 10% after matching. Second, only some of the covariates were statistically significant. Between *GAPD* and all dependent variables, are a significant negative association. The results prove that when there is an age gap between the firm's Chair and CEO, the firm's value and board monitoring intensity will decrease accordingly. Therefore, the propensity score matching analysis confirms our previous inference.

5. Conclusion

This study examines the association between the Chair-CEO age dissimilarity and firm value in Chinese listed firms and the moderating effect of board monitoring intensity. Overall, the result is consistent with previous research that shows a wider age dissimilarity is likely to cause cognitive conflict. Age dissimilarity leads to an age and cohort effect between the Chair and CEO, increasing the conflict between different age groups. The conflict effect occurs between the Chair and CEO, which exacerbates the principal-agent problem. This, in turn, negatively impacts the firm's internal monitoring (board meetings) and strategic decision-making design and implementation. Since Chinese firms are still building a modern enterprise system and have not yet formed a sound coordination mechanism and formal communication system, the potential impact of TMT heterogeneity on the firm value within Chinese listed firms is inconclusive. In addition, because the Chinese market is in a transitional economy, and the social structure and constitutional environment are changing rapidly, managers with huge age dissimilarities are prone to conflicts in values and concepts. Therefore, the coherence of the Chair and CEO being held by members of similar ages is higher than that of members of

Table 14. PSM regression results

	(1) GAPD	(2) TOBINQ	(3) MKTBK	(4) LNBMEET	(5) BMEET
GAPD		−0.103***	−0.001***	−0.022***	−0.023***
		(−4.754)	(−5.273)	(−3.881)	(−4.027)
Controls	Yes	Yes	Yes	Yes	Yes
Constant	−0.526***	18.851***	2.416***	0.381***	0.846***
	(−2.753)	(18.595)	(240.928)	(3.800)	(8.878)
Industry	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes
Observations	37,200	18,789	18,789	18,789	18,789
F-statistics		84.85***	1408.75***	113.55***	
Adjusted-R^2/*Pseudo* R^2	0.2271	0.4119	0.8659	0.2134	
Unmatched (S.E.; *T*-stat)		0.0205; −20.50	0.0006; 7.37	0.0045; −5.69	0.0579; 1.00
ATT (S.E.; *T*-stat)		0.0264; −7.99	0.0006; −0.31	0.0054; −3.33	0.0710; −1.87

Note(s): Table 14 reports the PSM regression Test using the Nearest Neighbour Matching approach. S.E. does not take into account the estimated propensity score. Column (1) is Probit regression, columns (2), (3), and (4) are OLS regressions, and column (5) is Poisson regression. *t*-statistics in parentheses. *$p < 0.10$, **$p < 0.05$, ***$p < 0.01$. Robust *t*-statistics (in parentheses) are based on standard errors clustered by industry and year. All the variables are defined in Appendix

Source(s): Authors' own calculation

different ages, the cooperation between members is better, and effective strategies can be formulated more quickly. All of this can help the team better handle emergencies and improve the firm's operations and decision-making efficiency. Under the impact of economic transformation and globalisation, the external environment of Chinese firms has become increasingly complex, and the competition has become more intense. Therefore, the ability of the Chair and CEO to make rapid decisions together helps improve firm performance.

In addition, this study combines age effects and cohort effects, effectively avoiding the research bias that cohort effects only exist in cross-sectional data and mitigating the threat of research data to internal validity. In addition, the longitudinal research on age effects is group-oriented, ensuring that group differences will not threaten its internal validity. The findings of this research should be interpreted with caution as the association between Chair-CEO age dissimilarity and firm value could have been impacted by another macroeconomic scenario, such as the global financial crisis. Future research could extend this line of research by examining the impact of such a macro-economic crisis.

Notes

1. The socioemotional selectivity theory refers to the idea that emotional, especially positive emotional experiences, become increasingly important to individuals as they age (Dahling and Perez, 2010). The theory proposes that individuals have two key goals in life: acquiring knowledge and regulating emotions (Ng and Feldman, 2010). Younger individuals tend to prioritize the knowledge acquisition goal because they perceive time as unlimited (Stamov-Roßnagel and Hertel, 2010). Birditt *et al.* (2005) showed that older are more likely to use constructive strategies to improve their interpersonal relationships and less likely to use destructive strategies that could harm them.
2. Previous studies have shown that the risks faced by firms include systematic, unsystematic, and total risks (Delgado-García *et al*., 2013; Sukrianingrum and Manda, 2020). Therefore, we follow previous literature and use beta coefficient *(BETA)* to calculate systematic risk, and use stock volatility *(STOCKVOL)* to measure unsystematic risk and total risk (Delgado-García *et al*., 2013; Zreik and Louhichi, 2017).

References

Abt, M. and Knyphausen-Aufseß, D.Z. (2017), "Chief human resources officers on top management teams: an empirical analysis of contingency, institutional, and homophily antecedents", *Business Research*, Vol. 10, pp. 49-77.

Adams, R.B. and Ferreira, D. (2007), "A theory of friendly boards", *The Journal of Finance*, Vol. 62 No. 1, pp. 217-250, doi: 10.1111/j.1540-6261.2007.01206.x.

Adams, R.B. and Mehran, H. (2005), "Corporate performance, board structure and its determinants in the banking industry", in *EFA 2005 Moscow Meetings*.

Aebi, V., Sabato, G. and Schmid, M. (2012), "Risk management, corporate governance, and bank performance in the financial crisis", *Journal of Banking and Finance*, Vol. 36 No. 12, pp. 3213-3226, doi: 10.1016/j.jbankfin.2011.10.020.

Allen, F. and Gale, D. (2000), "Corporate governance and competition", *Corporate Governance: Theoretical and Empirical Perspectives*, Vol. 23 No. 4, pp. 23-94.

Amason, A.C. (1996), "Distinguishing the effects of functional and dysfunctional conflict on strategic decision making: resolving a paradox for top management teams", *Academy of Management Journal*, Vol. 39 No. 1, pp. 123-148, doi: 10.2307/256633.

Amason, A.C. and Sapienza, H.J. (1997), "The effects of top management team size and interaction norms on cognitive and affective conflict", *Journal of Management*, Vol. 23 No. 4, pp. 495-516, doi: 10.1016/s0149-2063(97)90045-3.

Andres, C., Fernau, E. and Theissen, E. (2014), "Should I stay or should I go? Former CEOs as monitors", *Journal of Corporate Finance*, Vol. 28, pp. 26-47.

Andrikopoulos, A., Merika, A. and Sigalas, C. (2022), "Net asset value discounts and premiums in the maritime shipping industry", *European Financial Management*, Vol. 28 No. 2, pp. 510-544, doi: 10.1111/eufm.12313.

Audretsch, D.B., Hülsbeck, M. and Lehmann, E.E. (2013), "Families as active monitors of firm performance", *Journal of Family Business Strategy*, Vol. 4 No. 2, pp. 118-130, doi: 10.1016/j.jfbs.2013.02.002.

Baron, R.M. and Kenny, D.A. (1986), "The moderator–mediator variable distinction in social psychological research: conceptual, strategic, and statistical considerations", *Journal of Personality and Social Psychology*, Vol. 51 No. 6, pp. 1173-1182, doi: 10.1037//0022-3514.51.6.1173.

Bebchuk, L., Cohen, A. and Ferrell, A. (2009), "What matters in corporate governance?", *The Review of Financial Studies*, Vol. 22 No. 2, pp. 783-827, doi: 10.1093/rfs/hhn099.

Birditt, K.S., Fingerman, K.L. and Almeida, D.M. (2005), "Age differences in exposure and reactions to interpersonal tensions: a daily diary study", *Psychology and Aging*, Vol. 20 No. 2, p. 330.

Black, B. and Kim, W. (2012), "The effect of board structure on firm value: a multiple identification strategies approach using Korean data", *Journal of Financial Economics*, Vol. 104 No. 1, pp. 203-226, doi: 10.1016/j.jfineco.2011.08.001.

Blanchard, O. and Shleifer, A. (2001), "Federalism with and without political centralization: China versus Russia", *IMF Staff Papers*, Vol. 48 Suppl 1, pp. 171-179.

Botosan, C.A. and Stanford, M. (2005), "Managers' motives to withhold segment disclosures and the effect of SFAS No. 131 on analysts' information environment", *The Accounting Review*, Vol. 80 No. 3, pp. 751-772, doi: 10.2308/accr.2005.80.3.751.

Bouslah, K., Kryzanowski, L. and M'Zali, B. (2018), "Social performance and firm risk: impact of the financial crisis", *Journal of Business Ethics*, Vol. 149 No. 3, pp. 643-669, doi: 10.1007/s10551-016-3017-x.

Brick, I.E. and Chidambaran, N. (2010), "Board meetings, committee structure, and firm value", *Journal of Corporate Finance*, Vol. 16 No. 4, pp. 533-553, doi: 10.1016/j.jcorpfin.2010.06.003.

Buckley, P.J., Clegg, L.J., Voss, H., Cross, A.R., Liu, X. and Zheng, P. (2018), "A retrospective and agenda for future research on Chinese outward foreign direct investment", *Journal of International Business Studies*, Vol. 49 No. 1, pp. 4-23, doi: 10.1057/s41267-017-0129-1.

Burney, R.B., James, H.L. and Wang, H. (2021), "Working capital management and CEO age", *Journal of Behavioral and Experimental Finance*, Vol. 30, 100496, doi: 10.1016/j.jbef.2021.100496.

Byrne, D. (1997), "An overview (and underview) of research and theory within the attraction paradigm", *Journal of Social and Personal Relationships*, Vol. 14 No. 3, pp. 417-431, doi: 10.1177/0265407597143008.

Camelo-Ordaz, C., García-Cruz, J. and Sousa-Ginel, E. (2014), "Antecedents of relationship conflict in top management teams", *International Journal of Conflict Management*, Vol. 25 No. 2, pp. 124-147, doi: 10.1108/ijcma-06-2012-0054.

Chen, G., Liu, C. and Tjosvold, D. (2005), "Conflict management for effective top management teams and innovation in China", *Journal of Management Studies*, Vol. 42 No. 2, pp. 277-300, doi: 10.1111/j.1467-6486.2005.00497.x.

Chen, S., Sun, Z., Tang, S. and Wu, D. (2011), "Government intervention and investment efficiency: evidence from China", *Journal of Corporate Finance*, Vol. 17 No. 2, pp. 259-271, doi: 10.1016/j.jcorpfin.2010.08.004.

Choi, K. and Cho, B. (2011), "Competing hypotheses analyses of the associations between group task conflict and group relationship conflict", *Journal of Organizational Behavior*, Vol. 32 No. 8, pp. 1106-1126, doi: 10.1002/job.733.

Chow, Y.P. (2023), "Chair–CEO demographic dissimilarities and firm internationalization", *Review of International Business and Strategy*, Vol. 33 No. 2, pp. 246-271, doi: 10.1108/ribs-09-2021-0120.

Custódio, C. and Metzger, D. (2014), "Financial expert CEOs: CEO' s work experience and firm's financial policies", *Journal of Financial Economics*, Vol. 114 No. 1, pp. 125-154, doi: 10.1016/j.jfineco.2014.06.002.

Dahling, J.J. and Perez, L.A. (2010), "Older worker, different actor? Linking age and emotional labor strategies", *Personality and Individual Differences*, Vol. 48 No. 5, pp. 574-578, doi: 10.1016/j.paid.2009.12.009.

De Dreu, C.K. and Beersma, B. (2005), "Conflict in organizations: beyond effectiveness and performance", *European Journal of Work and Organizational Psychology*, Vol. 14 No. 2, pp. 105-117, doi: 10.1080/13594320444000227.

De Dreu, C.K. and Weingart, L.R. (2003), "Task versus relationship conflict, team performance, and team member satisfaction: a meta-analysis", *Journal of Applied Psychology*, Vol. 88 No. 4, pp. 741-749, doi: 10.1037/0021-9010.88.4.741.

Delgado-García, J.B., de Quevedo-Puente, E. and Díez-Esteban, J.M. (2013), "The impact of corporate reputation on firm risk: a Panel data analysis of Spanish quoted firms", *British Journal of Management*, Vol. 24 No. 1, pp. 1-20, doi: 10.1111/j.1467-8551.2011.00782.x.

De Wit, F.R., Greer, L.L. and Jehn, K.A. (2012), "The paradox of intragroup conflict: a meta-analysis", *Journal of Applied Psychology*, Vol. 97 No. 2, pp. 360-390, doi: 10.1037/a0024844.

Dittmann, I., Maug, E. and Schneider, C. (2010), "Bankers on the boards of German firms: what they do, what they are worth, and why they are (still) there", *Review of Finance*, Vol. 14 No. 1, pp. 35-71, doi: 10.1093/rof/rfp007.

Du, M. and Boateng, A. (2015), "State ownership, institutional effects and value creation in cross-border mergers & acquisitions by Chinese firms", *International Business Review*, Vol. 24 No. 3, pp. 430-442.

Eluyela, D.F., Akintimehin, O.O., Okere, W., Ozordi, E., Osuma, G.O., Ilogho, S.O. and Oladipo, O.A. (2018), "Board meeting frequency and firm performance: examining the nexus in Nigerian deposit money banks", *Heliyon*, Vol. 4 No. 10.

Fang, Z., Kong, X., Sensoy, A., Cui, X. and Cheng, F. (2021), "Government's awareness of environmental protection and corporate green innovation: a natural experiment from the new environmental protection law in China", *Economic Analysis and Policy*, Vol. 70, pp. 294-312, doi: 10.1016/j.eap.2021.03.003.

Farh, J.L. and Cheng, B.S. (2000), "A cultural analysis of paternalistic leadership in Chinese organizations", in *Management and Organizations in the Chinese Context*, Palgrave Macmillan UK, London, pp. 84-127.

Farh, J.L., Cheng, B.S., Chou, L.F. and Chu, X.P. (2014), "Authority and benevolence: employees' responses to paternalistic leadership in China", in *China's Domestic Private Firms*, Routledge, pp. 230-260.

Fu, P., Yan, X., Li, Y., Wang, E. and Peng, S. (2008), "Examining conflict-handling approaches by Chinese top management teams in IT firms", *International Journal of Conflict Management*, Vol. 19 No. 3, pp. 188-209, doi: 10.1108/10444060810875778.

Gilpin, R. (2000), *The Challenge of Global Capitalism: The World Economy in the 21st Century*, Princeton University Press.

Goergen, M., Limbach, P. and Scholz, M. (2015), "Mind the gap: the age dissimilarity between the chair and the CEO", *Journal of Corporate Finance*, Vol. 35, pp. 136-158, doi: 10.1016/j.jcorpfin.2015.08.011.

Gruenfeld, D.H., Mannix, E.A., Williams, K.Y. and Neale, M.A. (1996), "Group composition and decision making: how member familiarity and information distribution affect process and performance", *Organizational Behavior and Human Decision Processes*, Vol. 67 No. 1, pp. 1-15, doi: 10.1006/obhd.1996.0061.

Gugler, K. and Yurtoglu, B.B. (2003), "Corporate governance and dividend pay-out policy in Germany", *European Economic Review*, Vol. 47 No. 4, pp. 731-758, doi: 10.1016/s0014-2921(02)00291-x.

Guillaume, Y.R., Brodbeck, F.C. and Riketta, M. (2012), "Surface-and deep-level dissimilarity effects on social integration and individual effectiveness related outcomes in work groups: a meta-analytic integration", *Journal of Occupational and Organizational Psychology*, Vol. 85 No. 1, pp. 80-115, doi: 10.1111/j.2044-8325.2010.02005.x.

Haans, R.F., Pieters, C. and He, Z.L. (2016), "Thinking about U: theorizing and testing U-and inverted U-shaped relationships in strategy research", *Strategic Management Journal*, Vol. 37 No. 7, pp. 1177-1195, doi: 10.1002/smj.2399.

Habib, A. and Hossain, M. (2013), "CEO/CFO characteristics and financial reporting quality: a review", *Research in Accounting Regulation*, Vol. 25 No. 1, pp. 88-100, doi: 10.1016/j.racreg.2012.11.002.

Hambrick, D.C. and Mason, P.A. (1984), "Upper echelons: the organization as a reflection of its top managers", *Academy of Management Review*, Vol. 9 No. 2, pp. 193-206, doi: 10.2307/258434.

Hambrick, D.C., Misangyi, V.F. and Park, C.A. (2015), "The quad model for identifying a corporate director's potential for effective monitoring: toward a new theory of board sufficiency", *Academy of Management Review*, Vol. 40 No. 3, pp. 323-344, doi: 10.5465/amr.2014.0066.

Harjoto, M., Laksmana, I. and Lee, R. (2015), "Board diversity and corporate social responsibility", *Journal of Business Ethics*, Vol. 132 No. 4, pp. 641-660, doi: 10.1007/s10551-014-2343-0.

Hayat, M.J. and Higgins, M. (2014), "Understanding Poisson regression", *Journal of Nursing Education*, Vol. 53 No. 4, pp. 207-215.

He, B., Chen, H., Li, Z. and Zhou, X. (2023), "Information and communication technology and innovation performance of firms: evidence from Chinese listed state-owned enterprises", *International Review of Economics and Finance*, Vol. 88, pp. 47-59.

Heckman, J.J. (1979), "Sample selection bias as a specification error", *Econometrica: Journal of the Econometric Society*, Vol. 47 No. 1, pp. 153-161, doi: 10.2307/1912352.

Heenipellage, A.H., Fernando, M. and Gibbons, B. (2022), "Upper echelon characteristics and environmental sustainability practices: evidence from upper echelons in the hotel industry", *Journal of Cleaner Production*, Vol. 379, 134618, doi: 10.1016/j.jclepro.2022.134618.

Hilliard, J. and Zhang, H. (2015), "Size and price-to-book effects: evidence from the Chinese stock markets", *Pacific-Basin Finance Journal*, Vol. 32, pp. 40-55, doi: 10.1016/j.pacfin.2015.02.003.

Hoang, T.C., Abeysekera, I. and Ma, S. (2017), "The effect of board diversity on earnings quality: an empirical study of listed firms in Vietnam", *Australian Accounting Review*, Vol. 27 No. 2, pp. 146-163, doi: 10.1111/auar.12128.

Hoskisson, R.E., Eden, L., Lau, C.M. and Wright, M. (2000), "Strategy in emerging economies", *Academy of Management Journal*, Vol. 43 No. 3, pp. 249-267, doi: 10.2307/1556394.

Hsieh, Y.T., Chen, T.K., Tseng, Y.J. and Lin, R.C. (2018), "Top management team characteristics and accrual-based earnings management", *The International Journal of Accounting*, Vol. 53 No. 4, pp. 314-334, doi: 10.1016/j.intacc.2018.11.004.

Huang, Y.S. and Lu, Y.X. (2022), "Corporate environmental responsibility, financial performance, and international bank loans: evidence from China", Munich Personal RePEc Archive, 111682.

Jaffar, R. and Abdul-Shukor, Z. (2016), "The role of monitoring mechanisms towards company's performance: evidence from politically connected companies in Malaysia", *Journal of Accounting in Emerging Economies*, Vol. 6 No. 4, pp. 408-428.

Jehn, K.A. (1997), "A qualitative analysis of conflict types and dimensions in organizational groups", *Administrative Science Quarterly*, Vol. 42 No. 3, pp. 530-557, doi: 10.2307/2393737.

Jensen, M.C. (1986), "Agency costs of free cash flow, corporate finance, and takeovers", *The American Economic Review*, Vol. 76 No. 2, pp. 323-329.

Kamran, M., Djajadikerta, H.G., Mat Roni, S., Xiang, E. and Butt, P. (2023), "Board gender diversity and corporate social responsibility in an international setting", *Journal of Accounting in Emerging Economies*, Vol. 13 No. 2, pp. 240-275, doi: 10.1108/jaee-05-2021-0140.

Kaplan, S.N., Klebanov, M.M. and Sorensen, M. (2012), "Which CEO characteristics and abilities matter?", *The Journal of Finance*, Vol. 67 No. 3, pp. 973-1007, doi: 10.1111/j.1540-6261.2012.01739.x.

Keck, S.L. (1997), "Top management team structure: differential effects by environmental context", *Organization Science*, Vol. 8 No. 2, pp. 143-156, doi: 10.1287/orsc.8.2.143.

Khan, I., Khan, I. and Senturk, I. (2019), "Board diversity and quality of CSR disclosure: evidence from Pakistan", *Corporate Governance: The International Journal of Business in Society*, Vol. 19 No. 6, pp. 1187-1203, doi: 10.1108/cg-12-2018-0371.

Khedmati, M., Sualihu, M.A. and Yawson, A. (2020), "CEO-director ties and labor investment efficiency", *Journal of Corporate Finance*, Vol. 65, 101492, doi: 10.1016/j.jcorpfin.2019.101492.

Kilduff, M., Angelmar, R. and Mehra, A. (2000), "Top management-team diversity and firm performance: examining the role of cognitions", *Organization Science*, Vol. 11 No. 1, pp. 21-34, doi: 10.1287/orsc.11.1.21.12569.

Knapp, J.R., Dalziel, T. and Lewis, M.W. (2011), "Governing top managers: board control, social categorization, and their unintended influence on discretionary behaviors", *Corporate Governance: An International Review*, Vol. 19 No. 4, pp. 295-310.

Komal, B., Bilal, Ezeani, E., Shahzad, A., Usman, M. and Sun, J. (2023), "Age diversity of audit committee financial experts, ownership structure and earnings management: evidence from China", *International Journal of Finance and Economics*, Vol. 28 No. 3, pp. 2664-2682, doi: 10.1002/ijfe.2556.

Korsgaard, M.A., Soyoung Jeong, S., Mahony, D.M. and Pitariu, A.H. (2008), "A multilevel view of intragroup conflict", *Journal of Management*, Vol. 34 No. 6, pp. 1222-1252, doi: 10.1177/0149206308325124.

Labelle, R., Makni Gargouri, R. and Francoeur, C. (2010), "Ethics, diversity management, and financial reporting quality", *Journal of Business Ethics*, Vol. 93 No. 2, pp. 335-353, doi: 10.1007/s10551-009-0225-7.

Lambert, R., Leuz, C. and Verrecchia, R.E. (2007), "Accounting information, disclosure, and the cost of capital", *Journal of Accounting Research*, Vol. 45 No. 2, pp. 385-420, doi: 10.1111/j.1475-679x.2007.00238.x.

Le, S.A., Walters, B. and Kroll, M. (2006), "The moderating effects of external monitors on the relationship between R&D spending and firm performance", *Journal of Business Research*, Vol. 59 No. 2, pp. 278-287.

Lee, J., Lee, K.J. and Nagarajan, N.J. (2014), "Birds of a feather: value implications of political alignment between top management and directors", *Journal of Financial Economics*, Vol. 112 No. 2, pp. 232-250, doi: 10.1016/j.jfineco.2014.02.004.

Li, M. and Roberts, H. (2017), "Director and CEO pay reciprocity and CEO board membership", *Journal of Economics and Business*, Vol. 94, pp. 54-65, doi: 10.1016/j.jeconbus.2017.10.002.

Li, W., Liu, X. and Wan, W. (2008), "Demographic effects of work values and their management implications", *Journal of Business Ethics*, Vol. 81 No. 4, pp. 875-885, doi: 10.1007/s10551-007-9554-6.

Li, A. and Xia, X. (2013), "Political connections, financial crisis and firm's value: evidence from Chinese listed firms", *International Journal of Business and Management*, Vol. 8 No. 18, p. 63.

McPherson, M., Smith-Lovin, L. and Cook, J.M. (2001), "Birds of a feather: homophily in social networks", *Annual Review of Sociology*, Vol. 27 No. 1, pp. 415-444, doi: 10.1146/annurev.soc.27.1.415.

Milliken, F.J. and Martins, L.L. (1996), "Searching for common threads: understanding the multiple effects of diversity in organizational groups", *Academy of Management Review*, Vol. 21 No. 2, pp. 402-433, doi: 10.2307/258667.

Mooney, A.C., Holahan, P.J. and Amason, A.C. (2007), "Don't take it personally: exploring cognitive conflict as a mediator of affective conflict", *Journal of Management Studies*, Vol. 44 No. 5, pp. 733-758, doi: 10.1111/j.1467-6486.2006.00674.x.

Morris, M.W., Williams, K.Y., Leung, K., Larrick, R., Mendoza, M.T., Bhatnagar, D., Li, J., Kondo, M., Luo, J.l. and Hu, J.C. (1998), "Conflict management style: accounting for cross-national differences", *Journal of International Business Studies*, Vol. 29 No. 4, pp. 729-747, doi: 10.1057/palgrave.jibs.8490050.

Ng, T.W. and Feldman, D.C. (2010), "Organizational tenure and job performance", *Journal of Management*, Vol. 36 No. 5, pp. 1220-1250, doi: 10.1177/0149206309359809.

Nguyen, B.D. (2012), "Does the Rolodex matter? Corporate elite's small world and the effectiveness of boards of directors", *Management Science*, Vol. 58 No. 2, pp. 236-252, doi: 10.1287/mnsc.1110.1457.

Nielsen, B.B. and Nielsen, S. (2013), "Top management team nationality diversity and firm performance: a multilevel study", *Strategic Management Journal*, Vol. 34 No. 3, pp. 373-382, doi: 10.1002/smj.2021.

Ning, D., Majeed, M.A. and Zeb, A. (2022), "Board diversity and financial statement comparability: evidence from China", *Eurasian Business Review*, Vol. 12 No. 4, pp. 743-801, doi: 10.1007/s40821-022-00214-3.

Ntim, C.G. and Osei, K.A. (2011), "The impact of corporate board meetings on corporate performance in South Africa", *African Review of Economics and Finance*, Vol. 2 No. 2, pp. 83-103.

Nur, T. and Karnen, K.A. (2014), "Searching for determinants of pay or not to pay cash dividend in Indonesia", *The Indonesian Capital Market Review*, Vol. 6 No. 1, p. 2.

Ozer, M. (2010), "Top management teams and corporate political activity: do top management teams have influence on corporate political activity?", *Journal of Business Research*, Vol. 63 No. 11, pp. 1196-1201, doi: 10.1016/j.jbusres.2009.10.017.

Pahi, D. and Yadav, I.S. (2022), "Product market competition, agency cost and dividend payouts: new evidence from emerging market", *Journal of Management and Governance*, Vol. 26 No. 3, pp. 925-956, doi: 10.1007/s10997-021-09570-0.

Parayitam, S. and Dooley, R.S. (2009), "The interplay between cognitive-and affective conflict and cognition-and affect-based trust in influencing decision outcomes", *Journal of Business Research*, Vol. 62 No. 8, pp. 789-796, doi: 10.1016/j.jbusres.2008.02.006.

Patzelt, H., Zu Knyphausen-Aufseß, D. and Nikol, P. (2008), "Top management teams, business models, and performance of biotechnology ventures: an upper echelon perspective", *British Journal of Management*, Vol. 19 No. 3, pp. 205-221, doi: 10.1111/j.1467-8551.2007.00552.x.

Peng, M.W. and Jiang, Y. (2010), "Institutions behind family ownership and control in large firms", *Journal of Management Studies*, Vol. 47 No. 2, pp. 253-273, doi: 10.1111/j.1467-6486.2009.00890.x.

Pfeffer, J. and Salancik, G. (2015), "External control of organizations–resource dependence perspective", in *Organizational Behavior 2*, Routledge, pp. 355-370.

Pitcher, P. and Smith, A.D. (2001), "Top management team heterogeneity: personality, power, and proxies", *Organization Science*, Vol. 12 No. 1, pp. 1-18, doi: 10.1287/orsc.12.1.1.10120.

Popov, A. and Ongena, S. (2011), "Interbank market integration, loan rates, and firm leverage", *Journal of Banking and Finance*, Vol. 35 No. 3, pp. 544-559, doi: 10.1016/j.jbankfin.2010.08.011.

Preacher, K.J. and Hayes, A.F. (2004), "SPSS and SAS procedures for estimating indirect effects in simple mediation models", *Behavior Research Methods, Instruments, and Computers*, Vol. 36, pp. 717-731.

Rabl, T. and Triana, M.d. C. (2014), "Organizational value for age diversity and potential applicants' organizational attraction: individual attitudes matter", *Journal of Business Ethics*, Vol. 121 No. 3, pp. 403-417, doi: 10.1007/s10551-013-1729-8.

Rahim, M.A. (2002), "Toward a theory of managing organizational conflict", *International Journal of Conflict Management*, Vol. 13 No. 3, pp. 206-235, doi: 10.1108/eb022874.

Rosenbaum, P.R. and Rubin, D.B. (1985), "Constructing a control group using multivariate matched sampling methods that incorporate the propensity score", *The American Statistician*, Vol. 39 No. 1, pp. 33-38, doi: 10.1080/00031305.1985.10479383.

Schmid, S. and Mitterreiter, S. (2020), "International top managers on corporate boards: dissimilarity and tenure", *Management International Review*, Vol. 60 No. 5, pp. 787-825, doi: 10.1007/s11575-020-00430-x.

Simons, T.L. and Peterson, R.S. (2000), "Task conflict and relationship conflict in top management teams: the pivotal role of intragroup trust", *Journal of Applied Psychology*, Vol. 85 No. 1, pp. 102-111, doi: 10.1037/0021-9010.85.1.102.

Stahl, G.K., Maznevski, M.L., Voigt, A. and Jonsen, K. (2010), "Unraveling the effects of cultural diversity in teams: a meta-analysis of research on multicultural work groups", *Journal of International Business Studies*, Vol. 41 No. 4, pp. 690-709.

Stamov-Roßnagel, C. and Hertel, G. (2010), "Older workers' motivation: against the myth of general decline", *Management Decision*, Vol. 48 No. 6, pp. 894-906, doi: 10.1108/00251741011053451.

Strauss, W. and Howe, N. (1997), *The Fourth Turning: what the Cycles of History Tell Us about America's Next Rendezvous with Destiny*, Crown.

Sucuahi, W. and Cambarihan, J.M. (2016), "Influence of profitability to the firm value of diversified companies in the Philippines", *Accounting and Finance Research*, Vol. 5 No. 2, pp. 149-153.

Sukrianingrum, D.R. and Manda, G.S. (2020), "The effect of systematic risk and unsystematic risk on expected return of optimal portfolio. SAR (Soedirman Accounting Review)", *Journal of Accounting and Business*, Vol. 5 No. 2, pp. 181-195, doi: 10.20884/1.sar.2020.5.2.3772.

Sun, Q., Tong, W.H. and Tong, J. (2002), "How does government ownership affect firm performance? Evidence from China's privatization experience", *Journal of Business Finance and Accounting*, Vol. 29 Nos 1-2, pp. 1-27, doi: 10.1111/1468-5957.00422.

Tajfel, H. and Turner, J.C. (1979), "An integrative theory of intergroup conflict", in *Organizational Identity: A Reader*, pp. 56-65.

Tanikawa, T., Kim, S. and Jung, Y. (2017), "Top management team diversity and firm performance: exploring a function of age", *Team Performance Management*, Vol. 23 Nos 3/4, pp. 156-170.

Taylor, R.N. (1975), "Age and experience as determinants of managerial information processing and decision making performance", *Academy of Management Journal*, Vol. 18 No. 1, pp. 74-81, doi: 10.2307/255626.

Thomsen, S. and Conyon, M. (2012), *Corporate Governance: Mechanisms and Systems*, McGraw-Hill Higher Education.

Tonoyan, V. and Olson-Buchanan, J. (2023), "Toward a multidimensional and multilevel approach to studying gender diversity in upper echelons and firm innovation", *Group and Organization Management*, Vol. 48 No. 2, pp. 705-752, doi: 10.1177/10596011231162491.

Triandis, H.C. (1990), "Cross-cultural studies of individualism and collectivism", in Berman, J.J. (Ed.), *Nebraska Symposium on Motivation, 1989: Cross-Cultural Perspectives*, University of Nebraska Press, pp. 41-133.

Tse, D.K., Francis, J. and Walls, J. (1994), "Cultural differences in conducting intra-and inter-cultural negotiations: a Sino-Canadian comparison", *Journal of International Business Studies*, Vol. 25 No. 3, pp. 537-555, doi: 10.1057/palgrave.jibs.8490211.

Vafeas, N. (1999), "Board meeting frequency and firm performance", *Journal of Financial Economics*, Vol. 53 No. 1, pp. 113-142, doi: 10.1016/s0304-405x(99)00018-5.

Van Knippenberg, D. and Schippers, M.C. (2007), "Work group diversity", *Annual Review of Psychology*, Vol. 58 No. 1, pp. 515-541, doi: 10.1146/annurev.psych.58.110405.085546.

Wagner, W.G., Pfeffer, J. and O'Reilly, I.I.I.C.A. (1984), "Organizational demography and turnover in top-management group", *Administrative Science Quarterly*, Vol. 29 No. 1, pp. 74-92, doi: 10.2307/2393081.

Wang, G.Y. (2010), "The impacts of free cash flows and agency costs on firm performance", *Journal of Service Science and Management*, Vol. 3 No. 4, pp. 408-418.

Wang, G., Holmes Jr, R.M., Oh, I.S. and Zhu, W. (2016), "Do CEOs matter to firm strategic actions and firm performance? A meta-analytic investigation based on upper echelons theory", *Personnel Psychology*, Vol. 69 No. 4, pp. 775-862, doi: 10.1111/peps.12140.

Wang, F., Xu, L., Zhang, J. and Shu, W. (2018), "Political connections, internal control and firm value: evidence from China's anti-corruption campaign", *Journal of Business Research*, Vol. 86, pp. 53-67, doi: 10.1016/j.jbusres.2018.01.045.

Wei, Z., Xie, F. and Zhang, S. (2005), "Ownership structure and firm value in China's privatized firms: 1991-2001", *Journal of Financial and Quantitative Analysis*, Vol. 40 No. 1, pp. 87-108, doi: 10.1017/s0022109000001757.

Weldon, E. and Jehn, K.A. (2018), "Conflict management in US-Chinese joint ventures: an analytical framework", in *Management Issues in China*, Routledge, Vol. 2, pp. 89-105.

Williams, K.Y. and O'Reilly, C. (1998), "Demography and diversity in organizations: a review of 40 years of research", *Research in Organizational Behavior*, Vol. 20 No. 20, pp. 77-140.

Xiao, J. and Sun, F. (2005), "The challenges facing outbound Chinese M&As", *International Financial Law Review*, Vol. 24 No. 12, pp. 44-46.

Xie, S., Chen, Y. and Liu, Y. (2021), "Internal governance and innovation", *Accounting and Finance*, Vol. 61 No. S1, pp. 2507-2538, doi: 10.1111/acfi.12673.

Yermack, D. (1996), "Higher market valuation of companies with a small board of directors", *Journal of Financial Economics*, Vol. 40 No. 2, pp. 185-211, doi: 10.1016/0304-405x(95)00844-5.

Younsi, M. and Bechtini, M. (2020), "Economic growth, financial development, and income inequality in BRICS countries: does Kuznets' inverted U-shaped curve exist?", *Journal of the Knowledge Economy*, Vol. 11 No. 2, pp. 721-742, doi: 10.1007/s13132-018-0569-2.

Zhou, Y., Kara, A. and Molyneux, P. (2019), "Chair-CEO generation gap and bank risk-taking", *The British Accounting Review*, Vol. 51 No. 4, pp. 352-372, doi: 10.1016/j.bar.2019.03.005.

Zhu, J., Gao, J. and Tan, H. (2021), "How the CEO power and age dissimilarity shape the chair-CEO pay gap: empirical evidence from China", *The North American Journal of Economics and Finance*, Vol. 55, 101221, doi: 10.1016/j.najef.2020.101221.

Zreik, O. and Louhichi, W. (2017), "Risk disclosure and company unsystematic, systematic, and total risks", *Economics Bulletin*, Vol. 37 No. 1, pp. 448-467.

Further reading

Bartel, C.A., Blader, S. and Wrzesniewski, A. (2007), "A critique of organizational identity scholarship: challenging the uncritical use of social identity theory when social identities are also social actors", in *Identity and the Modern Organization*, Psychology Press, pp. 254-273.

Khanna, T., Song, J. and Lee, K. (2011), "The paradox of Samsung's rise", *Harvard Business Review*, Vol. 89 Nos 7-8, pp. 142-147.

Ng, T.W. and Feldman, D.C. (2013), "A meta-analysis of the relationships of age and tenure with innovation-related behaviour", *Journal of Occupational and Organizational Psychology*, Vol. 86 No. 4, pp. 585-616, doi: 10.1111/joop.12031.

Ployhart, R.E. (2006), "Staffing in the 21st century: new challenges and strategic opportunities", *Journal of Management*, Vol. 32 No. 6, pp. 868-897, doi: 10.1177/0149206306293625.

Xu, Q., Fernando, G.D. and Schneible, R.A. (2022), "Age diversity, firm performance and managerial ability", *Review of Accounting and Finance*, Vol. 21 No. 1, pp. 276-298, doi: 10.1108/raf-09-2021-0232.

(The Appendix follows overleaf)

Appendix

Table A1. Variable definitions

Variable	Definition and measurement
Dependent variables (firm value and board monitoring intensity)	
Firm value variables (FV)	
TOBINQ	Tobin's Q, the firm's market value to its replacement costs, is approximated by the market capitalisation plus the difference between the book value of total assets and the book value of equity divided by the book value of total assets
MKTBK	The Market-to-Book ratio is the natural logarithm of the share price divided by the net book value per share
NAVPS	Net Asset Value Per Share, total assets minus liabilities divided by the number of outstanding shares
MKTVAL	Market Value is the natural logarithm of the total number of shares multiplied by the closing market price (per share)
Board monitoring intensity variables (BMI)	
BMEET	Board meetings frequency, the sum number of board meetings, and the number of conferences held by the board during the year
LNBMEET	Board meetings, the natural logarithm of the sum of the number of board meetings and the number of conferences held by the board during the year
Independent variables (Chair-CEO age dissimilarity)	
GAPS	Age dissimilarity Signed, age difference (in years) between the Chair and the CEO calculated as chair age minus CEO age
GAPU	Age dissimilarity Unsigned is the absolute value of the age difference (in years) between the Chair and the CEO
GAPSQU	Age dissimilarity Squared, the squared age difference between the CEO and the board chair
GAP20/15/10/5	GAP20, GAP15, GAP10 and GAP5: Chair-CEO, dummy variable that takes a value of 1 if the age difference between the A dummy variable where Chair and the CEO age gap is at least 20 (15/10/5) years, and 0 otherwise. This dummy variable measures a generational gap, as reflected by an age difference of at least 20/15/10/5 years following Strauss and Howe (1997) and Zhu *et al*. (2021)
Chair-CEO characteristics	
DIFEDU	Chair-CEO has a different education; a dummy variable is set to 1 if the Chair and the CEO do not have the same education degree level (bachelor, master, PhD, and others), and 0 otherwise
DIFGEN	Chair-CEO different gender, dummy variable set to 1 if the Chair and the CEO have a different gender, and 0 otherwise
DIFNAT	Chair-CEO has different nationalities, and the dummy variable is set to 1 if the Chair and the CEO have different nationalities and 0 otherwise
JONTENU	Chair-CEO joint tenure is the number of years the Chair and the CEO have worked together in these positions
TENURE1	Chair tenure is the number of years the Chair has been serving as the firm's CEO
CHANGE1	Chair change, dummy variable set to 1 for years when there is a Chair change, and 0 otherwise
TENURE2	CEO tenure is the number of years the CEO has been serving as the firm's CEO
CHANGE2	CEO change, dummy variable set to 1 for years when there is a CEO change, and 0 otherwise
Board characteristics	
BODAGE	Board age, the average age of all the directors' representatives on the board
BODSIZE	Board size, the total number of members on the board

(*continued*)

Table A1. Continued

Variable	Definition and measurement
CVBA	CV board age, the coefficient of variation of the board members' age defined as the standard deviation of the age of shareholder representatives on the board divided by the average age of shareholder representatives
Firm-level control variable	
LEVER	Leverage is measured as the firm's total liabilities over total assets
CapEx/TA	CapEx/TA, the firm's capital expenditures (CapEx) are standardized by total assets, both measured at the end of the fiscal year ($t-1$)
FFIRM	Family firm, dummy variable that is set to 1 if the firm is a family firm and 0 otherwise
FIRMAGE	Firm age is the number of years since the firm was listed
R&D	R&D expenditures, the natural logarithm of the firm's annual R&D expenditures, are divided by total revenue (plus 1 if the firm's annual R&D expenditures are divided by total revenue is less than 1)
SALEGR	Sales growth is measured by the changes in sales between year (t) and year ($t-1$)
FSIZE	Firm Size is the natural logarithm of the firm's total assets
BETA	Beta coefficient of firm's stock. The covariance of the corporate security's return with the market return is divided by the variance of the market return. Use the comprehensive market return of the Shanghai and Shenzhen markets as the market return (for all stocks)
STOCKVOL	Stock volatility is measured by the stock volatility (standard deviation) over the past two years using daily stock returns
Control variable about characteristics (management board)	
CVMBA	Coefficient of variation management board committee age, the coefficient of variation of the management board committee age defined as the standard deviation of the age of the members of the board committee, excluding the CEO, divided by the average age of the members of the board committee, excluding the CEO
MBSIZE	Board committee size, the natural logarithm of the total number of members of the board committee
MBTENU	Board committee tenure, the average number of years the members of the board committee have been serving on the firm's board committee, excluding the CEO
SBSIZE	Supervisory board size, the natural logarithm of the annual number of supervisors
Other variables	
BMEET_median	Board Meetings Above Median, a dummy variable of value 1 is assigned if the value of BMEET is higher than the median and 0 otherwise
LNBMEET_median	Ln (Board Meetings) Above Median, a dummy variable of value 1 is assigned if the value of LNBMEET is higher than the median and 0 otherwise
GAPS_median	Age dissimilarity Signed Above Median, a dummy variable of value 1 assigned if the value of GAPS is higher than the median and 0 otherwise
GAPU_median	Age dissimilarity Unsigned Above Median, a dummy variable of value 1 assigned if the value of GAPU is higher than the median and 0 otherwise
BLOCKHD 50%	Blockholder 50%, dummy variable that takes the value of 1 if a single shareholder holds at least 50% of the common shares outstanding, and 0 otherwise
SOE	SOE, dummy variable set to 1 if state-owned or state-holding firms and 0 otherwise
FCF	FCF/TA, free cash flow (defined as EBITDA–Cap/Ex) divided by total assets
HHI	The Herfindahl-Hirschman index, calculated by squaring the market share of each competing firm in the same industry and then summing the resulting numbers, weighted by market share in the same industry and in one year, the result is proportional to the average market share (range from 0 to 1). Increases in the HHI generally indicate a decrease in competition and an increase in market power, and vice versa
CEO age	CEO age, the age of the firm's chief executive officer (CEO)
Chair age	Chair age, the age of the board's chair (Chair)
GAPD	Age Gap Dummy, variable set to 1 if the GAPU is not 0, and 0 otherwise
CRG	Cultural Revolution Generation, dummy variable set to 1 if the Chair or the CEO is at least 16 years old during the Cultural Revolution (1966–1976), and 0 otherwise

(*continued*)

Table A1. Continued

Variable	Definition and measurement
ChairNCN	Chair Nationality, dummy variable set to 1 if Chair's nationality is Chinese, and 0 otherwise
CEONCN	CEO Nationality, dummy variable set to 1 if the CEO's nationality is Chinese, and 0 otherwise

Source(s): Created by authors

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