

Does CEO Age Matter for Auditor Choice and Audit Pricing? The Role of CEO Dominance

ACCEPTED ARTICLE

JOURNAL OF ACCOUNTING LITERATURE (ABDC RANK: A)

Lutfa Tilat Ferdous

University of Leicester Business School
University of Leicester
Leicester, LE1 1RQ
United Kingdom
Email: ltf4@leicester.ac.uk

Sudipta Bose¹

Discipline of Accounting and Finance
Newcastle Business School
University of Newcastle
Sydney, NSW 2000, Australia
Email: sudipta.bose@newcastle.edu.au

Syed Shams

School of Business
University of Southern Queensland
Springfield, Qld 4350, Australia
Email: syed.shams@usq.edu.au

Masoud Azizkhani

Australian National Audit Office
Canberra, ACT, Australia
Email: masoud.azizkhani@anao.gov.au

Citation:

Ferdous, L. T., Bose, S., Shams, S., & Azizkhani, M. (2024). Does CEO Age Matter for Auditor Choice and Audit Pricing? The Role of CEO Dominance. *Journal of Accounting Literature*. <https://doi.org/10.1108/JAL-09-2023-0169>.

¹ Corresponding author: Sudipta Bose, Discipline of Accounting and Finance, University of Newcastle, Sydney, NSW 2000, Australia. Tel: +61 2 8262 6406; Email: sudipta.bose@newcastle.edu.au

Does CEO Age Matter in Auditor Choice and Audit Pricing? The Role of CEO Dominance

Abstract

Purpose – This study examines the impact of the age of the Chief Executive Officer (CEO) on the demand for audit quality, as reflected in auditor choice and audit fees. Furthermore, the study investigates whether CEO dominance moderates the association between CEO age, auditor choice and audit fees.

Design/methodology/approach – Using a sample of 14,066 firm-year observations from 2000–2017, the study employs logistic regression and ordinary least squares (OLS) regressions to estimate the research models. The study also employs various techniques to address the endogeneity issue in the findings.

Findings – Using industry specialist auditors and brand name (Big 4) auditors as proxies, the study finds that firms with older CEOs are more likely to appoint higher-quality auditors. The study also finds that firms with older CEOs pay higher audit fees than firms with younger CEOs, which is likely to be due to increased demand for higher-quality audits and to risk aversion among older CEOs. In addition, the study finds that CEO dominance attenuates the positive association of CEO age with auditor choice and audit fees. The findings are found to be robust in our analyses which address the endogeneity issue with firm fixed effects, two-stage least squares (2SLS) regression and entropy balancing. In addition, the study provides evidence that the positive association between CEO age and audit pricing persists when firms replace younger CEOs with older CEOs.

Research limitations/implications – The study's findings suggest that the United States (US) Securities and Exchange Commission (SEC) and the Public Company Accounting Oversight Board (PCAOB) may need to be more cautious when monitoring financial statements from firms with younger CEOs.

Originality/value – This study contributes to a growing stream of research investigating the links between managers' idiosyncratic age differences and the quality of financial reporting and corporate decisions.

Keywords: Auditor choice, Audit pricing, Audit risk, CEO age, CEO dominance.

Paper type: Research paper

Data availability: All data are available from the sources mentioned in the paper.

1. Introduction

The purpose of this study is to examine the impact of the age of the Chief Executive Officer (CEO) on the demand for high audit quality, as reflected in auditor choice and audit fees. Furthermore, we investigate whether CEO dominance moderates the relationship between CEO age, auditor choice and audit fees. Our study draws from upper echelons theory (Hambrick and Mason, 1984) which suggests that observable characteristics of managers, such as age, tenure and career experience, influence their risk appetite in strategic decision making, including shaping the “tone at the top” and investing in internal controls over financial reporting. According to this theory, younger managers (CEOs) exhibit a higher risk appetite. Consistent with this notion, Xu (2023) finds that firms with CEOs prone to excessive risk taking are more likely to report internal control weaknesses under Section 404 of the *Sarbanes–Oxley Act of 2002*. Furthermore, auditing standards consider this “tone” and management philosophy as crucial factors affecting the effectiveness of the control environment, as in the Public Company Accounting Oversight Board (PCAOB) (2010)’s AS 2110. Hence, both upper echelons theory and auditing standards suggest that a CEO’s age affects his/her risk-taking propensity and management philosophy, with these considered as determinants of the control environment over financial reporting. While prior research shows that many firm characteristics affect a firm’s control environment (e.g., Chalmers *et al.*, 2019), what remains unclear is whether and how a CEO’s age affects auditor choice and audit fees.² In their study, Lauck *et al.* (2020) examine whether variations in audit fees paid to auditors reflect the individual characteristics of executives, finding that executive effects explain 20–39% of the total variation in unexplained audit fees.³

² A body of the extant academic research shows that CEO characteristics, such as gender, overconfidence, tenure, integrity and age, influence financial reporting quality, but with mixed results (Geiger and North, 2006; Krishnan and Parsons, 2008; Barua *et al.*, 2010; Huang *et al.*, 2012; Duellman *et al.*, 2015; Dikolli *et al.*, 2020).

³ Lauck *et al.* (2020) use the collective effects of individual characteristics of executives (e.g., gender, age, qualifications, tenure and pay scale) on unexplained audit fees. In examining the separate impact of these characteristics, they only find a marginal impact of the CEO/Chief Financial Officer (CFO)’s birth year on unexplained audit fees in one of their four measures.

The auditing literature highlights the pivotal role of the “tone at the top”⁴ (Committee of Sponsoring Organizations [COSO] of the Treadway Commission, 2013) in shaping the control environment, both internally and externally. As stated in the COSO report, setting an effective “tone” starts with the CEO and flows throughout the organisation (COSO, 2013).⁵ Prior research shows that CEO age affects various corporate decisions, including investment choices, the control environment and financial reporting practices (Huang *et al.*, 2012; Serfling, 2014; Cline and Yore, 2016). Examining the association between individual values and business decisions, Barnett and Karson (1987) show that older executives tend to adopt increasingly ethical subjective values as their careers progress, compared to their younger counterparts. Moreover, evidence shows that age affects moral reasoning (White, 1988), with older CEOs showing a greater inclination to perceive unethical situations as unacceptable (Deshpande, 1997). Building upon this prior research, we argue that the age of CEOs directly impacts setting the “tone at the top”, a critical component for ensuring the quality and integrity of financial reporting.

Auditing Standard (AS 2110) emphasises the significance of top management, including CEOs, in shaping the control environment, encompassing employee awareness of controls and laying the groundwork for other internal control elements. Under this standard, auditors are mandated to “acquire sufficient knowledge of the control environment to understand management’s perceptions, awareness, and actions concerning the control environment”. Prior research shows that external auditors incorporate the control environment into their audit risk assessment (Cohen and Hanno, 2000; Patelli and Pedrini, 2015).⁶ Anecdotal evidence suggests that Big 4 partners take account of directors’ risk attitudes when assessing control environments and control risks.⁷ When auditors assess the control environment as strong (weak), they are inclined to reduce (increase) their assessment of

⁴ ‘Tone at the top’ refers to the set of values and motives imposed by management covering the firm’s wide attitudes of integrity, ethical behaviour and control consciousness, as demonstrated by top management executives within the organisation (Association of Certified Fraud Examiners [ACFE], 2006).

⁵ In its 1987 report, the National Commission of Fraudulent Financial Reporting (Treadway Commission) assesses the tone at the top as the factor that most contributes to the integrity of the financial reporting process.

⁶ Discussion with audit partners of two audit firms reveals that one of the factors in assessing the control environment of control risk is whether a firm’s directors have an aggressive attitude toward risk.

⁷ Auditing Standard 2110, *Identifying and Assessing Risks of Material Misstatement (AS2110)*, requires auditors to assess the control environment as one of the components of internal controls over financial reporting.

control risk, resulting in a corresponding decrease (increase) in substantive testing required to manage the audit risk to an acceptable level. Consequently, this leads to a decrease (increase) in audit fees (Judd *et al.*, 2017). Based on this view, we examine how a CEO's age impacts a firm's control environment and, subsequently, impacts auditor choice and audit fees.

Given that CEOs' risk appetites vary with their age (e.g., Sundaram and Yermack, 2007; Yim, 2013; Serfling, 2014; Cline and Yore, 2016; Plöckinger *et al.*, 2016), their inclination towards investing in internal control systems, including the control environment, to mitigate reporting risk may differ. CEOs play a crucial role in maintaining effective internal controls, particularly over financial reporting, by setting the "tone at the top" for the control environment, overseeing risk assessment process, allocating resources, and monitoring internal controls (Xu 2023). As a result, a CEO's management style and risk appetite could significantly influence the strength and effectiveness of internal controls.⁸ A strong (weak) internal control system resulting from a CEO's overinvestment (underinvestment) in the design, implementation and monitoring of internal controls is likely to have a positive (negative) impact on the system's ability to prevent or detect misstatements. This would result in a lower (higher) control risk as assessed by auditors. When control risk is assessed as low, auditors adopt an audit strategy to minimise costs through increasing audit efficiency by relying on internal controls and reducing substantive testing, consequently resulting in lower audit fees (Simunic, 1980). In contrast, a higher control risk necessitates heightened audit efforts, consequently leading to higher audit fees. Prior research shows that auditors adjust audit fees to account for changes in audit (control) risk (Hoitash *et al.*, 2008). Xu (2023) provides evidence supporting the positive association between CEOs' risk appetite and reporting on the existence of internal control weaknesses. Therefore, we argue in support of a link between CEO age and audit fees.

This study presents two competing arguments, based on the demand for audit services, to examine the impact of CEO age on audit fees. On one hand, the litigation and reputational costs

⁸ For example, in its 2014 10-K report, Hertz Global attributed its identified and reported internal control weaknesses to the former CEO's "management style and temperament" ((Xu, 2023).

associated with misreporting induce CEOs and board directors to either improve internal controls or to demand higher-quality audits in order to provide high-quality financial reports. Given that Section 404 of the *Sarbanes–Oxley Act of 2002* (SOX Act) requires management to establish an “adequate” internal control structure and to assess the effectiveness of internal controls, risk-averse CEOs are more likely to build stronger internal control systems. As a result of a firm’s improvement of its internal control structure, auditors will assess the firm as having a lower control risk leading to a lower level of substantive tests, resulting in lower audit fees. In light of the fact that older CEOs tend to be more risk averse and conservative in their accounting choices, this view suggests a negative association between CEOs’ age, the demand for higher quality auditors and audit fees (Yim, 2013; Serfling, 2014).

On the other hand, a risk-averse CEO and board of directors, through their firm’s audit committee, may request a higher-quality audit from the auditor in response to the market and regulatory pressures to increase financial reporting quality and to reduce the risk of the firm’s misreporting and consequent litigation and reputational damage. Previous studies show a positive association between CEO age and higher-quality financial reports (Francis et al., 2008), while Cao *et al.* (2012) show that managers and directors of reputable firms have a greater incentive to maintain their reputations; therefore, they will demand higher-quality services, consequently paying a higher audit fee. Using this argument, we predict an association between CEO age, the demand for higher-quality auditors and audit fees.⁹

Our study also examines whether CEO dominance moderates the association between CEO age, auditor selection and audit fees. A stream of the research has established the link of a CEO’s dominant attitude to corporate financial decisions and audit pricing (Malmendier and Tate, 2005, 2008, 2009; Cianci *et al.*, 2011; Tee, 2019). This research stream suggests that dominant CEOs exert more power and monitor financial reporting activities, resulting in higher-quality financial reports and lower audit

⁹ We focus on the demand side of audit quality as we use audit fees and auditor choice as observable inputs to the audit process with these controlled by audit clients, compared to the supply side of audit quality which requires the use of output-based measures, such as issuance of going-concern opinions, restatements or modified audit opinions (DeFond and Zhang, 2014).

efforts and audit fees (Tsui *et al.*, 2001; Chen *et al.*, 2015; Tee, 2019). Moreover, a higher level of client dominance increases clients' bargaining power in negotiations on audit engagements and audit pricing (Casterella *et al.*, 2004; Huang *et al.*, 2007). Given the findings in prior research, we expect CEO dominance to attenuate the association between CEO age, demand for higher quality audit and audit fees.

Using data from United States (US) publicly-listed firms from 2000–2017, our study provides the following findings. Firstly, a positive association is found between CEO age, appointment of higher-quality auditors (with brand name auditors and industry specialist auditors as proxies) and audit fees. Secondly, our results demonstrate that CEO dominance attenuates the positive association between CEO age with higher-quality auditors and audit fees. To triangulate our main findings, firms in our study's sample were separated into sub-samples of firms that replace a younger (older) CEO with an older (younger) CEO, based on the average age of CEOs in our sample. We find that audit fees increase for those firms that replace a younger CEO with an older CEO. Based on these findings, audit pricing can be viewed as a demand-driven process. We find our results are robust to a battery of additional tests, including checks for endogeneity, omitted variable bias and self-selection bias.

Our study offers the following contributions. Firstly, the study contributes to a growing stream of research investigating the relationship between managers' idiosyncratic age differences and the quality of financial reporting and corporate decision making (e.g., Huang *et al.*, 2012; Serfling, 2014; Cline and Yore, 2016).¹⁰ Specifically, we address a gap in prior literature examining the impact of CEO characteristics, such as turnover, tenure, management ability and ownership interests, on audit fees (Mitra *et al.*, 2007; Billings *et al.*, 2014; Huang *et al.*, 2014; Chen *et al.*, 2015; Kim *et al.*, 2015; Mitra *et al.*, 2019; Mitra *et al.*, 2020). This is done by providing evidence that CEO age, as an individual characteristic, is positively associated with demand for audit quality as reflected in auditor choice and audit fees. Secondly, the current study adds empirical evidence to the audit fee literature

¹⁰ Prior research has mainly focused on the impact of CEO age on the quality of financial reporting (Huang *et al.*, 2012); firm value, operating performance and deal-making activity (Serfling, 2014); and stock return volatility (Cline and Yore, 2016).

by examining the effects of CEO age and CEO dominance, two important factors that are likely to influence auditors' risk assessments and pricing decisions. Our study is the first to provide empirical evidence on the association between CEO age and demand for audit quality (proxied by auditor choice and audit fees), and the moderation impact of CEO dominance on this association. Lastly, this study complements the literature on CEO dominance, client bargaining power and audit fees (Casterella *et al.*, 2004; Huang *et al.*, 2007) by showing that a higher level of CEO dominance attenuates the impact of CEO age on auditor choice and audit fees. This finding is important as it provides evidence of a dominant CEO's strong bargaining power over the demand for audit quality.

The remainder of our paper is organised as follows. Section 2 reviews the related literature and develops our hypotheses. Section 3 describes the study's sample and definitions of the variables. Our main empirical results and analyses are presented in Section 4, with the endogeneity analysis discussed in Section 5. Additional analyses and robustness checks are reported in Section 6, while Section 7 concludes the paper.

2. Literature review and hypotheses development

2.1 CEO age and risk appetite

Studies in the accounting literature present mixed findings on the impact of CEO characteristics on corporate policies. The upper echelons theory (Hambrick and Mason, 1984) argues that choices by executives are influenced by their cognitive base and values. Based on this theory, executives' unique styles and values are determined by their observable demographic features (Bamber *et al.*, 2010; Nielsen, 2010). This theory is explored in several studies examining how managerial characteristics, such as age, gender, tenure and ethnicity, affect board decision making (Plöckinger *et al.*, 2016). Prior research in accounting and psychology found a positive correlation between executives' age and their decision making and ethical behaviour. Hambrick and Mason (1984) suggest that younger managers (CEOs) have a higher risk appetite, mainly due to the "follies of youth". Supporting this view, prior research show that younger managers take more aggressive actions, compared to older managers, during times of business turbulence (Brouthers *et al.*, 2000), are also more likely to make risky

corporate decisions, such as diversification and mergers; incur higher financial leverage (Prendergast and Stole, 1996; Yim, 2013; Serfling, 2014; Cline and Yore, 2016; Plöckinger *et al.*, 2016); engage in aggressive restructuring activities (Li *et al.*, 2017); or overspend in high-risk research and development (R&D) (Coles *et al.*, 2006). On the other hand, older managers are more conservative as they have more experience in evaluating risks and have a higher level of judgment (Wallach and Kogan, 1961; Vroom and Pahl, 1971; Sundaram and Yermack, 2007). Taken together, prior research findings suggest that the age of CEOs has implications for their risk appetite which affects their corporate decisions.

2.2 CEO age and financial reporting quality

The impact of the age of executives on financial report quality is investigated in prior research, but with mixed and inconclusive results. A stream of the research suggests that executives' ages have a positive impact on the quality of financial reporting. Examining the association between CEOs' demographic factors and fraud, Troy *et al.* (2011) find that younger, less functionally experienced CEOs and CEOs without business degrees are more likely to engage in accounting fraud. Huang *et al.* (2012) find that older CEOs are less likely to engage in opportunistic earnings management activities such as meeting/beating analysts' earnings forecasts and restating financial statements. In contrast, some studies suggest that CEO age is negatively associated with financial reporting quality. In their study, Davidson *et al.* (2007) find evidence of higher levels of upward earnings management when CEOs are approaching retirement. Furthermore, older CEOs are found to disclose less voluntary information, compared to their younger counterparts (Chithambo *et al.*, 2020). Taken together, prior research findings document an association between the age of CEOs and the quality of financial statements, but with mixed results.

2.3 CEO age, auditor selection and audit fees

Based on Simunic's (1980) pioneering work, extant research on audit fees identifies auditor firms (clients) and engagement attributes as determinants of audit fees (Hay *et al.*, 2006). Although a significant amount of research has been conducted on the characteristics of firms (clients), auditors

and, to some extent, boards (independence, gender, tenure and expertise), little research examines the association between executives' characteristics, auditor selection and audit fees. In this study, we examine the association between CEO age, auditor selection and audit fees using two competing arguments based on the demand for financial audit.

In one hand, financial audit is viewed as a mechanism for reducing agency costs resulting from the separation of ownership and management (Jensen and Meckling, 1976). Variations in agency costs appear to influence the demand for different levels of audit and, thus, audit pricing (Hay *et al.*, 2006). Research indicates that, with multiple stakeholders becoming involved in corporate governance decisions, the demand for external audit would increase and, as a result, so too would audit quality. The reason is that those responsible for choosing assurance levels (e.g., management and/or a firm's audit committee) have a financial incentive to protect their own interests (Knechel and Willekens, 2006). As audit committee members are responsible for appointing, compensating and overseeing external auditors, it is therefore reasonable to expect that a risk-averse audit committee may appoint a higher-quality auditor or require the auditor to extend the audit work to reduce misreporting and reputational risks. This would pass the additional costs of the audit to shareholders who have no control over the level and extent of audits (Carcello *et al.*, 2002).

Under the *Sarbanes–Oxley Act of 2002* (SOX Act) (Sections 302 and 404), CEOs and Chief Financial Officers (CFOs) of US firms are directly responsible for the accuracy, documentation and submission of all financial reporting and for their firms' internal control structure to the US Securities and Exchange Commission (SEC). As a result of this regulatory requirement and the pressures of both the capital market and the executive labour market, CEOs have a strong reason to demand a higher level of audit quality to avoid the reputational and litigation risks that would result from misreporting (Harjoto *et al.*, 2015). Research shows that company CEOs who have misreported accounting are more likely to lose their jobs (Desai *et al.*, 2006) and land in jobs at a lower level than those they previously held (Fee and Hadlock, 2004). Evidence also shows that CEOs' past performance impacts on their remuneration and position continuity (Banker *et al.*, 2013). As a result,

CEOs are naturally motivated to provide high-quality financial reports and to demand a higher-quality audit owing to the litigation and reputational costs associated with misreporting.

The above discussion and prior research show that older CEOs are more risk averse (Serfling, 2014) and conservative in their accounting choices (Yim, 2013). Therefore, it can be expected that older CEOs, through their firms' audit committees, are more likely to demand a high-quality auditor (i.e., a brand name/industry specialist auditor) and/or a higher level of audit effort from their auditors to prevent misreporting, reputational loss and future litigation. This is consistent with previous research that CEO age correlates with higher-quality financial reports (Francis *et al.*, 2008) and that reputable firms appoint high-quality auditors and pay higher audit fees to protect their reputation (Cao *et al.*, 2012). This argument suggests a positive link between the age of CEOs and the demand for higher-quality audit, as reflected in auditor selection and audit fees.

We note that there is a reason to expect a credible null for H1 where CEO age is negatively associated with audit fees/the likelihood of hiring a higher quality auditor. Under the regulatory requirements of Section 404 of the SOX Act, management is responsible for an "adequate" internal control structure and for assessment of the effectiveness of internal controls, combined with market pressure, may provide greater incentive for older CEOs, in comparison to younger CEOs, to build stronger internal control systems owing to their preference for lower risk taking. Enhancement of the internal control structure results in auditors' assessment of a lower control risk, reducing the extent of substantive tests which, in turn, lowers audit fees. Prior research shows that firms with weak internal controls pay higher audit fees than those with robust and strong internal controls (Hogan and Wilkins, 2008; Hoitash *et al.*, 2008). This argument suggests a negative link between CEOs' age and the demand for higher-quality audit, as reflected in auditor choice and audit fees.

However, we argue that the risk preference of older CEOs may allow them to transfer costs to external shareholders through higher audit fees / hiring higher-quality auditors. Hence, we propose and test the following directional hypotheses on the association between CEO age, auditor selection and audit fees:

H1a: *CEO age is positively associated with the likelihood of hiring a higher-quality auditor.*

H1b: *CEO age is positively associated with audit fees.*

2.4 CEO age and audit fees: Role of CEO dominance

The power circulation theory is proposed in organisational literature to explain the relation between executive dominance and organisation performance. An organisation's hierarchical structure places CEO dominance above other executives' powers (Finkelstein, 1992; Adams *et al.*, 2005; Hamori and Kakarika, 2009; Feng *et al.*, 2011). With the highest level of authority, the board of directors monitors and evaluates executive directors, including CEOs. Prior research shows that CEO dominance undermines the board's monitoring role. For example, Muniandy (2007) hypothesises that CEO dominance results in lower board independence and effectiveness, as management decision making and board monitoring are weakly separated. Extant prior research on board independence and the board's internal monitoring role (e.g., Fama and Jensen, 1983; DeBoskey *et al.*, 2019) shows that board independence affects the effectiveness of board oversight and monitoring, leading to a lower rate of fraud (Beasley, 1996). Evidence also shows that firms subject to SEC enforcements due to earnings manipulations are more likely to have dominant CEOs (Dechow *et al.*, 1996).

Taking control risk into account, CEO dominance explains the association between CEOs' age and audit fees. According to Tsui *et al.* (2001), dominant CEOs monitor and oversee their own decisions, negatively affecting the board's ability to monitor and oversee management. The absence of effective oversight and monitoring by the board can result in the dominant CEO making decisions, possibly not in the best interests of the company, and overriding the company's internal controls for processing accounting transactions (Messier, 2017). In turn, CEO dominance affects the accounting system's reliability and ability to accurately produce accounting information, resulting in an increased level of control risk (Tsui *et al.*, 2001). As stated previously, the response by auditors to a high level of control risk is to extend their substantive tests resulting in higher audit fees. For example, as found by Tsui *et al.* (2001), firms without CEO dominance have more efficient monitoring mechanisms;

thus, they pay lower audit fees. In contrast, Tee (2019) shows that CEO power is associated with lower audit fees in Malaysia.¹¹

The influence of CEO dominance on the association between CEO age and audit fees can also be seen in the bargaining power of clients. It has been argued that firms with dominant CEOs have greater bargaining power in negotiations with external parties, including auditors. Prior studies also show that audit fees are lower when clients have more negotiating power over audit firms (Casterella *et al.*, 2004; Huang *et al.*, 2007). With their foundation in agency theory, we argue that firms with CEO dominance may have incentives to hire higher-quality auditors to improve the quality of financial reports, as a signalling mechanism, to secure favourable contracting benefits, such as lower cost of capital (Fan and Wong, 2005).

Therefore, given the above discussion, we expect that CEO dominance would attenuate the positive association between CEO age, auditor selection and audit fees. Specifically, if the risk preference of older CEOs, from the demand side of audit quality, results in transferring costs to external shareholders through higher audit fees/hiring higher-quality auditors, we expect dominant CEOs to use their bargaining power to appoint a lower-quality auditor or to negotiate with their auditors for lower audit fees. Thus, we propose the following hypotheses to test this expectation:

H2a: *The positive association between CEO age and the likelihood of hiring a higher-quality auditor is less pronounced for firms with greater CEO dominance.*

H2b: *The positive association between CEO age and audit fees is less pronounced for firms with greater CEO dominance.*

3. Research methodology

3.1 Sample and data

Our sample consists of all firms available in the Compustat ExecuComp database from 2000–2017. We obtain audit fee data from Audit Analytics database, CEO characteristics data from the Compustat

¹¹ The findings of the study by Tee (2019) from an emerging market may not be generalisable to the US which has a developed audit market with an established market mechanism and a highly litigious audit market.

ExecuComp database, and financial and segment data from the Compustat database. Following prior research on audit fees, we exclude financial firms (Standard Industrial Classification [SIC] codes 6000–6999) as the audit fee model is not appropriate for these regulated firms (Kim *et al.*, 2015). From these databases, we merge firm-year observations from 2000–2017. Our sampling period is restricted by the availability of audit fee data from the Audit Analytics database, as audit fee data are only available from 2000. After excluding firm-year observations with missing data, our final sample comprises 3,000 unique firms with 14,066 firm-year observations covering the 2000–2017 period.

Table 1 shows the industry and year distribution of firms in our sample, reporting the industry distribution of these firms using the 48 industry classifications developed by Fama and French (1997). Our sample is dominated by firms operating in business services (11.50%), while the candy and soda, fabricated products, and coal industries each have the lowest number of observations (0.01%). Regarding the yearly distribution of the sample, the highest number of firms is from 2009 (6.95%), and then 2010 (6.79%), while the lowest number of firms (2.71%) is from 2000, the first year in our sample period.

[INSERT TABLE 1 HERE]

3.2 Empirical models

Following prior studies (e.g., Ho and Kang, 2013; Lai *et al.*, 2017), we estimate the following logistic regression model (Model 1) for the association between CEO age and the likelihood of a firm's selection of an industry specialist auditor or a Big 4 auditor:

$$Pr(SPEC_{i,t}=1)/Pr(BIG4_{i,t}=1)=\alpha + \beta CEO_AGE_{i,t} + \delta X_{i,t} + Fixed\ effects + \varepsilon_{i,t} \quad (Model\ 1)$$

To test the association between audit fee and CEO age, we use the following ordinary least squares (OLS) regression model (Model 2) based on prior audit fee studies (e.g., Chen *et al.*, 2015; Lai *et al.*, 2017):

$$LNAF_{i,t}=\alpha + \beta CEO_AGE_{i,t} + \delta X_{i,t} + Fixed\ effects + \varepsilon_{i,t} \quad (Model\ 2)$$

To examine whether CEO dominance moderates the association between CEO age and auditor choice, we estimate the following logistic regression model (Model 3):

$$Pr(SPEC_{i,t}=1)/Pr(BIG4_{i,t}=1)=\alpha + \beta_1 CEO_AGE_{i,t} + \beta_2 CEO_AGE_{i,t} \times CEO_DOM_{i,t} + \beta_3 CEO_DOM_{i,t} + \delta X_{i,t} + Fixed\ effects + \varepsilon_{i,t} \quad (Model\ 3)$$

The following regression model (Model 4) is estimated to test whether CEO dominance moderates the association between CEO age and audit pricing:

$$LNAF_{i,t}=\alpha + \beta_1 CEO_AGE_{i,t} + \beta_2 CEO_AGE_{i,t} \times CEO_DOM_{i,t} + \beta_3 CEO_DOM_{i,t} + \delta X_{i,t} + Fixed\ effects + \varepsilon_{i,t} \quad (Model\ 4)$$

We measure the dependent variable in Models 1 and 3 using two dependent variables: specialist auditors (*SPEC*) and Big 4 (*BIG4*) audit firms. Specialist auditors (*SPEC*), is measured as an indicator variable that takes a value of 1 if the firm's auditor is an industry specialist auditor, and 0 otherwise. An industry specialist is an auditor with the largest market share by client assets in that industry. We follow the measure proposed by Gramling and Stone (2001). To determine the industry specialisation of auditors, an audit firm's market share is calculated by dividing the total auditing fees earned by firms in a given industry by the total auditing fees earned by all clients in the same industry (Balsam *et al.*, 2003; Carcello and Nagy, 2004; Gul *et al.*, 2009). Furthermore, Big 4 audit firms (*BIG4*) are measured as an indicator variable that takes a value of 1 if the client firm is audited by one of the Big 4 auditors, and 0 otherwise.

In Models 2 and 4, we use the natural logarithm of the audit fee (*LNAF*) paid to an auditor as a dependent variable. In Models 1 and 2, the variable of interest is age of the CEO (*CEO_AGE*). We measure CEO age using two proxies: a dummy variable (*CEO_AGE_DUM*) and the natural logarithm of CEO age (*LN_CEO_AGE*). *CEO_AGE_DUM* is measured as an indicator variable that takes the value of 1 if the firm's CEO's age is equal to or above the sample's median value for CEO age, and 0 otherwise.

In Models 2 and 4, we construct the CEO dominance index (*CEO_DOM*) based on the theoretical and empirical measures of Finkelstein's (1992) executive dominance framework which comprises structural, expert and ownership dominance. Our first step is to examine the number of formal titles held by CEOs in their firms. The more titles a CEO holds, the more influence he or she has over

accounting choices and over other senior executives. Another proxy for structural dominance is CEOs who also sit on the board, exercising dual decision making and influence (Finkelstein, 1992; Adams *et al.*, 2005). Finkelstein (1992) argues that the longer the CEO is involved with a firm, the wider his/her range of experience and expertise. With a better understanding of the firm and its financial environment, the CEO has a stronger bargaining position in decision making with the board. We adopt CEO tenure to measure expert dominance. Ownership dominance is the final measure of CEO dominance. An increased level of CEO shareholding reduces the influence of the board. An increased CEO shareholding leads to even more power and influence as the CEO has both management and ownership positions, making oversight more difficult. The motivation behind this index is that these characteristics, namely, a CEO's role on the board, a CEO holding multiple titles, a CEO's percentage shareholding in the firm, and a CEO's tenure with the firm may lead to greater CEO dominance, reflected in audit pricing by the client firm's CEO. A dichotomous measure of each of the above-mentioned continuous variables (CEO title, CEO shareholding and CEO tenure) is computed based on medians, with values above the median receiving 1, and those below the median receiving 0. Finally, the CEO dominance index is derived by summing all the dichotomous variables divided by 4 to measure overall CEO dominance, which ranges from 0 (the lowest level of CEO dominance) to 1 (the highest level of CEO dominance).

3.3 Control variables

As shown in prior studies, client firm size, complexity, reporting quality and governance monitoring all affect auditor choice and audit fees (Ho and Kang, 2013; Chen *et al.*, 2015; Jha and Chen, 2015; Lai *et al.*, 2017). Therefore, we include the following control variables in our research models: natural logarithm of total assets (*SIZE*); profitability (*ROA*); ratio of long-term debt to total assets (*LEV*); ratio of market value of equity to book value of equity (*MB*); operating losses experienced within the financial year (*LOSS*); and proportion of total assets in accounts receivable and inventory (*RECINV*). To control for firm risk, we include ratio of cash and short-term investments to total assets (*CASH*); ratio of property, plant and equipment to total assets (*TANG*); special items (*SPI*), measured as an

indicator variable of 1 if the firm has non-zero, non-missing special items, and 0 otherwise; firm age (*FAGE*); litigious industry (*LITG*), measured as an indicator variable equal to 1 if the firm is in a highly litigious industry, and 0 otherwise¹²; ratio of the firm's foreign sales revenue to total reported revenue (*FOREIGN*); and number of the firm's business segments (*SEGMENT*). Additionally, we control for the effects of unfavourable financial reporting issues, such as restatement disclosures (*RESTATE*) (Hoitash *et al.*, 2008; Feldmann *et al.*, 2009) and discretionary accrual quality (*AQ*) (Gul *et al.*, 2003). We also control for internal control weakness (*IC*), measured as an indicator variable equal to 1 when either a SOX Act, Section 404 report or a revised report indicates an internal control weakness, and 0 otherwise. We control for factors related to auditor engagement attributes that may influence audit–client relationships in the audit fee model, comprising client firms being audited by industry specialist auditors (*SPEC*) or Big 4 auditors (*BIG4*); audit firm tenure (*ATENURE*); audit opinion (*AUOP*); non-audit fee relative size (*LNNAS*); and an indicator variable to control for the pricing of audit services during busy seasons (*YREND*).

We control for board structural variables and director characteristics to measure corporate governance strength (Larcker *et al.*, 2007, Lai *et al.*, 2017). Specifically, we include the number of directors on the board (*BSIZE*) (Lai *et al.*, 2017); the proportion of independent directors on the board (*BIND*) (Larcker *et al.*, 2007; Lai *et al.*, 2017); directors' tenure (*DIRTEN*); and directors' qualifications (*DIRQUAL*). Directors with a long board tenure (Chan *et al.*, 2013) and qualified and experienced directors have a greater impact on higher governance quality and are more concerned about reputational capital. Therefore, they demand greater audit effort. In parallel with the evolution of audit committee governance, academic research has attempted to assess the effectiveness and usefulness of various audit committee characteristics in influencing audit quality (Ghafran and O'Sullivan, 2017). The presence of an audit committee; frequency of audit committee meetings; and use of internal audits are related to higher audit fees (Goodwin-Stewart and Kent, 2006). Following

¹² Highly litigious industries comprise those with SIC codes 2833–2838, 3570–3577, 3600–3674, 5200–5961, 7370–7374 and 8731–8734 (Bose *et al.*, 2022).

prior audit fees research (e.g., Chen *et al.*, 2015; Lai *et al.*, 2017), we include the number of members on the audit committee (*ACSIZE*) and the number of independent directors serving on the audit committee (*ACIND*). Members of the audit committee with a greater level of financial expertise are likely to charge a higher audit fee; therefore, we include the percentage of audit committee members who are financial experts (*ACEXP**ERT*). Institutional owners often have large holdings; more influence over management; and are more likely to demand a higher-quality audit (Kane and Velury, 2004). Thus, we control for the percentage of institutional ownership (*INSTOWN*) in its role of external monitoring. Appendix A provides the definitions of all variables used in Models 1–4.

3.4 Estimation method

We employ a logistic regression for Models 1 and 3 and ordinary least squares (OLS) regressions for Models 2 and 4 to estimate our regression models. We use robust standard errors clustered by firm in the regression models to alleviate heteroscedasticity and serial correlation issues. In our regressions, we use industry and year fixed effects to eliminate the impact of industry-wide and yearly audit fee fluctuations. All continuous variables are winsorised at the 1st and 99th percentiles to minimise the impact of outliers.

4. Empirical analyses

4.1 Descriptive statistics

Table 2, Panel A presents the descriptive statistics of the variables in this study. The mean (median) audit fee (as measured by the natural logarithm of the audit fee) is 14.07 (14.07) which indicates an average audit fee of US\$2.35 million. We find that the average (median) age of CEOs is 56.24 (56.00), which is consistent with Huang *et al.* (2012) and Serfling (2014) who both found that 62.4% of CEOs were over the age of 56. The mean value of 0.490 for the CEO dominance index (*CEO_DOM*), which ranges from 0 to 1, indicates that, on average, the sample firms exhibit a moderate level of CEO dominance.¹³ In our sample, the mean (median) size of firms is 7.21 (7.05) which indicates that most

¹³ While our CEO dominance index (*CEO_DOM*) is based on established measures (Adams, et al., 2005; Finkelstein, 1992), the methodological differences in construction lead to variations in descriptive statistics, which may limit direct

of the firms are large. The average (median) profitability (*ROA*) of a firm is 3.40% (5.00%). Approximately 38.41% of firms use an industry specialist auditor (*SPEC*), while about 89.30% of firms are audited by Big 4 auditors (*BIG4*). Approximately 34.80% of firms receive qualified audit opinions (*AUOP*), with approximately 34.40% operating in litigation-prone industries (*LITG*). Our observations have a December year-end (*YREND*) in about 65.70% of cases.

[INSERT TABLE 2 HERE]

Table 2, Panel B shows the mean and median differences between a firm with an older CEO and a firm with a younger CEO. We define an older CEO as one whose age is equal to or greater than the median age of CEOs in the sample, assigning a value of 1 for older CEOs and 0 for younger CEOs. Compared to firms with younger CEOs, firms with older CEOs have higher audit fees; are larger (*SIZE*); have higher debts (*LEV*); higher profitability (*ROA*); fewer losses (*LOSS*); more receivables and inventory (*RECINV*); more tangible assets (*TANG*); more foreign operations (*FOREIGN*) and more segments (*SEGMENT*); longer auditor tenure (*ATENURE*); and are less litigious (*LITG*). Firms with older CEOs have more directors on the board (*BSIZE*); more independent directors on the board (*BIND*); longer director tenure (*DIRTEN*); larger audit committee size (*ACSIZE*); more independent members of the audit committee (*ACIND*); and more audit experts on the audit committee (*ACEXPRT*), as well as higher institutional ownership (*INSTOWN*). Significant differences are found for most variables in the means between the two sub-samples (i.e., firms with an older CEO and firms with a younger CEO).

4.2 Correlation analysis

Table 3 shows the Pearson correlation matrix between the dependent and independent variables. As shown, *LNAF* (the audit fee) correlates positively with *LN_CEO_AGE*, indicating that older CEOs pay more in audit fees. Furthermore, auditor specialisation (*SPEC*) is positively correlated with *LN_CEO_AGE*. The results of the analysis also show that multicollinearity is unlikely to be a problem

comparability with other studies. Nonetheless, our index remains grounded in well-regarded theoretical constructs from the literature.

in our models, with Gujarati and Porter (2009) suggesting that correlations between variables with values less than 0.80 indicate the likely absence of multicollinearity. The average variance inflation factor (VIF) value is 1.43, with values ranging from 1.00–2.80. If VIF values are greater than 10, they may potentially be multicollinear (Gujarati and Porter, 2009). Our research models are likely to be resistant to multicollinearity concerns, based on the overall assessment of VIF values.

[INSERT TABLE 3 HERE]

Additionally, we show the mean and correlation among the different components of the CEO dominance index, including CEO insider, CEO title dummy, CEO shareholding dummy, and CEO tenure dummy, in Appendix B. The correlations suggest that each component captures a unique dimension of CEO power. For instance, the correlation between CEO insider and CEO title dummy is -0.044 and statistically significant, indicating that while these variables are related, they measure different aspects of CEO power—such as board influence versus dual roles. Similarly, the positive correlation between CEO shareholding dummy and CEO tenure dummy (0.182) suggests that while longer-tenured CEOs might hold shares, tenure and shareholding represent distinct aspects of CEO influence. These differences across components justify their inclusion in the broader CEO dominance index, as they collectively provide a more comprehensive measure of the CEO's power within the firm.

4.3 Regression analysis

The regression results for our study's H1a and H2a are reported in Table 4. Columns (1) and (3) report the logistic regression results using industry specialist auditor as the dependent variable, while Columns (2) and (4) show the logistic regression results using Big 4 auditor as the dependent variable. The pseudo- R -squared (R^2) values of our logistic regressions in Columns (1)–(4) range from 15.20% to 34%. Furthermore, we use receiver operating characteristic (ROC) curve analysis to evaluate the accuracy of the results (Zweig and Campbell, 1993) as shown in Columns (1)–(4). The areas under the ROC curve in all models range from 73.10% to 89.03%, suggesting a good level of accuracy in distinguishing firms with and without specialist auditors/Big 4 auditors. The coefficient of *CEO_AGE*

is positive and statistically significant in both Columns (1) and (2), showing that firms with older CEOs are more likely to demand their firm's financial audit from industry specialist auditors and Big 4 firms, which are our study's proxies for a higher-quality audit. These results provide support for H1a and are consistent with the argument that older CEOs are more likely to engage higher-quality auditors (Big 4/industry specialist) to prevent misreporting, reputational loss and future litigation. Furthermore, we report the regression results for testing H2a in Columns (3) and (4). As shown, the coefficients of $CEO_AGE \times CEO_DOM$ are negative and significant in both columns. These results suggest that the positive association between CEO age and the likelihood of hiring a higher-quality auditor (industry specialist/Big4 auditors) is less pronounced for firms with greater CEO dominance; thus, H2a is supported.

[INSERT TABLE 4 HERE]

We report the regression results for H1b and H2b in Table 5. We use two proxies for CEO age: CEO_AGE_DUM and LN_CEO_AGE . Columns (1) and (2) report the regression results for H1b, while the regression results for H2b are reported in Columns (3) and (4). Furthermore, Columns (1) and (3) show the regression results for the dummy measure of CEO age (CEO_AGE_DUM), while Columns (2) and (4) show the regression results for the continuous measure of CEO age (LN_CEO_AGE). The adjusted R^2 values range from 63.50% to 63.70%, indicating that the independent variables provide a good explanation of the variation of the dependent variable.¹⁴ As reported, the coefficient of CEO_AGE is positive and statistically significant ($\beta=0.105, p<0.01$; $\beta=0.295, p<0.01$), respectively, in Columns (1) and (2), thus providing support for H1b which posited that firms with older CEOs pay higher audit fees. The result suggests that older CEOs have an active involvement in the demand for higher-quality audits and, in turn, higher-quality financial reports, with this reflected in paying higher audit fees. In terms of economic significance, the coefficient estimates from Table 5, Column (2) indicate that an increase of one standard deviation in CEO age leads to a 3.69% (0.295×0.125) increase in audit fees.

¹⁴ The adjusted R^2 value for the firm fixed effects model is 75.50%, as reported in Table 6.

[INSERT TABLE 5 HERE]

Columns (3) and (4) show the results for the role of CEO dominance in the association between CEO age and audit fees, as reported in Table 5. The key variable of interest in Columns (3) and (4) is the interaction term, $CEO_AGE \times CEO_DOM$, which captures the difference in the effects of CEO age on audit fees between firms with higher CEO dominance and those with lower CEO dominance. Equally important, the coefficient of CEO_AGE in Columns (3) and (4) captures the effects on audit fees of lower CEO dominance. The coefficient of the interaction term, $CEO_AGE \times CEO_DOM$, is negative and statistically significant at the 1% level of significance in both columns. This suggests that, after controlling for other factors, the average increase in audit fees arising from CEO age is lower for firms in which the CEO has greater dominance; thus, H2b is supported. For example, an increase of one standard deviation in CEO age leads to 2.28% and 5.05% (0.125×0.182 ; 0.125×0.404) increases, respectively, in the cost of audit fees for firms with lower CEO dominance, while an increase of one standard deviation in CEO age leads to 1.99% and 2.70% (0.125×-0.159 ; 0.125×-0.216) decreases, respectively, in the cost of audit fees for firms with greater CEO dominance. Overall, this result is consistent with the argument that dominant CEOs have greater bargaining power in negotiating lower audit fees for firms with higher negotiation power with external parties, including auditors (Casterella *et al.*, 2004; Huang *et al.*, 2007).

Our control variable results indicate that larger firms (*SIZE*); with more leverage (*LEV*); losses (*LOSS*); greater current assets (*RECINV*); and special items (*SPI*) pay higher audit fees. We find that older firms (*FAGE*); with foreign operations (*FOREIGN*); many segments (*SEGMENT*); higher non-audit fees (*LNNAS*); unqualified opinions (*AUOP*); financial restatements (*RESTATE*); higher internal controls (*IC*); Big 4 auditors (*BIG4*); specialist auditors (*SPEC*); December year-end (*YREND*); and higher reporting quality (*AQ*) also pay higher audit fees. Conversely, firms with lower profitability (*ROA*) and tangible assets (*TANG*) pay lower audit fees. The results from the control variables are consistent with findings from prior audit studies (Gul *et al.*, 2003; Sun *et al.*, 2014; Chen *et al.*, 2015) in relation to higher levels of corporate governance monitoring, with more directors on the board

(*BSIZE*); shorter director tenure (*DIRTEN*); and more qualified directors (*DIRQUAL*). Overall, we find that firms with an older CEO have higher audit fees, while the role of CEO dominance attenuates the positive relationship between CEO age and audit fees.¹⁵

5. Endogeneity analysis

In our research models, an endogenous relationship between CEO age and audit pricing could be a concern, with any omitted variables correlated with CEO age potentially resulting in the endogeneity problem. Even though we include several control variables, as well as industry and year fixed effects, our research models could still suffer from omitted variable bias. Therefore, to address this risk, we estimate our models using firm fixed effects. The advantage of this method is that it eliminates any omitted time-invariant firm characteristics that may cause a spurious correlation between audit pricing and CEO age. Table 6 shows the firm fixed effects regression results, which are consistent with the results presented in Table 5, thus confirming the robustness of our findings.

[INSERT TABLE 6 HERE]

Our study also examines the possible effect of reverse causality on audit pricing and CEO age. It is reasonable to argue that firms with an older CEO pay higher audit fees, with the reverse effect also being possible. Prior studies argue that firms with older CEOs have higher-quality financial reporting; thus, firms with higher audit fees may hire older CEOs for improved quality in their financial reporting (Francis *et al.*, 2008). A two-stage least squares (2SLS) regression is used with instrumental variables to address this potential reverse causality. The rationale for the 2SLS method usually depends on selecting appropriate instrumental variables that are associated with CEO age, but not audit pricing. We employ two instrumental variables: industry–year adjusted average CEO age (*CEO_AGE_INS1*) and industry–county adjusted average CEO age (*CEO_AGE_INS2*). Sufficient evidence in empirical research suggests that a firm’s financial decisions and policies are influenced

¹⁵ We also examine the role of the choice of auditors (specialist auditors or Big 4 auditors) in the association between CEO age and audit pricing and the moderating role of CEO dominance in this association. We do not report the regression results here for reasons of brevity. The unreported results suggest that the positive association between CEO age and audit fees and the negative effect of CEO dominance in this association are conditional on firms being audited by industry specialist auditors and Big 4 auditors.

by industry and peer effects (Ferrell *et al.*, 2016). For example, peer effect is used as an instrumental variable in the financial reporting literature (Mande and Son, 2012; Parsons *et al.*, 2018). The industry–year average CEO age (*CEO_AGE_INS1*) is calculated as the average of the CEO age of each industry–year pair, while the industry–county adjusted average CEO age (*CEO_AGE_INS2*) is calculated as the average of the CEO age of each industry–county pair. The rationale behind these two instruments is that the audit pricing of a firm may be influenced by CEO age; however, as the industry comprises several firms, it is unlikely that the industry–year average CEO age and the industry–county average CEO age will influence audit pricing. Thus, we believe that these two variables can be used as instrumental variables.

We report the results of the 2SLS regression in Table 7. Column (1) shows the results of the first-stage regression, whereas Column (2) reports the results of the second-stage regression. The results in Column (1) show that the coefficients of the instrumental variables, *CEO_AGE_INS1* ($\beta=0.756$, $p<0.01$) and *CEO_AGE_INS2* ($\beta=0.890$, $p<0.01$) are statistically significant. As expected, the coefficients of the other control variables are significant; however, we do not report these results here for reasons of brevity. The Wald F -statistic (also unreported in this paper) for CEO age is significant at the $p<0.01$ level. The results for the second-stage regression in Column (2) show that the coefficient of *CEO_AGE_FITTED* is positive and statistically significant ($\beta=0.476$, $p<0.01$). Moreover, we assess the validity and strength of each instrumental variable. The Durbin–Wu–Hausman test is statistically significant ($\chi^2=3.117$, $p<0.10$), suggesting an endogenous relationship between CEO age and audit pricing. As a result, the use of instrumental variables is justified. Furthermore, the under-identification test (Kleibergen–Paap rk LM statistic) is statistically significant, suggesting that our models are satisfactorily identified. The Kleibergen–Paap rk Wald F statistic (weak identification test) is at least 20, suggesting that our instruments are relevant and strong. Finally, the over-identification test (the Sargan J statistic) is statistically insignificant for Column (2) ($\chi^2=0.019$, $p>0.10$), suggesting that our instruments are valid. The results of these tests indicate that our instruments satisfy the requirements of exogeneity and relevance; thus, they can be considered valid.

[INSERT TABLE 7 HERE]

6. Additional analyses and robustness checks

6.1 Entropy balancing analysis

The association between CEO age and audit pricing may also be affected by bias due to inherent differences in observable firm characteristics. As shown in Table 2, Panel B, most firm characteristics differ significantly between treatment and control groups. To address this issue, we employ the entropy balancing method to minimise the impact of disparities in firm attributes, decreasing the possibility that our outcomes would be linked to these disparities instead of to CEO age. Table 8 shows the results of entropy balancing, a method used to adjust for the sample's distributions of control observations in order to create a more comparable control group (Hainmueller, 2012; Hainmueller and Xu, 2013). This method successfully balances the covariates across the three moments (mean, variance and skewness) of the distributions by assigning weights to each observation. Underrepresented observations receive more weight, while overrepresented observations receive less weight, which ultimately creates a “pseudo” control group which reduces the differences between the treatment and control groups.

[INSERT TABLE 8 HERE]

In this study, the treatment group consists of firms with higher CEO age ($HIGH_CEO_AGE=1$), while the control group consists of firms with lower CEO age ($HIGH_CEO_AGE=0$). The variable $HIGH_CEO_AGE$ is an indicator variable, which takes a value of 1 when a firm's CEO's age is above the sample's median age. Conversely, it takes a value of 0 when a firm's CEO's age is below this median age. Table 8, Panel A shows the descriptive statistics of the entropy-balanced sample when balancing $HIGH_CEO_AGE$ versus LOW_CEO_AGE , respectively, for the control and treatment groups. Table 8, Panel B presents the multivariate regression analysis of the entropy-balanced sample. The coefficient of CEO_AGE is positive and statistically significant ($\beta=0.122$, $p<0.01$) in Column (1). Furthermore, the coefficient of $CEO_AGE \times CEO_DOM$ is negative and statistically significant ($\beta=-0.177$, $p<0.01$) in Column (1). Our findings are robust, based on the entropy balancing results.

While Table 8, Panel B does not report the entropy balancing results for the control variables for reasons of brevity, the un-tabulated results indicate consistent findings across all control variables, as shown in Table 5.

6.2 Shock analysis: Switching from ‘older CEO’ to ‘younger CEO’ vs. ‘younger CEO’ to ‘older CEO’

As shown earlier, our study’s results indicate that firms with older CEOs pay higher audit fees. We further examine the impact of CEO age on audit fees by dividing firms in our sample into two sub-samples: firms that replace an older CEO with a younger CEO (*FROM_OLD_TO_YOUNG_CEO*), and firms that replace a younger CEO with an older CEO (*FROM_YOUNG_TO_OLDER_CEO*). We use the average of *CEO_AGE* in our sample as a cut-off point for splitting the sample.¹⁶ More specifically, we create a dummy variable of *FROM_OLD_TO_YOUNG_CEO* for the first sub-sample (firms that replace an older CEO with a younger CEO) that takes a value of 1 if the firm replaces its older CEO and appoints a new younger CEO, and 0 otherwise. This sub-sample examines the impact on audit fees of replacing an older CEO with a younger CEO. On the other hand, we create another dummy variable of *FROM_YOUNG_TO_OLDER_CEO* (firms that replace a younger CEO with an older CEO) that takes a value of 1 if the firm replaces its younger CEO with an older CEO, and 0 otherwise. This sub-sample examines the impact on audit fees of replacing a younger CEO with an older CEO. The above specifications compare audit pricing before and after transitioning from an older CEO to a younger CEO (from a younger CEO to an older CEO). Table 9 reports the regression results. Column (1) shows that the coefficient of *FROM_OLD_TO_YOUNG_CEO* is negative and statistically significant ($\beta=-0.053$, $p<0.10$), while Column (2) shows that the coefficient of *FROM_YOUNG_TO_OLDER_CEO* is positive and statistically significant ($\beta=0.134$, $p<0.01$). Consistent with our main findings, these results suggest that audit fees increase for those firms that replace a younger CEO with an older CEO.

[INSERT TABLE 9 HERE]

¹⁶ We obtained similar results when we used the median of CEO age to classify older CEOs versus younger CEOs.

6.3 Role of industry specialist and Big4 auditors

We also examine the influence of CEO age on audit fees and explore how the presence of industry specialist and Big 4 auditors moderates this association, particularly considering the role of CEO dominance (*CEO_DOM*). The regression results are presented in two panels, with Panel A focusing on industry specialist auditors and Panel B examining Big 4 auditors.

Panel A of Table 10 examines the impact of industry specialist auditors (*SPEC=1*) versus non-specialist auditors (*SPEC=0*) on the association between CEO age and audit fees. With industry specialist auditors, the coefficients for CEO age—both as a dummy (*CEO_AGE_DUM*) and a continuous variable (*LN_CEO_AGE*)—are significantly positive ($\beta=0.132$, $p<0.01$ and $\beta=0.384$, $p<0.01$, respectively), indicating that older CEOs demand higher-quality audits, leading to increased audit fees. This aligns with the view that older, more risk-averse CEOs prefer thorough audits for better financial reporting. Furthermore, the interaction term *CEO_AGE*×*CEO_DOM* shows a negative and significant coefficient ($\beta=-0.309$, $p<0.01$ for *CEO_AGE_DUM* and $\beta=-0.126$, $p<0.01$ for *LN_CEO_AGE*) when industry specialists are involved, suggesting that CEO dominance weakens the positive link between CEO age and audit fees. Dominant CEOs may use their influence to negotiate lower fees or reduce audit scope.

[INSERT TABLE 10 HERE]

Panel B of Table 10 explores the role of Big 4 auditors (*BIG4=1*) compared to non-Big 4 auditors (*BIG4=0*) in the association between CEO age and audit fees. The results indicate that the positive relationship between CEO age and audit fees is significant when a Big 4 auditor is engaged ($\beta=0.118$, $p<0.01$ for *CEO_AGE_DUM* and $\beta=0.381$, $p<0.01$ for *LN_CEO_AGE*). This is consistent with the notion that older CEOs prioritize high-quality audits, particularly from the globally recognized Big 4 firms. In contrast, the relationship is not significant when non-Big 4 auditors are involved, suggesting that the demand for high audit quality by older CEOs is more pronounced when they engage reputable audit firms. Furthermore, the interaction term *CEO_AGE*×*CEO_DOM* shows a negative and significant coefficient ($\beta=-0.106$, $p<0.10$ for *CEO_AGE_DUM* and $\beta=-0.075$, $p<0.01$

for *LN_CEO_AGE*) when Big4 auditors are involved, suggesting that CEO dominance weakens the positive link between CEO age and audit fees. Dominant CEOs may use their influence to negotiate lower fees or reduce audit scope.

6.4 Alternative measure of CEO dominance index

To ensure the robustness of our findings, we constructed an alternative CEO dominance index using principal component analysis (PCA). The PCA is widely employed in the literature for combining multiple related variables into a single index, as it allows for the reduction of dimensionality while preserving the underlying structure of the data (Lee and Bose, 2021). Specifically, we used PCA to combine CEO insider, CEO title, CEO shareholding, and CEO tenure into a single dominance index, capturing the common variance among these variables. The results are qualitatively similar, as shown in Panel A of Table 11. The consistency in the coefficients and significance levels across both methods suggests that our results are robust to different operationalizations of CEO dominance.

[INSERT TABLE 11 HERE]

6.5 Other additional analyses

As evidenced by research, Chief Financial Officers (CFOs) engage in audit planning, particularly in the selection and scope of audited entities (Hellman, 2011); influence audit pricing (Beck and Mauldin, 2014); and engage in audit–client negotiations (Gibbins *et al.*, 2007). In line with previous research findings, we include CFO characteristics¹⁷ as a control variable, finding substantially similar results to the analyses presented in Table 5. As shown in Panel B of Table 11, Column (1), CEO age has a significant positive association with audit pricing ($\beta=0.295$, $p<0.05$), while the interaction variable, *CEO_AGE* × *CEO_DOM*, has a significant negative association with audit pricing ($\beta=-0.263$, $p<0.01$) after controlling for various CFO characteristics. As suggested by the analyses, CFO characteristics do not affect the relationship between CEO age and audit fees nor the moderating role of CEO dominance in the association between CEO age and audit pricing.

¹⁷ Among CFO characteristics, we control for CFO age, CFO gender, CFO financial expertise, CFO board membership, CFO ownership and CFO tenure. Due to missing data relating to CFO characteristics, the total number of observations has been reduced in Table 10. Detailed definitions of variables can be found in Appendix A.

7. Conclusion

Among regulators, legislators and policy makers worldwide, CEO characteristics have received a significant amount of attention in recent years. Although the audit quality literature in accounting provides insights into audit pricing and choice of auditor, little is known about the association between CEO characteristics, auditor choice and audit pricing. Using firm-level data from a sample of US firms from 2000–2017, we find that older CEOs tend to hire industry specialist auditors or Big 4 auditors who demand higher audit fees, supporting the hypothesis that CEO age impacts on the choice of auditor and the level of audit fees. Our study is conducted in a setting in which CEO age tends to reflect and capture differences in the risk appetite, diligence and monitoring power of CEOs. This, in turn, affects financial decisions, which are then reflected in firms' demand for higher-quality audits and their payment of higher audit fees. Furthermore, our study shows that CEO dominance attenuates the association between CEO age and audit fees. This result shows that dominant CEOs have higher ability to negotiate audit fees for higher-quality audits for firms managed by older CEOs.

Our study contributes to the audit fee literature by showing how CEO age influences the choice of auditor and audit pricing, as well as the potential professional and regulatory implications. The findings indicate that CEO characteristics, as part of the governance mechanism, are salient determinants of auditor selection and audit effort. Therefore, they have a significant impact on the demand for audit services by firms, given the various characteristics of their executives. Firstly, the maturity of CEOs could improve the quality of financial reports as they demand a higher level of audit quality. Specifically, our results suggest that older CEOs demand greater assurance from their audits to protect their reputations and reduce the risks of accounting misreporting. Our findings confirm those of Huang *et al.* (2012) who document an association between CEO age and financial reporting quality. Secondly, our findings regarding CEO dominance may be of interest to shareholders. Considering our findings concerning CEO age, shareholders may have to pay additional costs in the form of higher audit fees if assurance is required beyond the optimal level to keep the misreporting risk at an acceptable level. As shown in the results, dominant CEOs use their negotiation

power with external auditors to reduce the cost of audit assurance resulting from the demand for higher-quality audits to protect the firm's reputational capital.¹⁸ Also, our results are aligned with Huang *et al.* (2012) who suggest that the US SEC and the PCAOB may need to be more cautious when monitoring financial statements from firms with younger CEOs.

Our study has several limitations that open opportunities for future research. Firstly, although we follow prior accounting research by controlling for various factors as determinants of a firm's auditor choice and audit fees, our results may suffer from the issue of omitted variables. The reason is that different firm and governance characteristics might simultaneously impact on the relationship between a firm's CEO's age, auditor choice and audit fees. Secondly, as our sample consists of US firms, the results may not be generalisable to other countries or settings (Ittonen and Peni, 2012) due to the difference in the US regulatory environment and the prevalence of litigation risk for auditors. Thirdly, scholars discuss various upper-echelon traits (i.e., traits of top management) in relation to accounting decision making (Hiebl, 2014; Plöckinger *et al.*, 2016). Thus, future research could explore the impact of the attributes of CEOs and other senior management personnel on accounting and financial reporting decisions. Finally, examining the impact of the CEO's attributes (e.g., age) from the supply side of audit outputs could be a fruitful venue for future research.

References

- Association of Certified Fraud Examiners [ACFE], 2006, Tone at the top: How management can prevent fraud in the workplace. <https://corporatefinanceinstitute.com/resources/management/tone-at-the-top/> (accessed on 30 September, 2024).
- Adams, R. B., H. Almeida, and D. Ferreira, 2005, Powerful CEOs and their impact on corporate performance, *The Review of Financial Studies* 18(4), 1403-1432.
- Balsam, S., J. Krishnan, and J. S. Yang, 2003, Auditor industry specialisation and earnings quality, *Auditing: A Journal of Practice & Theory* 22(2), 71-97.
- Bamber, L. S., J. Jiang, and I. Y. Wang, 2010, What's my style? The influence of top managers on voluntary corporate financial disclosure, *The Accounting Review* 85(4), 1131-1162.
- Banker, R. D., M. N. Darrough, R. Huang, and J. M. Plehn-Dujowich, 2013, The relation between CEO compensation and past performance, *The Accounting Review* 88(1), 1-30.
- Barnett, J. H., and M. J. Karson, 1987, Personal values and business decisions: An exploratory investigation, *Journal of Business Ethics* 6, 371-382.
- Barua, A., L. F. Davidson, D. V. Rama, and S. Thiruvadi, 2010, CFO gender and accruals quality, *Accounting Horizons* 24(1), 25-39.

¹⁸ Prior research shows that directors and board members demand higher-quality auditors to improve the quality of financial reporting and to protect their reputational capital as "decision experts" (Carcello *et al.*, 2002; Fredriksson *et al.*, 2020).

- Beasley, M. S., 1996, An empirical analysis of the relation between the board of director composition and financial statement fraud, *The Accounting Review* 71(4), 443-456.
- Beck, M. J., and E. G. Mauldin, 2014, Who's really in charge? Audit committee versus CFO power and audit fees, *The Accounting Review* 89(6), 2057-2085.
- Billings, B. A., X. Gao, and Y. Jia, 2014, CEO and CFO equity incentives and the pricing of audit services, *Auditing: A Journal of Practice and Theory* 33(2), 1-25.
- Bose, S., S. Hossain, A. Sobhan, and K. Handley, (2022). Does Female Participation in Strategic Decision-Making Roles Matter for Corporate Social Responsibility Performance? *Accounting & Finance*, 62(3), 4109-4156.
- Brouthers, K. D., L. E. Brouthers, and S. Werner, 2000, Influences on strategic decision-making in the Dutch financial services industry, *Journal of Management* 26(5), 863-883.
- Cao, Y., L. A. Myers, and T. C. Omer, 2012, Does company reputation matter for financial reporting quality? Evidence from restatements, *Contemporary Accounting Research* 29(3), 956-990.
- Carcello, J. V., D. R. Hermanson, T. L. Neal, and R. A. Riley, 2002, Board characteristics and audit fees, *Contemporary Accounting Research* 19(3), 365-384.
- Carcello, J. V., and A. L. Nagy, 2004, Audit firm tenure and fraudulent financial reporting, *Auditing: A Journal of Practice and Theory* 23(2), 55-69.
- Casterella, J. R., J. R. Francis, B. L. Lewis, and P. L. Walker, 2004, Auditor industry specialization, client bargaining power, and audit pricing, *Auditing: A Journal of Practice and Theory* 23(1), 123-140.
- Chan, A. M. Y., G. Liu, and J. Sun, (2013). Independent audit committee members' board tenure and audit fees. *Accounting & Finance* 53(4), 1129-1147.
- Chalmers, K., D. Hay, and H. Khelif, 2019, Internal control in accounting research. *Journal of Accounting Literature*, 42, 80-103.
- Chen, Y., F. A. Gul, M. Veeraraghavan, and L. Zolotoy, 2015, Executive equity risk-taking incentives and audit pricing, *The Accounting Review* 90(6), 2205-2234.
- Chithambo, L., I. Tingbani, G. A. Agyapong, E. Gyapong, and I. S. Damoah, 2020, Corporate voluntary greenhouse gas reporting: Stakeholder pressure and the mediating role of the chief executive officer, *Business Strategy and the Environment* 29(4), 1666-1683.
- Cianci, A. M., G. D. Fernando, and E. M. Werner, 2011, The differential CEO dominance–compensation and corporate governance–compensation relations: Pre-and post-SOX, *Advances in Accounting* 27(2), 213-222.
- Cline, B. N., and A. S. Yore, 2016, Silverback CEOs: Age, experience, and firm value, *Journal of Empirical Finance* 35(C), 169-188.
- Cohen, J. R., and D. M. Hanno, 2000, Auditors' consideration of corporate governance and management control philosophy in preplanning and planning judgments, *Auditing: A Journal of Practice and Theory* 19(2), 133-146.
- Coles, J. L., N. D. Daniel, and L. Naveen, 2006, Managerial incentives and risk-taking, *Journal of Financial Economics* 79(2), 431-468.
- Committee of Sponsoring Organizations (COSO) of the Treadway Commission, 2013, *Internal control–Integrated framework*. New York, NY: American Institute of Certified Public Accountants (AICPA).
- Davidson, W. N., B. Xie, W. Xu, and Y. Ning, 2007, The influence of executive age, career horizon and incentives on pre-turnover earnings management, *Journal of Management and Governance* 11(1), 45-60.
- DeBoskey, D. G., Y. Luo, and L. Zhou, 2019, CEO power, board oversight, and earnings announcement tone, *Review of Quantitative Finance and Accounting*, 52, 657-680.
- Dechow, P. M., R. G. Solan, and A. P. Sweeney, 1996, Causes and consequences of earning manipulation: An analysis of firms subject to enforcement actions by the SEC, *Contemporary Accounting Research* 13(1), 1-36.
- DeFond, M. L., and J. Zhang, 2014, A review of archival auditing research, *Journal of Accounting and Economics* 58(2-3), 275-326.
- Desai, H., C. E. Hogan, and M. S. Wilkins, 2006, The reputational penalty for aggressive accounting: Earnings restatements and management turnover, *The Accounting Review* 81(1), 83-112.
- Deshpande, S. P., 1997, Managers' perception of proper ethical conduct: The effect of sex, age, and level of education, *Journal of Business Ethics* 16, 79-85.
- Dikolli, S. S., T. Keusch, W. J. Mayew, and T. D. Steffen, 2020, CEO behavioral integrity, auditor responses, and firm outcomes, *The Accounting Review* 95(2), 61-88.

- Duellman, S., H. Hurwitz, and Y. Sun, 2015, Managerial overconfidence and audit fees, *Journal of Contemporary Accounting and Economics* 11(2), 148-165.
- Fama, E. F., and K. R. French, 1997, Industry costs of equity, *Journal of Financial Economics* 43(2), 153-193.
- Fama, E., and M. Jensen, 1983, Separation of ownership and control, *Journal of Law and Economics* 26(2), 301-326.
- Fan, J. P., and T. J. Wong, 2005, Do external auditors perform a corporate governance role in emerging markets? Evidence from East Asia, *Journal of Accounting Research* 43(1), 35-72.
- Fee, C. E., and C. J. Hadlock, 2004, Management turnover across the corporate hierarchy, *Journal of Accounting and Economics* 37(1), 3-38.
- Feldmann, D. A., W. J. Read, and M. J. Abdolmohammadi, 2009, Financial restatements, audit fees, and the moderating effect of CFO turnover, *Auditing: A Journal of Practice and Theory* 28(1), 205-223.
- Feng, M., W. Ge, S. Luo, and T. Shevlin, 2011, Why do CFOs become involved in material accounting manipulations? *Journal of Accounting and Economics* 51(1-2), 21-36.
- Ferrell, A., H. Liang, and L. Renneboog, 2016, Socially responsible firms, *Journal of Financial Economics* 122(3), 585-606.
- Finkelstein, S., 1992, Power in top management teams: Dimensions, measurement, and validation, *Academy of Management Journal* 35(3), 505-538.
- Francis, J., A. H. Huang, S. Rajgopal, and A. Y. Zang, 2008, CEO reputation and earnings quality, *Contemporary Accounting Research* 25(1), 109-147.
- Fredriksson A., A. Kiran, and L. Niemi, 2020, Reputation capital of directorships and demand for audit quality, *European Accounting Review*, 29, 901-926
- Gramling, A. A., and D. N. Stone, 2001, Audit firm industry expertise: A review and synthesis of the archival literature, *Journal of Accounting Literature*, 20, 1-29.
- Geiger, M. A., and D. S. North, 2006, Does hiring a new CFO change things? An investigation of changes in discretionary accruals, *The Accounting Review* 81(4), 781-809.
- Ghafran, C., and N. O'Sullivan, 2017, The impact of audit committee expertise on audit quality: Evidence from UK audit fees, *The British Accounting Review* 49(6), 578-593.
- Gibbins, M., S. A. McCracken, and S. E. Salterio, 2007, The chief financial officer's perspective on auditor-client negotiations, *Contemporary Accounting Research* 24(2), 387-422.
- Goodwin-Stewart, J., and P. Kent, 2006, Relation between external audit fees, audit committee characteristics and internal audit, *Accounting & Finance* 46(3), 387-404.
- Gujarati, D. N., and D. C. Porter, 2009, *Basic econometrics*, New York, NY: McGrawHill/Irwin.
- Gul, F. A., C. J. Chen, and J. S. Tsui, 2003, Discretionary accounting accruals, managers' incentives, and audit fees, *Contemporary Accounting Research* 20(3), 441-464.
- Gul, F. A., S. Y. K. Fung, and B. Jaggi, 2009, Earnings quality: Some evidence on the role of auditor tenure and auditors' industry expertise, *Journal of Accounting and Economics* 47(3), 265-287.
- Hainmueller, J., 2012, Entropy balancing for causal effects: A multivariate reweighting method to produce balanced samples in observational studies, *Political Analysis* 20(1), 25-46.
- Hainmueller, J., and Y. Xu, 2013, Ebalance: A Stata package for entropy balancing, *Journal of Statistical Software* 54(7), 1-18.
- Hambrick, D. C., and P. A. Mason, 1984, Upper echelons: The organization as a reflection of its top managers, *Academy of Management Review* 9(2), 193-206.
- Hamori, M., and M. Kakarika, 2009, External labor market strategy and career success: CEO careers in Europe and the United States, *Human Resource Management*, 48(3), 355-378.
- Harjoto, M. A., I. Laksmana, and R. Lee, 2015, The impact of demographic characteristics of CEOs and directors on audit fees and audit delay, *Managerial Auditing Journal* 30(8/9), 963-997.
- Hay, D. C., W. R. Knechel, and N. Wong, 2006, Audit fees: A meta-analysis of the effect of supply and demand attributes, *Contemporary Accounting Research* 23(1), 141-191.
- Hellman, N., 2011, Chief financial officer influence on audit planning, *International Journal of Auditing* 15(3), 247-274.
- Hiebl, M. R., 2014, Upper echelons theory in management accounting and control research, *Journal of Management Control* 24(3), 223-240.
- Ho, J. L., and F. Kang, 2013, Auditor choice and audit fees in family firms: Evidence from the S&P 1500, *Auditing: A Journal of Practice & Theory* 32(4), 71-93.
- Hogan, C. E., and M. S. Wilkins, 2008, Evidence on the audit risk model: Do auditors increase audit fees in the presence of internal control deficiencies? *Contemporary Accounting Research* 25(1), 219-242.

- Hoitash, R., U. Hoitash, and J. C. Bedard, 2008, Internal control quality and audit pricing under the Sarbanes–Oxley Act, *Auditing: A Journal of Practice and Theory* 27(1), 105-126.
- Huang, H. W., L. L. Liu, K. Raghunandan, and D. V. Rama, 2007, Auditor industry specialization, client bargaining power, and audit fees: Further evidence, *Auditing: A Journal of Practice and Theory* 26(1), 147-158.
- Huang, H., R. J. Parker, Y. A. Yan, and Y. Lin, 2014, CEO turnover and audit pricing, *Accounting Horizons* 28(2), 297-312.
- Huang, H. W., E. Rose-Green, and C.-C. Lee, 2012, CEO age and financial reporting quality, *Accounting Horizons* 26(4), 725-740.
- Ittonen, K., and E. Peni, 2012, Auditor's gender and audit fees, *International Journal of Auditing* 16(1), 1-18.
- Jensen, M. C., and W. H. Meckling, 1976, Theory of the firm: Managerial behavior, agency costs and ownership structure, *Journal of Financial Economics* 3(4), 305-360.
- Jha, A., and Y. Chen, 2015, Audit fees and social capital, *The Accounting Review* 90(2), 611-639.
- Judd, J. S., K. J. Olsen, and J. Stekelberg, 2017, How do auditors respond to CEO narcissism? Evidence from external audit fees, *Accounting Horizons* 31(4), 33-52.
- Kane, G. D., and U. Velury, 2004, The role of institutional ownership in the market for auditing services: An empirical investigation, *Journal of Business Research*, 57(9), 976-983.
- Kim, Y., H. Li, and S. Li, 2015, CEO equity incentives and audit fees, *Contemporary Accounting Research* 32(2), 608-638.
- Knechel, W. R., and M. Willekens, 2006, The role of risk management and governance in determining audit demand, *Journal of Business Finance and Accounting* 33(9-10), 1344-1367.
- Krishnan, G. V., and L. M. Parsons, 2008, Getting to the bottom line: An exploration of gender and earnings quality, *Journal of Business Ethics* 78(1-2), 65-76.
- Lai, K. M., B. Srinidhi, F. A. Gul, and J. S. Tsui, 2017, Board gender diversity, auditor fees, and auditor choice, *Contemporary Accounting Research* 34(3), 1681-1714.
- Larcker, D. F., S. A. Richardson, and I. R. Tuna, 2007, Corporate governance, accounting outcomes, and organizational performance, *The Accounting Review* 82(4), 963-1008.
- Lauck, J. R., J. R. Rakestraw, and S. E. Stein, 2020, Do audit fees reflect unique characteristics of individual executives? *Accounting Horizons* 34(4), 105-124.
- Lee, C. H., and S. Bose, 2021, Do family firms engage in less tax avoidance than non-family firms? The corporate opacity perspective. *Journal of Contemporary Accounting and Economics* 17(2), 1-22.
- Li, X., A. Low, and A. K. Makhija, 2017, Career concerns and the busy life of the young CEO, *Journal of Corporate Finance* 47(C), 88-109.
- Malmendier, U., and G. Tate, 2005, CEO overconfidence and corporate investment, *The Journal of Finance* 60(6), 2661-2700.
- Malmendier, U., and G. Tate, 2008, Who makes acquisitions? CEO overconfidence and the market's reaction, *Journal of Financial Economics* 89(1), 20-43.
- Malmendier, U., and G. Tate, 2009, Superstar CEOs, *The Quarterly Journal of Economics* 124(4), 1593-1638.
- Mande, V., and M. Son, 2012, CEO centrality and meeting or beating analysts' earnings forecasts, *Journal of Business Finance and Accounting* 39(1-2), 82-112.
- Messier, W. F., 2017, *Auditing and assurance services: A systematic approach* (10th ed.), Boston, MA: Irwin/McGraw-Hill.
- Mitra, S., M. Hossain, and D. Deis, 2007, The empirical relationship between ownership characteristics and audit fees, *Review of Quantitative Finance and Accounting* 28(3), 257-285.
- Mitra, S., B. Jaggi, and T. Al-Hayale, 2019, Managerial overconfidence, ability, firm governance and audit fees, *Review of Quantitative Finance and Accounting* 52(3), 841-870.
- Mitra, S., H. Song, S. M. Lee, and S. H. Kwon, 2020, CEO tenure and audit pricing, *Review of Quantitative Finance and Accounting* 55, 427-459.
- Muniandy, B., 2007, CFO duality, audit committee effectiveness and audit risks, *Managerial Auditing Journal* 22(7), 716-728.
- Nielsen, S., 2010, Top management team diversity: A review of theories and methodologies, *International Journal of Management Reviews* 12(3), 301-316.
- Parsons, C. A., J. Sulaeman, and S. Titman, 2018, The geography of financial misconduct, *The Journal of Finance* 73(5), 2087-2137.
- Patelli, L., and M. Pedrini, 2015, Is tone at the top associated with financial reporting aggressiveness? *Journal of Business Ethics* 126(1), 3-19.

- Plöckinger, M., E. Aschauer, M. R. Hiebl, and R. Rohatschek, 2016, The influence of individual executives on corporate financial reporting: A review and outlook from the perspective of upper echelons theory, *Journal of Accounting Literature* 37, 55-75.
- Prendergast, C., and L. Stole, 1996, Impetuous youngsters and jaded old-timers: Acquiring a reputation for learning, *Journal of Political Economy* 104(6), 1105-1134.
- Public Company Accounting Oversight Board (PCAOB), 2010, AS 2110: Identifying and assessing risks of material misstatement. Washington, D.C. <https://pcaobus.org/oversight/standards/auditing-standards/details/AS2110> (accessed on 30 September, 2024).
- Serfling, M. A., 2014, CEO age and the riskiness of corporate policies, *Journal of Corporate Finance* 25, 251-273.
- Simunic, D. A., 1980, The pricing of audit services: Theory and evidence, *Journal of Accounting Research* 18(1), 161-190.
- Sun, F., F. Wu, and S. F. Li, 2014, CEO inside debt and audit fees, *International Journal of Auditing* 18(1), 2-13.
- Sundaram, R. K., and D. L. Yermack, 2007, Pay me later: Inside debt and its role in managerial compensation, *The Journal of Finance* 62(4), 1551-1588.
- Tee, C. M., 2019, CEO power and audit fees: Evidence from Malaysia, *International Journal of Auditing* 23(3), 365-386.
- Troy, C., K. G. Smith, and M. A. Domino, 2011, CEO demographics and accounting fraud: Who is more likely to rationalize illegal acts? *Strategic Organization* 9(4), 259-282.
- Tsui, J. S., B. Jaggi, and F. A. Gul, 2001, CEO domination, growth opportunities, and their impact on audit fees, *Journal of Accounting, Auditing and Finance* 16(3), 189-208.
- Vroom, V. H., and B. Pahl, 1971, Relationship between age and risk taking among managers, *Journal of Applied Psychology* 55(5), 399-405.
- Wallach, M. A., and N. Kogan, 1961, Aspects of judgment and decision making: Interrelationships and changes with age, *Behavioral Science* 6(1), 23-36.
- White, C. B., 1988, Age, education, and sex effects on adult moral reasoning, *The International Journal of Aging and Human Development* 27(4), 271-281.
- Xu, X., 2023, Generalist CEOs, management risk and internal control weaknesses, *Journal of Business, Finance and Accounting*. <https://doi.org/10.1111/jbfa.12691>
- Yim, S., 2013, The acquisitiveness of youth: CEO age and acquisition behavior, *Journal of Financial Economics* 108(1), 250-273.
- Zweig, M. H., and G. Campbell, 1993, Receiver-operating characteristic (ROC) plots: A fundamental evaluation tool in clinical medicine. *Clinical Chemistry*, 39, 561-577.

Table 1: Industry and year distribution

	Industry	N	%	Year	N	%
1	Agriculture	19	0.14	2000	381	2.71
2	Food Products	292	2.08	2001	664	4.72
3	Candy & Soda	2	0.01	2002	682	4.85
4	Beer & Liquor	54	0.38	2003	831	5.91
6	Recreation	88	0.63	2004	798	5.67
7	Entertainment	129	0.92	2005	765	5.44
8	Printing and Publishing	117	0.83	2006	770	5.47
9	Consumer Goods	259	1.84	2007	845	6.01
10	Apparel	226	1.61	2008	822	5.84
11	Healthcare	319	2.27	2009	977	6.95
12	Medical Equipment	543	3.86	2010	955	6.79
13	Pharmaceutical Products	681	4.84	2011	895	6.36
14	Chemicals	483	3.43	2012	849	6.04
15	Rubber and Plastic Products	90	0.64	2013	848	6.03
17	Construction Materials	378	2.69	2014	822	5.84
18	Construction	125	0.89	2015	762	5.42
19	Steel Works, etc.	243	1.73	2016	721	5.13
20	Fabricated Products	2	0.01	2017	<u>679</u>	<u>4.83</u>
21	Machinery	710	5.05	Total	14,066	100
22	Electrical Equipment	217	1.54			
23	Automobiles and Trucks	247	1.76			
24	Aircraft	117	0.83			
27	Precious Metals	8	0.06			
28	Non-Metallic and Industrial	63	0.45			
29	Coal	1	0.01			
30	Petroleum and Natural Gas	659	4.69			
31	Utilities	660	4.69			
32	Communications	358	2.55			
33	Personal Services	195	1.39			
34	Business Services	1,617	11.50			
35	Computers	586	4.17			
36	Electronic Equipment	1,311	9.32			
37	Measuring and Control	442	3.14			
38	Business Supplies	267	1.90			
39	Shipping Containers	10	0.07			
40	Transportation	378	2.69			
41	Wholesale	601	4.27			
42	Retail	1,057	7.51			
43	Restaurants, Hotels, Motels	220	1.56			
46	Real Estate	20	0.14			
47	Trading	153	1.09			
48	Miscellaneous	<u>119</u>	<u>0.84</u>			
	Total	14,066	100			

Table 2: Descriptive statistics

Panel A: Full sample descriptive statistics (n=14,066)						
	Mean	St. Dev.	Median	1 st Quartile	3 rd Quartile	
LNAF	14.072	1.165	14.070	13.459	14.638	
CEO_AGE_DUM	0.624	0.484	1.000	0.000	1.000	
AGE	56.244	7.092	56.000	52.000	60.000	
LN_CEO_AGE	4.040	0.125	4.043	3.970	4.111	
CEO_DOM (Raw value)	1.974	0.882	2.000	1.000	3.000	
CEO_DOM	0.493	0.220	0.5000	0.250	0.750	
SPEC	0.384	0.486	0.000	0.000	1.000	
BIG4	0.893	0.309	1.000	1.000	1.000	
SIZE	7.216	1.515	7.057	6.176	8.118	
ROA	0.034	0.165	0.050	0.016	0.089	
LEV	0.185	0.193	0.161	0.004	0.289	
MB	3.350	54.091	2.271	1.468	3.661	
LOSS	0.188	0.391	0.000	0.000	0.000	
RECINV	0.246	0.160	0.225	0.116	0.341	
CASH	0.177	0.185	0.111	0.034	0.264	
TANG	0.265	0.230	0.186	0.089	0.380	
SPI	0.744	0.436	1.000	0.000	1.000	
FAGE	27.628	17.104	22.000	14.000	41.000	
FOREIGN	0.399	0.342	0.408	0.000	0.716	
SEGMENT	2.567	0.910	2.449	1.732	3.317	
LNNAS	11.711	3.355	12.421	11.17	13.477	
AUOP	0.348	0.476	0.000	0.000	1.000	
RESTATE	0.122	0.327	0.000	0.000	0.000	
IC	0.169	0.375	0.000	0.000	0.000	
SPEC	0.384	0.486	0.000	0.000	1.000	
ATENURE	0.509	0.500	1.000	0.000	1.000	
LITG	0.344	0.475	0.000	0.000	1.000	
YTREND	0.657	0.475	1.000	0.000	1.000	
AQ	0.044	0.037	0.034	0.021	0.054	
BSIZE	8.796	2.165	9.000	7.000	10.00	
BIND	10.273	7.001	8.000	6.000	12.000	
DIRTEN	9.725	4.755	9.159	6.387	12.508	
ACSIZE	4.183	1.173	4.000	3.000	5.000	
ACIND	0.967	0.109	1.000	1.000	1.000	
ACEXPERT	0.449	0.302	0.333	0.250	0.667	
DIRQUAL	2.054	0.503	2.083	1.750	2.375	
INSTOWN	0.507	0.420	0.682	0.000	0.880	
Panel B: Mean and median tests						
	OLDER CEO (8,777)		YOUNGER CEO (5,289)		Mean test (p-value)	Median test (p-value)
	Mean	Median	Mean	Median		
LNAF	14.274	14.258	13.738	13.849	0.000	0.000
CEO_DOM	0.526	0.500	0.440	0.500	0.000	0.000
SPEC	0.431	0.000	0.306	0.000	0.000	0.000
BIG4	0.899	1.000	0.883	1.000	0.000	0.000
SIZE	7.502	7.394	6.742	6.674	0.000	0.000
ROA	0.036	0.051	0.030	0.050	0.021	0.422
LEV	0.198	0.180	0.164	0.119	0.000	0.000
MB	2.755	2.245	4.337	2.322	0.093	0.000
LOSS	0.176	0.000	0.208	0.000	0.000	0.000
RECINV	0.250	0.234	0.238	0.209	0.000	0.000
CASH	0.159	0.098	0.208	0.142	0.000	0.000
TANG	0.276	0.203	0.247	0.158	0.000	0.000
SPI	0.753	1.000	0.728	1.000	0.001	0.001
FAGE	3.272	3.296	2.982	2.944	0.000	0.000
FOREIGN	0.407	0.429	0.385	0.385	0.000	0.000
SEGMENT	2.683	2.828	2.375	1.732	0.000	0.000

<i>LNNAS</i>	11.960	12.592	11.298	12.165	0.000	0.000
<i>AUOP</i>	0.344	0.000	0.353	0.000	0.262	0.262
<i>RESTATE</i>	0.123	0.000	0.119	0.000	0.498	0.498
<i>IC</i>	0.166	0.000	0.174	0.000	0.221	0.221
<i>SPEC</i>	0.431	0.000	0.306	0.000	0.000	0.000
<i>ATENURE</i>	0.546	1.000	0.448	0.000	0.000	0.000
<i>LITG</i>	0.308	0.000	0.403	0.000	0.000	0.000
<i>YTREND</i>	0.660	1.000	0.654	1.000	0.501	0.501
<i>AQ</i>	0.041	0.033	0.049	0.037	0.000	0.000
<i>BSIZE</i>	9.059	9.000	8.360	8.000	0.000	0.000
<i>BIND</i>	10.893	9.348	9.244	8.236	0.000	0.000
<i>DIRTEN</i>	10.214	9.709	8.914	8.370	0.000	0.000
<i>ACSIZE</i>	4.300	4.344	3.989	4.129	0.000	0.000
<i>ACIND</i>	0.968	1.000	0.966	1.000	0.227	0.346
<i>ACEXPRT</i>	0.459	0.335	0.432	0.332	0.000	0.000
<i>DIRQUAL</i>	2.065	2.091	2.034	2.000	0.000	0.000
<i>INSTOWN</i>	0.515	0.695	0.493	0.655	0.003	0.060

St. Dev.=standard deviation. Definitions of variables are provided in Appendix A.

Table 3: Correlation analysis

Panel A: Correlation matrix		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]
<i>LNAF</i>	[1]	1.000															
<i>LN_CEO_AGE</i>	[2]	0.162	1.000														
<i>CEO_DOM</i>	[3]	0.137	0.232	1.000													
<i>SIZE</i>	[4]	0.644	0.186	0.108	1.000												
<i>ROA</i>	[5]	0.039	0.029	0.016	0.135	1.000											
<i>LEV</i>	[6]	0.183	0.067	0.029	0.294	-0.150	1.000										
<i>MB</i>	[7]	-0.003	-0.005	0.001	-0.005	0.001	0.018	1.000									
<i>LOSS</i>	[8]	-0.065	-0.056	-0.023	-0.199	-0.536	0.092	0.010	1.000								
<i>RECINV</i>	[9]	-0.008	0.055	-0.064	-0.184	0.053	-0.194	0.000	-0.055	1.000							
<i>CASH</i>	[10]	-0.200	-0.120	0.002	-0.380	-0.057	-0.305	0.007	0.133	-0.221	1.000						
<i>TANG</i>	[11]	-0.038	0.061	0.005	0.273	-0.007	0.263	-0.004	-0.027	-0.316	-0.424	1.000					
<i>SPI</i>	[12]	0.221	0.008	0.037	0.121	-0.127	0.139	-0.001	0.162	-0.020	-0.043	-0.128	1.000				
<i>FAGE</i>	[13]	0.344	0.195	0.059	0.429	0.058	0.125	0.001	-0.113	0.062	-0.296	0.172	0.036	1.000			
<i>FOREIGN</i>	[14]	0.250	0.001	0.007	0.035	-0.005	-0.133	0.015	0.045	0.107	0.235	-0.331	0.186	0.038	1.000		
<i>SEGMENT</i>	[15]	0.288	0.154	0.004	0.303	0.033	0.097	-0.002	-0.081	0.055	-0.296	0.047	0.087	0.368	0.034	1.000	
<i>LNNAS</i>	[16]	0.290	0.056	-0.072	0.398	0.046	0.104	0.010	-0.073	-0.016	-0.119	-0.026	0.095	0.180	0.150	0.185	1.000
<i>AUOP</i>	[17]	0.065	-0.022	-0.082	0.064	-0.032	0.033	0.011	0.024	-0.015	-0.061	0.024	0.013	0.011	0.016	0.082	0.084
<i>RESTATE</i>	[18]	-0.010	0.006	-0.035	-0.028	-0.008	0.018	-0.005	0.003	-0.007	-0.001	-0.004	-0.008	-0.010	-0.016	0.022	0.003
<i>IC</i>	[19]	0.238	0.070	0.002	0.276	0.043	0.095	0.011	-0.076	-0.065	-0.086	0.085	0.061	0.092	0.024	0.102	0.232
<i>BIG4</i>	[20]	-0.007	-0.011	-0.213	0.068	-0.060	0.048	0.013	0.061	0.039	-0.067	0.003	0.046	0.005	0.069	0.103	0.182
<i>SPEC</i>	[21]	0.149	0.197	0.248	0.182	0.028	0.075	-0.003	-0.044	-0.052	-0.091	0.126	-0.006	0.129	-0.012	0.084	0.048
<i>ATENURE</i>	[22]	0.187	0.095	0.039	0.287	0.090	0.031	0.014	-0.135	0.033	-0.121	0.057	-0.005	0.238	0.043	0.157	0.177
<i>LITG</i>	[23]	-0.118	-0.098	0.012	-0.147	-0.033	-0.190	0.001	0.070	-0.067	0.372	-0.222	-0.004	-0.231	0.092	-0.308	-0.051
<i>YTREND</i>	[24]	0.080	-0.020	0.025	0.071	-0.035	0.112	-0.011	0.047	-0.183	-0.053	0.113	0.018	-0.018	-0.024	0.044	0.003
<i>AQ</i>	[25]	-0.160	-0.090	-0.106	-0.336	-0.157	-0.034	0.008	0.215	0.174	0.235	-0.222	0.031	-0.193	0.054	-0.131	-0.083
<i>BSIZE</i>	[26]	0.413	0.123	-0.001	0.598	0.078	0.190	-0.000	-0.135	-0.046	-0.319	0.209	0.074	0.415	-0.041	0.290	0.284
<i>BIND</i>	[27]	0.345	0.073	0.085	0.377	0.008	0.076	0.002	-0.047	-0.074	-0.101	0.027	0.101	0.314	0.092	0.200	0.162
<i>DIRTEN</i>	[28]	-0.07	0.217	0.190	-0.008	0.095	-0.086	0.013	-0.118	0.130	-0.063	0.016	-0.102	0.255	-0.016	0.067	-0.059
<i>ACSIZE</i>	[29]	0.260	0.096	-0.015	0.344	0.021	0.119	-0.012	-0.065	0.025	-0.232	0.162	0.047	0.365	-0.030	0.220	0.154
<i>ACIND</i>	[30]	0.147	0.018	0.171	-0.009	0.073	-0.033	0.006	-0.045	0.006	0.032	-0.032	0.029	0.047	0.024	-0.034	-0.126
<i>ACEXPRT</i>	[31]	0.194	0.025	0.129	0.089	0.027	0.047	0.009	-0.037	0.033	-0.031	-0.043	0.073	0.061	0.044	0.024	-0.053
<i>DIRQUAL</i>	[32]	0.244	-0.007	0.070	0.176	-0.039	0.028	0.001	0.045	-0.134	0.098	-0.098	0.117	0.095	0.175	0.067	0.061
<i>INSTOWN</i>	[33]	0.185	0.021	0.170	0.082	0.129	-0.051	0.009	-0.146	0.034	0.023	-0.084	0.036	0.027	0.068	-0.035	-0.037
Panel B: Correlation matrix (continued)		[17]	[18]	[19]	[20]	[21]	[22]	[23]	[24]	[25]	[26]	[27]	[28]	[29]	[30]	[31]	[32]
<i>AUOP</i>	[17]	1.000															
<i>RESTATE</i>	[18]	0.069	1.000														

<i>IC</i>	[19]	0.079	0.014	1.000													
<i>BIG4</i>	[20]	0.141	0.087	0.011	1.000												
<i>SPEC</i>	[21]	-0.025	-0.015	0.147	-0.067	1.000											
<i>ATENURE</i>	[22]	0.019	-0.011	0.290	0.005	0.103	1.000										
<i>LITG</i>	[23]	-0.030	-0.021	-0.034	-0.009	-0.124	-0.080	1.000									
<i>YTREND</i>	[24]	0.016	0.022	-0.018	-0.028	0.009	-0.032	-0.161	1.000								
<i>AQ</i>	[25]	0.016	0.017	-0.096	0.056	-0.122	-0.139	0.082	0.017	1.000							
<i>BSIZE</i>	[26]	0.072	-0.007	0.218	0.105	0.109	0.239	-0.182	0.007	-0.196	1.000						
<i>BIND</i>	[27]	0.029	-0.022	0.133	-0.054	0.093	0.214	-0.059	0.042	-0.104	0.455	1.000					
<i>DIRTEN</i>	[28]	-0.063	0.003	-0.035	-0.050	0.083	0.156	-0.074	-0.123	-0.121	0.003	-0.022	1.000				
<i>ACSIZE</i>	[29]	0.058	-0.007	0.114	0.039	0.096	0.146	-0.165	0.036	-0.086	0.437	0.261	-0.080	1.000			
<i>ACIND</i>	[30]	-0.028	-0.03	0.049	-0.306	0.045	0.017	0.012	0.002	-0.047	-0.040	0.125	0.044	-0.045	1.000		
<i>ACEXPRT</i>	[31]	-0.034	-0.027	0.060	-0.254	0.049	0.018	-0.027	0.019	-0.055	0.033	0.096	-0.011	-0.091	0.264	1.000	
<i>DIRQUAL</i>	[32]	0.010	-0.021	0.123	-0.016	0.053	0.018	0.028	0.096	-0.025	0.119	0.157	-0.206	0.096	0.078	0.085	1.000
<i>INSTOWN</i>	[33]	-0.042	-0.046	0.078	-0.270	0.065	0.045	0.030	-0.020	-0.116	-0.026	0.014	0.051	0.037	0.280	0.243	0.101

A correlation coefficient in bold font indicates that the correlation is statistically significant at least at the 10% level. All definitions of variables are provided in Appendix A.

Table 4: Logistic regression results for association of CEO age with likelihood of the selection of industry specialist auditor or Big 4 auditor

	Dependent variable= <i>Industry specialist auditor</i>	Dependent variable= <i>Big 4 auditor</i>	Dependent variable= <i>Industry specialist auditor</i>	Dependent variable= <i>Big 4 auditor</i>
	Column (1)	Column (2)	Column (3)	Column (4)
<i>CEO_AGE</i>	2.782*** (15.770)	0.750*** (2.601)	2.109*** (11.779)	1.000*** (3.364)
<i>CEO_AGE</i> × <i>CEO_DOM</i>	—	—	-0.133** (-2.434)	-0.294** (-2.061)
<i>CEO_DOM</i>	—	—	2.725*** (13.254)	0.397 (0.707)
<i>SIZE</i>	0.110*** (5.324)	0.519*** (12.758)	0.075*** (3.521)	0.522*** (12.738)
<i>ROA</i>	0.031 (0.217)	-0.328 (-1.351)	0.091 (0.593)	-0.345 (-1.411)
<i>LEV</i>	-0.014 (-0.122)	0.276 (1.444)	-0.077 (-0.637)	0.287 (1.499)
<i>MB</i>	-0.000 (-0.586)	0.001 (1.433)	-0.000 (-0.744)	0.001 (1.472)
<i>LOSS</i>	0.089 (1.472)	-0.023 (-0.237)	0.086 (1.381)	-0.018 (-0.185)
<i>RECINV</i>	-0.147 (-0.759)	0.073 (0.253)	-0.094 (-0.475)	0.086 (0.297)
<i>CASH</i>	0.193 (1.200)	0.771*** (3.230)	0.168 (1.031)	0.832*** (3.460)
<i>TANG</i>	0.179 (1.191)	1.628*** (6.193)	0.178 (1.159)	1.648*** (6.251)
<i>SPI</i>	-0.096** (-2.010)	0.278*** (3.694)	-0.106** (-2.192)	0.284*** (3.774)
<i>FAGE</i>	-0.109*** (-2.637)	-0.347*** (-4.941)	-0.096** (-2.251)	-0.356*** (-5.034)
<i>FOREIGN</i>	0.217*** (2.766)	0.248* (1.959)	0.260*** (3.248)	0.216* (1.711)
<i>SEGMENT</i>	0.054** (2.081)	0.053 (1.165)	0.064** (2.411)	0.054 (1.176)
<i>LNNAS</i>	0.011 (1.571)	0.083*** (10.604)	0.016** (2.315)	0.083*** (10.436)
<i>AUOP</i>	0.105** (2.140)	0.155* (1.711)	0.102** (2.016)	0.159* (1.757)
<i>RESTATE</i>	-0.037 (-0.608)	-0.008 (-0.075)	-0.045 (-0.737)	-0.004 (-0.036)
<i>IC</i>	-0.018 (-0.262)	-0.522*** (-5.005)	0.005 (0.065)	-0.514*** (-4.904)
<i>BIG4</i>	0.920*** (12.158)	—	0.970*** (13.126)	—
<i>SPEC</i>	—	1.026*** (12.904)	—	1.102*** (13.678)
<i>ATENURE</i>	0.085** (2.013)	2.196*** (22.443)	0.079* (1.825)	2.196*** (22.368)
<i>LITG</i>	-0.307*** (-3.345)	-0.093 (-0.682)	-0.378*** (-4.053)	-0.041 (-0.298)
<i>YREND</i>	-0.108** (-2.429)	-0.063 (-0.839)	-0.126*** (-2.805)	-0.044 (-0.589)
<i>AQ</i>	-1.677*** (-2.593)	1.016 (1.285)	-1.269* (-1.941)	0.944 (1.196)
<i>BSIZE</i>	-0.422*** (-3.467)	1.348*** (6.665)	-0.322*** (-2.589)	1.329*** (6.561)
<i>BIND</i>	0.006* (1.897)	0.016** (1.979)	0.003 (1.022)	0.018** (2.141)
<i>DIRTEN</i>	0.029***	-0.044***	0.012**	-0.039***

	(5.938)	(-5.875)	(2.450)	(-5.058)
<i>ACSIZE</i>	0.057***	-0.022	0.066***	-0.027
	(2.959)	(-0.606)	(3.372)	(-0.747)
<i>ACIND</i>	-0.366	0.870***	-0.410*	0.891***
	(-1.626)	(2.651)	(-1.768)	(2.712)
<i>ACEXPRT</i>	-0.043	0.454***	-0.022	0.438***
	(-0.598)	(3.636)	(-0.296)	(3.492)
<i>DIRQUAL</i>	0.070	0.597***	0.023	0.615***
	(1.621)	(8.213)	(0.517)	(8.441)
<i>INSTOWN</i>	0.044	0.157*	0.009	0.166*
	(0.824)	(1.758)	(0.171)	(1.851)
Intercept	-12.903***	-9.110***	-11.126***	-9.875***
	(-15.972)	(-6.369)	(-13.533)	(-6.828)
Year Fixed Effects	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes
Observations	14,066	14,066	14,066	14,066
Pseudo- R^2	0.152	0.338	0.153	0.340
Area under ROC curve	73.10%	88.90%	75.14%	89.03%

This table presents the regression results for the association between CEO age and choice of auditor. Column (1) shows the regression results for the association between CEO age and industry specialist auditors. Column (2) shows the regression results for the association between CEO age and Big 4 auditors. Coefficient values (robust t -statistics) are shown with standard errors clustered at the firm level. Superscript ***, ** and * represent statistical significance at the 1%, 5% and 10% levels, respectively. All definitions of variables are provided in Appendix A.

Table 5: Regression results for association between audit fee and CEO age and the moderating role of CEO dominance

	Dependent variable= <i>LNAF</i>			
	<i>CEO_AGE_DUM</i>	<i>LN_CEO_AGE</i>	<i>CEO_AGE_DUM</i>	<i>LN_CEO_AGE</i>
	Column (1)	Column (2)	Column (3)	Column (4)
<i>CEO_AGE</i>	0.105*** (5.713)	0.295*** (3.666)	0.182*** (5.108)	0.404*** (4.818)
<i>CEO_AGE</i> × <i>CEO_DOM</i>	—	—	-0.159** (-2.430)	-0.216*** (-4.198)
<i>CEO_DOM</i>	—	—	0.063 (1.093)	0.831*** (4.018)
<i>SIZE</i>	0.454*** (35.312)	0.458*** (35.992)	0.454*** (35.394)	0.456*** (35.860)
<i>ROA</i>	-0.170*** (-3.519)	-0.171*** (-3.580)	-0.171*** (-3.525)	-0.172*** (-3.582)
<i>LEV</i>	0.110* (1.919)	0.112* (1.954)	0.109* (1.894)	0.116** (2.020)
<i>MB</i>	0.000 (0.403)	0.000 (0.192)	0.000 (0.406)	0.000 (0.171)
<i>LOSS</i>	0.087*** (3.711)	0.089*** (3.778)	0.086*** (3.699)	0.088*** (3.761)
<i>RECINV</i>	0.773*** (7.351)	0.779*** (7.377)	0.773*** (7.336)	0.772*** (7.303)
<i>CASH</i>	0.082 (1.064)	0.083 (1.077)	0.082 (1.076)	0.078 (1.012)
<i>TANG</i>	-0.441*** (-5.587)	-0.439*** (-5.527)	-0.438*** (-5.546)	-0.438*** (-5.519)
<i>SPI</i>	0.084*** (4.708)	0.083*** (4.646)	0.085*** (4.763)	0.083*** (4.675)
<i>FAGE</i>	0.048** (2.213)	0.050** (2.279)	0.049** (2.237)	0.050** (2.280)
<i>FOREIGN</i>	0.454*** (10.447)	0.457*** (10.427)	0.453*** (10.436)	0.456*** (10.418)
<i>SEGMENT</i>	0.083*** (6.329)	0.083*** (6.392)	0.082*** (6.285)	0.082*** (6.279)
<i>LNNAS</i>	0.014*** (4.248)	0.014*** (4.302)	0.014*** (4.204)	0.014*** (4.251)
<i>AUOP</i>	0.053*** (2.974)	0.052*** (2.912)	0.052*** (2.936)	0.052*** (2.955)
<i>RESTATE</i>	0.092*** (5.785)	0.093*** (5.808)	0.092*** (5.787)	0.093*** (5.845)
<i>IC</i>	0.428*** (18.609)	0.426*** (18.488)	0.427*** (18.588)	0.428*** (18.584)
<i>BIG4</i>	0.199*** (4.790)	0.196*** (4.695)	0.198*** (4.773)	0.197*** (4.722)
<i>SPEC</i>	0.043** (2.372)	0.039** (2.120)	0.049*** (2.652)	0.041** (2.201)
<i>ATENURE</i>	-0.008 (-0.348)	-0.008 (-0.351)	-0.007 (-0.334)	-0.008 (-0.369)
<i>LITG</i>	-0.070 (-1.338)	-0.069 (-1.313)	-0.069 (-1.326)	-0.067 (-1.281)
<i>YREND</i>	0.120*** (4.306)	0.121*** (4.328)	0.119*** (4.303)	0.122*** (4.394)
<i>AQ</i>	0.731*** (2.720)	0.728*** (2.712)	0.727*** (2.705)	0.714*** (2.667)
<i>BSIZE</i>	0.200*** (3.288)	0.197*** (3.244)	0.199*** (3.273)	0.197*** (3.246)
<i>BIND</i>	0.002 (1.488)	0.002 (1.552)	0.002 (1.479)	0.002 (1.333)
<i>DIRTEN</i>	-0.014***	-0.015***	-0.014***	-0.014***

	(-5.241)	(-5.326)	(-5.032)	(-5.099)
<i>ACSIZE</i>	-0.000	0.000	-0.001	-0.000
	(-0.044)	(0.050)	(-0.067)	(-0.060)
<i>ACIND</i>	-0.072	-0.078	-0.072	-0.078
	(-0.937)	(-1.015)	(-0.939)	(-1.014)
<i>ACEXPRT</i>	-0.008	-0.006	-0.008	-0.006
	(-0.202)	(-0.149)	(-0.211)	(-0.166)
<i>DIRQUAL</i>	0.043**	0.044**	0.044**	0.046**
	(1.965)	(1.976)	(2.005)	(2.055)
<i>INSTOWN</i>	-0.020	-0.021	-0.020	-0.020
	(-0.872)	(-0.893)	(-0.858)	(-0.847)
Intercept	8.299***	7.159***	8.270***	7.047***
	(45.588)	(19.164)	(44.640)	(18.989)
Year Fixed Effects	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes
Observations	14,066	14,066	14,066	14,066
Adjusted R^2	0.636	0.635	0.636	0.637

This table presents the regression results for the association between CEO age and audit fees. Columns (1) and (2) show the regression results for the association between CEO age and audit fees. Columns (3) and (4) show the regression results for the moderating role of CEO dominance in the association between CEO age and audit fees, using both the CEO age dummy and the natural logarithm of CEO age as proxies for the CEO age variable. Coefficient values (robust t -statistics) are shown with standard errors clustered at the firm level. Superscript ***, ** and * represent statistical significance at the 1%, 5% and 10% levels, respectively. All definitions of variables are provided in Appendix A.

Table 6: Firm fixed effects regression results for association between audit fee and CEO age and the moderating role of CEO dominance

	Dependent variable= <i>LNAF</i>			
	<i>CEO AGE DUM</i>	<i>LN CEO AGE</i>	<i>CEO AGE DUM</i>	<i>LN CEO AGE</i>
	Column (1)	Column (2)	Column (3)	Column (4)
<i>CEO AGE</i>	0.043*** (2.979)	0.124* (1.804)	0.114*** (3.994)	0.205*** (2.912)
<i>CEO AGE</i> × <i>CEO_DOM</i>	—	—	-0.140*** (-2.577)	-0.067*** (-2.738)
<i>CEO_DOM</i>	—	—	0.003 (0.050)	0.184* (1.812)
Intercept	-0.024 (-1.068)	-0.024 (-1.065)	-0.024 (-1.074)	-0.023 (-1.034)
Control Variables	Included	Included	Included	Included
Year Fixed Effects	Yes	Yes	Yes	Yes
Firm Fixed Effects	Yes	Yes	Yes	Yes
Observations	14,066	14,066	14,066	14,066
Adjusted <i>R</i> ²	0.755	0.755	0.755	0.755

This table presents the firm fixed effects regression results for the association between CEO age and audit fees, as well as the moderating role of CEO dominance in this association. Columns (1) and (2) show the firm fixed effects regression results for the association between CEO age and audit fees. Columns (3) and (4) show the firm fixed effects regression results for the moderating role of CEO dominance in the association between CEO age and audit fees. Coefficient values (robust *t*-statistics) are shown with standard errors clustered at the firm level. Superscript ***, ** and * represent statistical significance at the 1%, 5% and 10% levels, respectively. All definitions of variables are provided in Appendix A.

Table 7: Two-stage least squares (2SLS) regression results for association between audit fee and CEO age

	<i>Dependent variable</i> <i>= LN CEO AGE</i>	<i>Dependent variable</i> <i>= LNAF</i>
	First Stage	Second Stage
	Column (1)	Column (2)
<i>CEO_AGE_FITTED</i>	—	0.476*** (4.147)
<i>CEO_AGE_INS1</i>	0.756*** (18.966)	—
<i>CEO_AGE_INS2</i>	0.890*** (54.494)	—
Intercept	-2.670*** (-15.587)	-0.169*** (-3.875)
Control Variables	Included	Included
Year Fixed Effects	Yes	Yes
Industry Fixed Effects	Yes	Yes
Observations	14,066	14,066
R^2		0.631
Instrument diagnostics tests:		
Durbin–Wu–Hausman stats		3.117*
(Test of endogeneity)		
Kleibergen–Paap rk LM statistic		2810.480***
(Under-identification test)		
Kleibergen–Paap rk Wald F statistic		1744.639
(Weak identification test)		
Sargan statistic		0.019
(Over-identification test)		(<i>p</i> -value=0.889)

This table presents the two-stage least squares (2SLS) regression results for the association between CEO age and audit fees. Column (1) shows the first-stage regression results of the impact of instrumental variables on CEO age. Column (2) presents the second-stage regression results of the impact of CEO age on audit fees. Coefficient values (robust *t*-statistics) are shown with standard errors clustered at the firm level. Superscript ***, ** and * represent statistical significance at the 1%, 5% and 10% levels, respectively. All definitions of variables are provided in Appendix A.

Table 8: Entropy balancing analysis

Panel A: Descriptive statistics of treatment and control groups after entropy balancing						
	Treatment Group			Control Group		
	Mean	Variance	Skewness	Mean	Variance	Skewness
<i>SIZE</i>	7.502	2.462	0.325	7.503	2.462	0.324
<i>ROA</i>	0.036	0.028	-12.560	0.036	0.028	-12.560
<i>LEV</i>	0.198	0.037	2.915	0.198	0.037	2.915
<i>MB</i>	2.755	889.800	6.788	2.756	889.800	6.788
<i>LOSS</i>	0.176	0.145	1.701	0.176	0.145	1.701
<i>RECINV</i>	0.250	0.025	0.720	0.250	0.025	0.720
<i>CASH</i>	0.159	0.029	1.620	0.159	0.029	1.620
<i>TANG</i>	0.276	0.053	1.068	0.276	0.053	1.068
<i>SPI</i>	0.753	0.186	-1.176	0.754	0.186	-1.176
<i>FAGE</i>	3.272	0.385	-0.348	3.272	0.385	-0.348
<i>FOREIGN</i>	0.407	0.117	0.065	0.407	0.117	0.065
<i>SEGMENT</i>	2.683	0.862	0.265	2.683	0.862	0.265
<i>LNNAS</i>	11.960	10.650	-2.474	11.960	10.650	-2.474
<i>AUOP</i>	0.344	0.226	0.656	0.344	0.226	0.657
<i>RESTATE</i>	0.123	0.108	2.293	0.123	0.108	2.294
<i>IC</i>	0.166	0.138	1.798	0.166	0.138	1.798
<i>BIG4</i>	0.899	0.091	-2.643	0.899	0.091	-2.643
<i>SPEC</i>	0.432	0.245	0.277	0.432	0.245	0.277
<i>ATENURE</i>	0.546	0.248	-0.187	0.546	0.248	-0.187
<i>LITG</i>	0.308	0.213	0.833	0.308	0.213	0.833
<i>YREND</i>	0.660	0.225	-0.674	0.660	0.225	-0.674
<i>AQ</i>	0.041	0.001	2.916	0.041	0.001	2.916
<i>BSIZE</i>	2.283	0.051	-0.246	2.283	0.051	-0.247
<i>BIND</i>	10.890	59.590	4.657	10.890	59.590	4.656
<i>DIRTENURE</i>	10.210	23.630	0.778	10.210	23.630	0.778
<i>ACSIZE</i>	4.300	1.445	0.983	4.300	1.445	0.983
<i>ACIND</i>	0.968	0.011	-3.980	0.968	0.011	-3.980
<i>ACEXPRT</i>	0.459	0.095	0.500	0.459	0.095	0.500
<i>DIRQUAL</i>	2.065	0.256	-0.118	2.065	0.256	-0.118
<i>INSTOWN</i>	0.515	0.172	-0.262	0.515	0.172	-0.262

Panel B: Regression results of association between audit fee and CEO age, and moderating role of CEO dominance in association between CEO age and audit fees using entropy-balanced sample		
	Dependent variable=LNAF	
	CEO_AGE_DUM	CEO_AGE_DUM
	Column (1)	Column (2)
<i>CEO_AGE</i>	0.122*** (8.318)	0.207*** (7.105)
<i>CEO_AGE</i> × <i>CEO_DOM</i>	—	-0.177*** (-3.269)
<i>CEO_DOM</i>	—	0.096** (2.169)
Intercept	8.472*** (66.077)	8.426*** (64.714)
Control Variables	Included	Included
Year Fixed Effects	Yes	Yes
Industry Fixed Effects	Yes	Yes
Observations	14,066	14,066
Adjusted <i>R</i> ²	0.651	0.651

This table presents the entropy balancing analysis. Panel A reports the descriptive statistics of the entropy-balanced sample. Panel B reports the regression results using the entropy-balanced sample. Coefficient values (robust *t*-statistics) are shown with standard errors clustered at the firm level. Superscript ***, ** and * represent statistical significance at the 1%, 5% and 10% levels, respectively. All definitions of variables are provided in Appendix A.

Table 9: Regression results for association between audit fee and CEO age: Shock analysis

	Dependent variable= <i>LNAF</i>	
	Column (1)	Column (2)
<i>FROM_OLD_TO_YOUNG_CEO</i>	-0.053* (-1.938)	—
<i>FROM_YOUNG_TO_OLD_CEO</i>	—	0.134*** (2.991)
Intercept	8.241*** (53.692)	8.233*** (53.580)
Control Variables	Included	Included
Year Fixed Effects	Yes	Yes
Industry Fixed Effects	Yes	Yes
Observations	14,066	14,066
Adjusted <i>R</i> ²	0.626	0.626

This table presents the regression results for the association between CEO age and audit fees through the CEO transition phase. Columns (1) and (2) show the results using the transition from older CEO to younger CEO and from younger CEO to older CEO, respectively. Coefficient values (robust *t*-statistics) are shown with standard errors clustered at the firm level. Superscript ***, ** and * represent statistical significance at the 1%, 5% and 10% levels, respectively. All definitions of variables are provided in Appendix A.

Table 10: Regression results for association between audit fee and CEO age: Moderating role of industry specialist auditor and Big 4 auditor

Panel A: Regression results of the role of industry specialist auditors in the association between CEO age and audit fee and the moderating role of CEO dominance								
	Dependent variable= <i>LNAF</i>							
	<i>CEO AGE DUM</i>		<i>LN CEO AGE</i>		<i>CEO AGE DUM</i>		<i>LN CEO AGE</i>	
	SPEC=1	SPEC=0	SPEC=1	SPEC=0	SPEC=1	SPEC=0	SPEC=1	SPEC=0
<i>CEO AGE</i>	0.132*** (4.617)	0.096*** (4.250)	0.384*** (3.117)	0.265*** (2.800)	0.291*** (5.742)	0.094** (1.967)	0.434*** (3.570)	0.272*** (2.834)
<i>CEO AGE</i> × <i>CEO DOM</i>					-0.309*** (-3.904)	0.007 (0.074)	-0.126*** (-5.215)	-0.001 (-0.021)
<i>CEO DOM</i>					0.197*** (2.745)	-0.051 (-0.584)	0.411*** (4.590)	-0.036 (-0.248)
Intercept	8.072*** (35.962)	8.671*** (43.707)	6.576*** (11.838)	7.617*** (18.466)	8.014*** (35.337)	8.684*** (42.360)	6.524*** (11.862)	7.601*** (18.412)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	5403	8663	5403	8663	5403	8663	5403	8663
Adjusted <i>R</i> ²	0.691	0.597	0.690	0.596	0.692	0.597	0.692	0.598
Panel B: Regression results of the role of Big4 auditors in the association between CEO age and audit fee and the moderating role of CEO dominance								
	Dependent variable= <i>LNAF</i>							
	<i>CEO AGE DUM</i>		<i>LN CEO AGE</i>		<i>CEO AGE DUM</i>		<i>LN CEO AGE</i>	
	BIG4=1	BIG4=0	BIG4=1	BIG4=0	BIG4=1	BIG4=0	BIG4=1	BIG4=0
<i>CEO AGE</i>	0.118*** (6.502)	0.046 (0.674)	0.381*** (4.799)	0.015 (0.073)	0.169*** (4.998)	0.194 (1.296)	0.407*** (5.002)	0.052 (0.256)
<i>CEO AGE</i> × <i>CEO DOM</i>					-0.106* (-1.715)	-0.310 (-1.217)	-0.075*** (-3.604)	-0.077 (-0.931)
<i>CEO DOM</i>					0.053 (0.919)	0.087 (0.396)	0.237*** (2.986)	0.238 (0.732)
Intercept	8.462*** (47.596)	9.274*** (13.829)	6.981*** (19.537)	9.246*** (8.624)	8.440*** (46.852)	9.185*** (13.538)	6.941*** (19.322)	9.109*** (8.474)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	12,561	1,505	12,561	1,505	12,561	1,505	12,561	1,505
Adjusted <i>R</i> ²	0.674	0.325	0.673	0.324	0.674	0.325	0.675	0.325

This table presents the regression results of the role of industry specialist and Big4 auditors in the association between CEO age and audit fees and the moderating role of CEO power. Panel A shows the regression results of the role of industry specialist auditors in the association between CEO age and audit fees and the moderating role of CEO power. Panel B shows the regression results of the role of Big4 auditors in the association between CEO age and audit fees and the moderating role of CEO power. Coefficient values (robust *t*-statistics) are shown with standard errors clustered at the firm level. Superscript ***, ** and * represent statistical significance at the 1%, 5% and 10% levels, respectively. All definitions of variables are provided in Appendix A.

Table 11: Regression results for association between audit fee and CEO age

Panel A: Regression results of the moderating role of CEO dominance in the association between audit fee and CEO age using alternative proxy for CEO dominance		
	Dependent variable=<i>LNAF</i>	
	Column (1)	Column (2)
<i>CEO_AGE</i>	0.101*** (5.301)	0.266*** (3.244)
<i>CEO_AGE</i> × <i>CEO_DOM</i>	-0.036* (-1.847)	-0.014** (-2.017)
<i>CEO_DOM</i>	0.029 (1.575)	0.055* (1.802)
Intercept	8.303*** (45.361)	7.304*** (18.781)
Control variables	Yes	Yes
Year Fixed Effects	Yes	Yes
Industry Fixed Effects	Yes	Yes
Observations	14,066	14,066
Adjusted <i>R</i> ²	0.636	0.635
Panel B: Regression results of the association between audit fee and CEO age and the moderating role of CEO dominance: Controlling for CFO characteristics		
	<i>LN_CEO_AGE</i>	<i>LN_CEO_AGE</i>
	Column (1)	Column (2)
<i>CEO_AGE</i>	0.295** (2.076)	0.469*** (3.224)
<i>CEO_AGE</i> × <i>CEO_DOM</i>	—	-0.263*** (-6.875)
<i>CEO_DOM</i>	—	0.915*** (6.656)
<i>CEO_GENDER</i>	0.052 (0.936)	0.062 (1.106)
<i>CFO_EXP</i>	-0.151 (-0.880)	-0.149 (-0.872)
<i>CFO_AGE</i>	0.016 (0.109)	0.029 (0.204)
<i>CFO_BOARD</i>	0.033 (0.810)	0.042 (1.055)
<i>CFO_OWN</i>	-0.031 (-0.839)	-0.037 (-1.020)
<i>CFO_TENURE</i>	-0.004 (-0.774)	-0.004 (-0.849)
<i>CFO_GENDER</i>	0.061 (1.338)	0.065 (1.467)
Intercept	9.132*** (8.840)	8.613*** (8.347)
Control variables	Included	Included
Year Fixed Effects	Yes	Yes
Industry Fixed Effects	Yes	Yes
Observations	4,762	4,762
Adjusted <i>R</i> ²	0.605	0.610

This table presents the regression results for the association between CEO age and audit fees. Column (1) shows the regression results for the association between CEO age and audit fees after controlling for CFO characteristics and CEO gender. Column (2) shows the regression results for the moderating role of CEO dominance in the association between CEO age and audit fees after controlling for CFO characteristics. Coefficient values (robust *t*-statistics) are shown with standard errors clustered at the firm level. Superscript ***, ** and * represent statistical significance at the 1%, 5% and 10% levels, respectively. All definitions of variables are provided in Appendix A.

Appendix A: Definitions of variables

Notations	Variable Name	Description
Panel A: Dependent Variables		
<i>LNAF</i>	Audit fee	The natural logarithm of audit fees paid to the auditor for auditing services.
<i>BIG4</i>	Big 4 auditor	An indicator variable of 1 if the firm is audited by one of the Big 4 auditors, and 0 otherwise.
<i>SPEC</i>	Industry specialist auditor	An indicator variable of 1 if the firm's auditor is an industry specialist, and 0 otherwise. An industry specialist is an auditor with the largest market share by client assets in that industry.
Panel B: Independent Variables		
<i>AGE</i>	CEO age	The age of the current CEO.
<i>CEO_AGE_DUM</i>	CEO age dummy	An indicator value of 1 if a CEO's age is equal to or more than the median value of CEO ages in the sample, and 0 otherwise.
<i>CEO_AGE</i>	CEO age	The natural logarithm of the CEO's age.
<i>CEO_DOM</i>	CEO dominance	The CEO dominance index is derived by summing all the dichotomous variables (CEO insider, CEO title dummy, CEO shareholding dummy and CEO tenure dummy) and dividing by 4 to measure the overall CEO dominance, which ranges from 0 (the lowest level of CEO dominance) to 1 (the highest level of CEO dominance). CEO insider dummy equals 1 if the CEO sits on the board, and 0 otherwise. CEO title dummy equals 1 if the CEO's number of titles exceeds the sample's median number of CEO titles, and 0 otherwise. The number of titles is calculated by counting the titles listed in the ExecuComp database. CEO shareholding dummy equals 1 if the CEO shareholding is greater than the sample's CEO shareholding median, and 0 otherwise. CEO tenure dummy equals 1 if the CEO's tenure at the current firm exceeds the sample's median CEO tenure and 0 otherwise.
Panel C: Control Variables		
<i>SIZE</i>	Firm's size	The natural logarithm of total assets.
<i>ROA</i>	Profitability	The ratio of net income before extraordinary items to total assets.
<i>LEV</i>	Leverage	The ratio of long-term debt to total assets.
<i>MB</i>	Growth opportunities	The ratio of market value of equity to book value of equity.
<i>LOSS</i>	Loss	An indicator variable of 1 if a firm has a loss, and 0 otherwise.
<i>RECINV</i>	Proportion of receivables and inventory	The sum of receivables and inventory scaled by total assets.
<i>CASH</i>	Cash ratio	The ratio of cash and short-term investments to total assets.
<i>TANG</i>	Tangibility	The ratio of property, plant and equipment to total assets.
<i>SPI</i>	Special items	An indicator variable of 1 if the firm has non-zero, non-missing special items, and 0 otherwise.
<i>FAGE</i>	Firm's age	The natural logarithm of the firm's age, measured by the total number of years since the firm was included in the Compustat database.
<i>FOREIGN</i>	Foreign sales	The proportion of sales by foreign segments.
<i>SEGMENT</i>	Number of segments	The natural logarithm of the total number of business segments within the firm.
<i>LNNAS</i>	Non-audit fees	The natural logarithm of non-audit fees paid to the auditor for non-audit services.
<i>AUOP</i>	Audit opinion	An indicator variable equal to 1 if the audit opinion is not a standard, unqualified opinion, and 0 otherwise.
<i>RESTATE</i>	Restatement	An indicator variable equal to 1 if the firm restates its financial statements in the preceding three years, and 0 otherwise.
<i>IC</i>	Internal control weakness	An indicator variable equal to 1 when the firm's auditor reports an internal control weakness in either the original or a revised SOX Act Section 404 report, and 0 otherwise, as indicated by Audit Analytics.
<i>ATENURE</i>	Auditor tenure	The natural logarithm of auditor tenure. Auditor tenure is defined as the number of years for which the firm has retained its current auditor.
<i>LITG</i>	High-litigation industry	An indicator variable equal to 1 if the firm is in a high-litigation industry, and 0 otherwise. High-litigation industries comprise those with SIC codes 2833–2838, 3570–3577, 3600–3674, 5200–5961, 7370–7374 and 8731–8734.
<i>YREND</i>	Fiscal year-end	An indicator variable of 1 if the firm's fiscal year-end is December, and 0 otherwise.
<i>AQ</i>	Accrual quality	The absolute value of discretionary accruals estimated following Dechow et al. (1996).
Panel D: Governance Variables		
<i>BSIZE</i>	Board size	The natural logarithm of the total number of directors on the board.
<i>BIND</i>	Board independence	The proportion of independent directors on the board.
<i>DIRTEN</i>	Director tenure	The natural logarithm of the average number of years for which the firm retained its current directors.

<i>ACSIZE</i>	Audit committee size	Number of members on the audit committee.
<i>ACIND</i>	Audit committee independence	The proportion of independent directors on the audit committee.
<i>ACEXP</i>	Audit committee expertise	Percentage of finance specialists on the audit committee.
<i>CEO_GENDER</i>	CEO gender	The CEO gender dummy is equal to 1 if the CEO is female, and 0 otherwise.
<i>DIRQUAL</i>	Director qualifications	Average qualifications of directors
<i>INSTOWN</i>	Institutional ownership	Number of shares held by institutions divided by beginning total outstanding common shares.
Panel E: CFO Variables		
<i>CFO_EXP</i>	CFO experience	An indicator variable of 1 if the firm's CFO is a financial expert, and 0 otherwise.
<i>CFO_AGE</i>	CFO age	The natural logarithm of the CFO's age.
<i>CFO_BOARD</i>	CFO on board	An indicator variable of 1 if the firm's CFO sits on the board of directors, and 0 otherwise.
<i>CFO_OWN</i>	CFO ownership	CFO ownership, based on the percentage of shareholding held by the CFO
<i>CFO_TENURE</i>	CFO tenure	CFO tenure, measured by the total duration of time that the CFO has been employed within the same firm
<i>CFO_GENDER</i>	CFO gender	The CFO gender dummy is equal to 1 if the CFO is female, and 0 otherwise.
Panel F: Instrumental Variables		
<i>CEO_AGE_INS1</i>	Instrumental variable	Industry- and year-adjusted CEO age.
<i>CEO_AGE_INS2</i>	Instrumental variable	Industry- and county-adjusted CEO age.

Appendix B: Components of the CEO power index and their correlations

	Mean	CEO Insider	CEO Title	CEO Shareholding	CEO Tenure
CEO Insider	0.969	1.000			
CEO Title Dummy	0.149	-0.044***	1.000		
CEO Shareholding Dummy	0.357	-0.034***	0.146***	1.000	
CEO Tenure Dummy	0.498	0.024***	0.032***	0.182***	1.000