

Managerial tone and audit outcomes: Do information environment and governance monitoring matter?

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ABSTRACT

This study examines the relationship between managerial tone and audit outcomes. We employ 42,250 firm-year observations from United States non-financial firms from 2000 through 2020. Our results show that firms with a more positive managerial tone in their 10-K filings tend to experience more favorable audit outcomes. This is evidenced by fewer financial restatements, fewer adverse opinions on the strength of internal controls, lower audit fees, less audit effort, and fewer going concern opinions. We also find that such favorable impacts are more pronounced in financially non-distressed firms, thereby reinforcing the credibility of the positive managerial tone as perceived by auditors. Our main findings are robust across various sensitivity tests and alternative variable approaches. Our analysis also suggests that the relationship between managerial tone and audit outcomes is more pronounced for firms with a poorer quality information environment and weaker governance monitoring. Finally, our findings suggest that a positive managerial tone is negatively associated with both earnings management and the likelihood of whistleblowing, which in turn have a positive influence on audit outcomes. Overall, our study contributes to the literature and practice by demonstrating the significant role that client-firm managerial tone plays in audit outcomes.

1. Introduction

In this paper, we investigate the relationship between managerial tone in United States Securities and Exchange Commission (SEC) 10-K filings and audit outcomes. The importance of the ‘tone at the top’ is well established in both professional and academic literature on international accounting and auditing (Committee of Sponsoring Organizations of the Treadway Commission, 2013; International Auditing and Assurance Standards Board, 2025). Managerial tone is a key element of narrative corporate disclosure, providing valuable information to auditors and financial statement users (Hossain et al., 2020; Loughran & McDonald, 2016; Quick & Sayar, 2024). International regulators and standard-setting bodies have recognized the significant role of managerial tone in influencing auditor judgments and audit outcomes through narrative disclosures. For example, the IAASB’s extended auditor reporting standards and International Standard on Auditing (ISA) 701 requirements on Key Audit Matters (KAMs), as well

as the Public Company Accounting Oversight Board (PCAOB)’s Critical Audit Matters (CAMs), underscore the importance of linguistic framing and tone in corporate reporting for shaping audit judgments (International Auditing and Assurance Standards Board, 2025; Public Company Accounting Oversight Board, 2024). The IAASB also issued the International Standard on Quality Management (ISQM), which requires auditors to design and operate a system of quality management to exercise, among other things, professional judgment about the client firm’s tone at the top (International Auditing and Assurance Standards Board, 2025). Finally, the International Accounting Standards Board (IASB) issued the revised ‘International Financial Reporting Standards (IFRS) Practice Statement 1 Management Commentary’ in June 2025 to achieve greater global alignment in corporate narrative disclosures, thereby enabling global investors to assess a company’s long-term prospects (International Accounting Standards Board, 2025).

These international regulatory initiatives highlight that managerial tone is no longer a peripheral disclosure feature but a central element in

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assessing credibility, risk, and accountability. In this context, the managerial tone becomes a crucial aspect of the global audit environment, influencing how auditors interpret client risk, allocate resources, and issue opinions. Therefore, auditors should critically evaluate managerial tone to assess firms' financial reporting quality and internal control structures, as misjudgments can limit audit effectiveness and quality (AS No. 5, [Public Company Accounting Oversight Board, 2007](#); ISA 315, [International Federation of Accountants \(IFAC\), 2004](#); [Schmidt, 2014](#)).

Our study responds to these international developments by investigating how managerial tone affects specific audit outcomes, an issue of growing relevance amid evolving global assurance standards and expanding stakeholder demand for transparency and accountability. Understanding this relationship is crucial as audit outcomes play a central role in reinforcing stakeholder confidence and the credibility of financial reporting. For investors, they signal reporting credibility, reduce information risk, and influence valuation and capital allocation. Regulators and oversight bodies rely on audit outcomes to assess compliance with reporting standards, detect systemic risks, and evaluate the effectiveness of corporate governance and audit oversight mechanisms. Similarly, for board audit committees, audit outcomes serve as a crucial indicator of audit quality, auditor independence, and managerial integrity, helping them fulfill their governance and monitoring responsibilities. By shaping these outcomes, managerial tone influences not only audit judgments but also the broader system of accountability and transparency for investor protection and global market confidence.

Prior research highlights two opposing views on the influence of managerial tone in corporate narrative disclosures on the quality of a firm's information environment and how it relates to audit outcomes. On the one hand, signaling theory suggests that a strong, positive, and optimistic managerial tone signals high-quality information about a firm's performance and prospects to firm stakeholders ([Alta'any et al., 2025](#); [Li, 2010](#)). Consequently, positive managerial tone enhances disclosure and transparency ([Lail et al., 2015](#)) and provides incremental information beyond traditional accounting ([Law & Mills, 2015](#)). Auditors interpret this positive and confident tone as indicative of stronger internal controls and high-quality financial reporting, which reduces the need for substantive testing and lowers risk premiums. In turn, these may minimize audit engagement risk and result in lower audit effort, reduced audit fees, and fewer adverse opinions ([Garrett et al., 2022](#)). The fundamental argument of signaling theory can be further supplemented by behavioral decision theory, which highlights auditors' reliance on heuristics and cognitive shortcuts for their audit judgments. In environments of high information asymmetry, auditors may outweigh qualitative cues (e.g., a positive managerial tone) to reinforce their prior beliefs through confirmation bias ([Cassell et al., 2022](#)), thereby reducing their assessment risk and positively influencing audit outcomes.

On the other hand, impression management theory suggests that opportunistic managers adopt deliberate strategies to craft tone not just to signal information but also to influence stakeholder perceptions for self-serving purposes ([Rosenfeld et al., 1994](#)). This argument also aligns with the managerial obfuscation hypothesis, which holds that managers can strategically use tone to manipulate and conceal poor performance, thereby increasing information asymmetry ([Alta'any et al., 2025](#); [Huang et al., 2014](#)). In these views, managers may employ overly optimistic and vague language in narrative disclosures to mislead stakeholders or delay the recognition of adverse developments ([Huang et al., 2014](#)). Such opportunistic use of tone undermines the reliability of disclosures, thereby making it harder for auditors to assess the firm's actual financial health and increasing investors' information-processing costs ([Kayed, & Alta'any, 2025](#)). In response, a poor-quality information environment is likely to increase the risk of material misstatement, which in turn requires the auditor to enhance the quantity and quality of audit evidence to mitigate detection risks (AS 2301, [Public Company Accounting Oversight Board, 2010](#); ISA 330, [International Auditing and Assurance Standards Board, 2025](#)). This ultimately leads to higher audit

engagement risk, increased audit effort, higher audit fees, and more conservative audit opinions.

Considering the two opposing views, we examine whether and how managerial tone influences audit outcomes, including audit risk outcomes (the likelihood of restatements and the possibility of issuing audit opinions on internal controls) and final audit outcomes (audit fees, audit effort, and the likelihood of issuing a going concern opinion). Following prior studies (e.g., [Jiang et al., 2019](#); [Loughran & McDonald, 2011, 2013](#)), we empirically investigate this relationship by employing Loughran and McDonald's sentiment word lists as a proxy for managerial tone. Using 42,250 firm-year observations from 2000 through 2020, we find that a positive managerial tone in 10-K filings is associated with favorable audit outcomes. This is evidenced by fewer financial restatements, fewer auditor opinions on internal controls, lower audit fees, reduced audit effort, and fewer going concern opinions. This effect is more pronounced in financially non-distressed firms, highlighting the credibility of managerial tone and auditors' perception of it as a reliable signal of firm performance. Our results remain robust across alternative measures of managerial tone and econometric specifications. Cross-sectional analysis reveals that the association between managerial tone and audit outcomes is stronger for firms with a poorer quality information environment (e.g., lower analyst following, higher forecast error, and the presence of non-specialist auditors) and weaker governance monitoring (e.g., lower dedicated ownership and higher takeover protection). Further, channel analysis indicates that managerial tone is negatively associated with earnings management and whistleblowing, which, in turn, influence audit outcomes.

We employ a battery of sensitivity tests to minimize potential endogeneity concerns. For example, we use an instrumental variable approach and propensity score matching (PSM) to address omitted-variable bias and self-selection bias. In both cases, our main finding remains robust. In addition, we treat the sudden departure of the chief executive officer (CEO) as an exogenous shock to managerial tone within the difference-in-differences (DiD) framework and find that the relationship between managerial tone and audit outcomes is causal. We also employ the Sarbanes-Oxley Act of 2002 (SOX) as an additional exogenous shock to managerial tone and find evidence of a causal relationship.

This study makes several significant contributions to extant literature. First, we contribute to the literature on the determinants of audit outcomes by examining managerial tone, a narrative disclosure feature that remains largely unexplored in this context. Prior research has linked audit outcomes to factors such as report readability ([Abernathy et al., 2019](#)), discretionary accruals ([Gul et al., 2003](#)), managerial ability ([Gul et al., 2018](#)), female audit partners ([Oradi et al., 2025](#)), CEO traits ([Dikolli et al., 2020](#); [Judd et al., 2017](#)), CEO succession origin ([Oradi, 2021](#)), managerial ownership ([Shan et al., 2019](#)), and external influences like political corruption and social capital ([Jha et al., 2021](#); [Jha & Chen, 2015](#)). Moreover, [Alaskar et al. \(2025\)](#) show that ethical factors in AI shape audit judgements and decision processes. However, no study to date has investigated the role of managerial tone in shaping both audit risk outcomes (e.g., restatements and internal control opinions) and final audit outcomes (e.g., audit fees, effort, and going concern opinions). This is a notable gap, as these audit outcomes are vital indicators of reporting credibility and firm risk ([Hanlon et al., 2022](#); [Hosseiniakani et al., 2024](#)). Empirically, we find that a one-unit increase in managerial tone is associated with an 11% reduction in restatements, a 19% reduction in adverse internal control opinions, and a 13% reduction in going-concern opinions. Moreover, a one standard deviation increase in our variable *TONE* is associated with approximately a 6.2% reduction in audit fees and a 1.6% reduction in audit effort. Our findings contribute to the international discourse on disclosure quality and audit behavior by demonstrating that narrative tone is not merely cosmetic but has a material influence on audit outcomes.

Second, we extend the literature by examining how the quality of a firm's information environment and the intensity of governance

monitoring moderate the relationship between managerial tone and audit outcomes, an area that remains underexplored. Prior research highlights the roles of transparency and governance in limiting managerial opportunism and enhancing disclosure quality, which, in turn, affect audit risk (Armstrong et al., 2010; Blanco et al., 2021; Kim et al., 2016). Consistent with this view, our findings show that auditors rely more heavily on managerial tone when firms exhibit high information asymmetry and weak governance, using tone as a substitute for missing and unreliable hard information. In doing so, we contribute to emerging work on disclosure context and audit risk (e.g., Armstrong et al., 2010; Baik et al., 2018; Frino et al., 2023) by providing novel evidence on when and why tone becomes more influential.

Finally, this study adds three important distinctions to the emerging literature examining the impact of managerial tone on audit fees and audit effort (e.g., Garrett et al., 2022; Tam et al., 2023). First, a key difference lies in how tone is measured. Garrett et al. (2022) employed a measure of managerial tone based on employee perceptions of management integrity and communication quality, thereby capturing organizational culture rather than the external messages that auditors and stakeholders typically rely on. Similarly, Tam et al. (2023) capture audit-related language in the Management's Discussion and Analysis (MD&A) section, which, while important, covers narrow aspects of disclosure tone. In contrast, we analyze the overall tone of the entire 10-K filing to capture how top management communicates with external stakeholders, including auditors. This comprehensive approach accounts for tone across strategic, operational, and financial disclosures, thereby addressing concerns about selective tone management in specific sections. Moreover, prior studies have shown that full-document tone is more effective than MD&A tone in informing and influencing auditors' and investors' perceptions of firm transparency and audit risk (Davis et al., 2012; Huang et al., 2014). Thus, our holistic tone measure reflects the full scope of managerial sentiment, which auditors conceivably incorporate into their audit assessments and planning.

Second, we explore how the impact of managerial tone varies between distressed and non-distressed firms, a distinction largely overlooked in prior research. We argue that auditors may interpret an optimistic tone more skeptically in distressed firms, associating it with obfuscation and a higher risk of misstatement, while viewing it as more credible in financially healthy firms. Consistent with this expectation, our results show that the favorable effects of positive tone on audit outcomes are significantly more pronounced among non-distressed firms.

Third, from the audit fees perspective, audit fees tend to be significantly discounted in the auditor rotation year (Hay et al., 2006). This bias raises questions about the validity of earlier empirical works (Barua et al., 2020). We follow Barua et al. (2020) in using the natural log of the successor auditor's corrected audit fees during the year of auditor change to mitigate the risk of mismeasuring audit fees. We find a positive association between managerial tone and uncorrected audit fees for distressed firms. However, after adjusting for audit fees, we find that the positive association shifts to a negative one for distressed firms. Overall, our results provide reliable and robust findings regarding audit fees.

While our study focuses on US firms, the findings have important implications for international accounting environments, especially in jurisdictions that emphasize narrative disclosures. In countries with strong investor protection and audit oversight, such as the European Union (EU), United Kingdom (UK), Canada, and Australia, our evidence applies to settings with similar institutional frameworks. In IFRS-reporting regimes, where principles-based standards give managers greater discretion in narrative disclosure, managerial tone may have a particularly significant impact on auditor judgments. In contrast, in developing economies with weaker enforcement, tone can provide a crucial "soft signal" to auditors and investors with limited access to reliable hard information. Our robust evidence on the link between managerial tone and audit outcomes aligns with global calls from standard-setting and professional bodies, including the IAASB, IFAC,

and COSO, to recognize and strengthen the 'tone at the top' to enhance internal controls and develop integrated audit frameworks. By framing our analysis within these broader international discussions, we contribute to the global accounting literature on disclosure quality, audit risk, and the critical role of managerial tone in narrative disclosure in shaping audit processes and outcomes.

The remainder of the paper is structured as follows: Section 2 critically assesses related literature and develops hypotheses. Section 3 presents the data, model, and descriptive statistics. Section 4 presents empirical results and addresses endogeneity issues. Section 5 presents cross-sectional analyses, whereas Section 6 discusses channel tests. Finally, Section 7 concludes the paper.

2. Literature review and hypotheses development

In the following sections, we first discuss and elaborate on our theoretical framework. We then highlight how contextual factors, such as information asymmetry and corporate governance, moderate the relationship between managerial tone and audit outcomes.

2.1. Theoretical framework: Managerial tone and audit outcomes

Managerial tone, the emotional and attitudinal framing of corporate disclosures, plays a critical role in shaping the perceived quality and clarity of a firm's information environment. This is central to how external stakeholders, including auditors, evaluate risk. It also influences whether the surrounding disclosure context is interpreted as transparent and credible or vague and misleading.

We draw on several theoretical perspectives to explain the impact of managerial tone on a firm's information environment and subsequent audit risk assessment. These include signaling theory, behavioral decision theory, impression management theory, and the management obfuscation hypothesis. After combining these to explain the central arguments regarding the relationship between managerial tone and audit outcomes, we develop the comprehensive theoretical framework illustrated in Figure 1. Specifically, our framework illustrates how managerial tone can shape the perceived quality of a firm's information environment and influence auditors' risk assessments. These perceptions influence audit planning and process, which in turn affect both audit risk and audit outcomes.

2.1.1. Signaling theory

Signaling theory offers a unique, practical, and empirically testable perspective for enhancing a firm's information environment (Connelly et al., 2011). It focuses on the actions of insiders (e.g., executives, managers) who intentionally communicate the positive qualities of individuals, products, and organizations to outsiders as proper signals (Connelly et al., 2011).

Two broad types of information can be used as signals to enhance a firm's information environment: information about quality and information about intent and behavior (Connelly et al., 2011; Stiglitz, 2002). Under signaling theory, a positive and consistent tone is considered a credible signal of management's confidence and transparency in a firm's performance, outlook, and risk profile, thereby enhancing the informativeness of disclosures and providing more information to external users (Ning et al., 2024). For example, Zhang and Wiersema (2009) and Connelly et al. (2011) argue that CEOs use an optimistic tone in observable corporate disclosures to signal a firm's unobservable quality to potential investors. Likewise, Davis et al. (2012) suggest that managerial tone in earnings press releases tends to signal, both directly and subtly, their expectations about future performance. Law and Mills (2015) report that the linguistic tone in a firm's qualitative disclosures reflects managerial behavior and provides incremental information beyond traditional accounting. Furthermore, the optimistic tone in earnings press releases is positively associated with future return on assets and generates a positive market reaction (Yekini et al., 2016). In

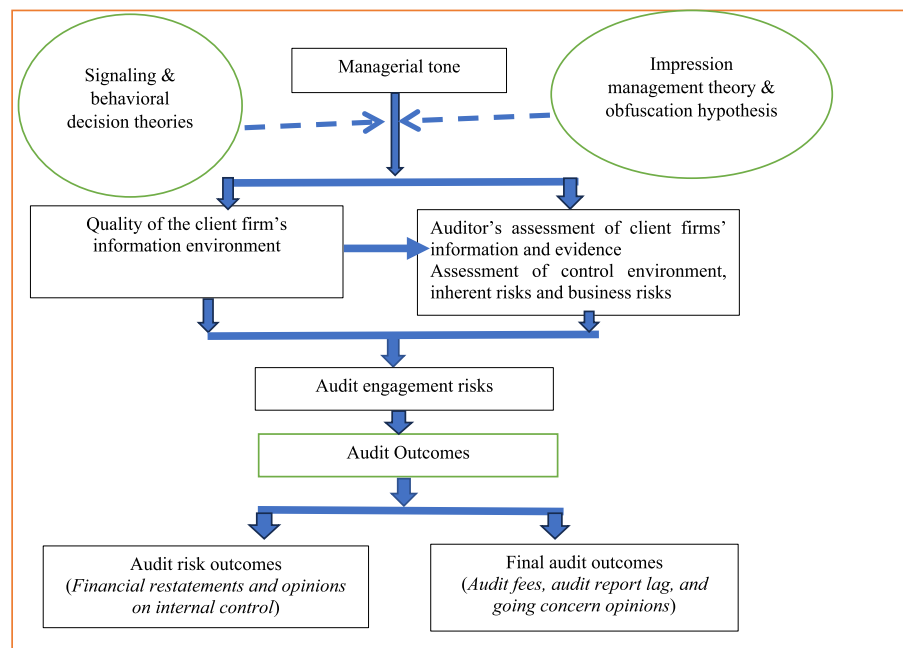


Fig. 1. Conceptual framework: Managerial tone and audit outcomes. Source: Developed by authors.

these cases, managers are driven by extrinsic motivations, such as ethical responsibilities and reputational concerns; hence, the managerial tone reflects transparent financial reporting and truthful information about the firm (Fu et al., 2021). Thus, a managerial tone is a reliable signaling tool that conveys superior quality private information from managers, enabling analysts to make high-quality forecasts (Ning et al., 2024).

The positive influence of a managerial tone on the quality of a firm's information environment may affect the auditor's client risk assessment by enhancing the credibility of the information source and the evidence. Kizirian et al. (2005) argue that because auditors rely heavily on management to access key audit evidence, managerial credibility and transparency are critical components of the audit planning process. If auditors have greater confidence in top management's ability and trustworthiness, as indicated by the tone and descriptive narratives, they are less likely to conduct substantive audit procedures (Asare et al., 2019). As a result, auditors may interpret a credible and positive managerial tone as a signal of lower audit risk, leading to reduced audit effort, lower fees, and a decreased likelihood of issuing adverse opinions. In this context, we argue that managerial tone is not merely a narrative; instead, it should be considered an informative signal rooted in a firm's overall communication strategy that shapes audit planning and judgments.

Along with a credible information environment, as depicted in Figure 1, auditors heavily rely on managerial tone to assess client risk and guide their audit procedures. A strong 'tone at the top' signals a commitment to ethical behavior and strong internal controls, which can significantly impact the auditor's assessment of inherent and control risks. For instance, a positive and ethical tone reduces the perceived risk of material misstatements, consequently allowing auditors to scale back the extent of their testing (Garrett et al., 2022). Conversely, a negative and concerning tone may signal the need for more extensive audit procedures to mitigate the increased risk. This can ultimately affect the overall audit scope and the associated costs. Rose et al. (2021) contend that auditors are more concerned about a negative Chief Financial Officer (CFO) tone, which can cause them to undertake a more comprehensive assessment of associated fraud risks. Therefore, under signaling theory, we argue that a positive and confident managerial tone is likely to lead to a favorable evaluation of their internal control system, which

will positively impact the auditors' client risk assessment and audit outcomes.

2.1.2. Behavioral decision theory

We further draw on behavioral decision theory, which provides crucial insights into how managerial tone influences audit judgments, particularly in environments with high information asymmetry and greater complexity and uncertainty (Tversky & Kahneman, 1974). Like other decision-makers, auditors rely on heuristics (e.g., mental shortcuts) to manage cognitive complexity and time constraints during the audit process (Trotman et al., 2011). In such settings, qualitative cues such as managerial tone serve as relevant sources of soft information that influence perceptions of management credibility and reporting risk. A consistently confident and positive tone may subconsciously reinforce auditors' prior beliefs about management integrity, thereby confirming bias and leading to favorable audit outcomes. Supporting this argument, Cassell et al. (2022) provide experimental evidence that auditors' use of heuristics significantly reduces their judgments, suggesting that prior auditor-client relationships drive confirmation bias, which, in turn, leads to a decline in auditors' assessment of audit risks. Likewise, Schmidt (2014) argues that auditors, with greater access to positive information and evidence of the 'tone at the top', are likely to develop a 'favorable bias' in their mental representations, leading to a positive assessment of client firms' control environments and to more favorable audit judgments. Thus, auditor psychology provides crucial insights into how managerial tone can favorably influence audit judgments.

2.1.3. Impression management theory

In contrast, impression management theory provides an alternative perspective to understanding the underlying motives of narrative disclosure tone. According to this theory, managers strategically design corporate disclosures to influence stakeholder perceptions and protect their legitimacy (Merkl-Davies et al., 2011; Rosenfeld et al., 1994). Within this framework, managers may use an excessively positive tone to conceal their poor performance and lead auditors to view the internal information environment as more opaque with higher inherent and business risks. For example, Huang et al. (2014) contend that firms often use tone management as part of an opportunistic impression management technique to mislead investors by shaping their perceptions about

the reported quantitative information. Likewise, Aerts and Yan (2017) report that companies use rhetorical impression management in their letters to shareholders, although the rhetorical tone is usually decoupled from financial performance commentary. Such impression management practices can heighten concerns about internal control weakness and managerial opportunism, leading to a higher assessment of engagement risk. This should increase substantive testing procedures and expand audit effort, potentially resulting in higher audit fees and more conservative audit opinions. Thus, the impression management perspective highlights that excessive positive and confident managerial tone influences auditors' evaluation of the client's control environment and overall risk profile, which ultimately negatively affects audit outcomes.

2.1.4. Managerial obfuscation hypothesis

The above arguments of impression management theory are broadly consistent with the managerial obfuscation hypothesis, which posits that managerial tone can be leveraged opportunistically to influence stakeholders' perceptions by manipulating corporate reporting and obscuring negative performance (Alta'any et al., 2025; Huang et al., 2014). According to this hypothesis, managers strategically manipulate textual information by hiding bad news with more complex language while highlighting good news with clear language (Abernathy et al., 2019). This eventually leads to managerial information hoarding and a poorer information environment, making it difficult for external stakeholders to assess a firm's risk characteristics and valuation (Ertugrul et al., 2017; Fu et al., 2021). In a poorer information environment, auditors become more skeptical and engage in more substantive audit planning and procedures to reduce the likelihood of misreporting. This eventually increases audit engagement risk, which increases audit efforts and fees, and results in the issuance of more conservative audit opinions, including going concern opinions and adverse internal control assessments.

2.1.5. Hypothesis 1

In sum, managerial tone can either signal transparency and credibility or serve as an act of impression management and obfuscation, thereby directly affecting how auditors assess and respond to client risk. A positive and consistent tone can be a credible signal of managerial confidence, transparency, and high-quality financial reporting; consequently, it enhances the informativeness of corporate disclosures, favorably affects auditors' client risk assessments, and raises confidence in clients' internal control systems. These eventually lower audit risk, reduce audit effort, reduce fees, and lower the likelihood of adverse opinions. Such tone-driven cues may also trigger auditors' heuristics and confirmation bias, influencing their professional judgments and audit responses. In contrast, an optimistic tone can also be used as a part of a firm's impression management and obfuscation strategies to conceal negative news and poor performance, raising auditor skepticism and increasing perceived audit risk. Considering the conflicting arguments, we develop the following non-directional hypothesis:

Hypothesis 1. (H1): *Ceteris paribus, the managerial tone is significantly associated with audit outcomes.*

2.2. Moderating effects

In this sub-section, we focus on information asymmetry and corporate governance as moderators in the association between managerial tone and audit outcomes. Both factors are crucial to determining how auditors interpret and respond to managerial disclosures, and both capture the core contextual elements that highlight the informational value and credibility of managerial tone in financial reporting.

2.2.1. The role of information asymmetry

Information asymmetry, the extent to which managers possess private information not observable by external stakeholders, including

auditors, significantly influences their assessment of financial reporting risks and, ultimately, audit outcomes. A transparent and reliable information environment enables auditors to confidently evaluate the accuracy and completeness of financial statements, resulting in favorable audit outcomes. Conversely, an opaque and misleading information environment creates significant challenges for auditors, increasing the likelihood of adverse audit outcomes due to heightened uncertainty and risk (Frino et al., 2023). We argue that distinguishing between hard and soft information environments is crucial to understanding how information asymmetry moderates the association between managerial tone and audit outcomes. Both a better hard information environment, where firms disclose abundant and credible quantitative data, and a soft information environment, where firms provide a positive, clear managerial tone, enhance auditors' confidence in the financial reporting process. Thus, a positive managerial tone plays a complementary role, as signaling theory suggests that managers use disclosure tone to communicate private information about firm quality credibly. This complementary effect can expedite the audit, reduce costs, and increase the likelihood of favorable audit outcomes, as auditors perceive a reduced need for extensive procedures to validate management assertions.

However, as we explained earlier, auditors' heuristics and confirmation bias (Tversky & Kahneman, 1974) can play a critical role in shaping auditor judgment. In particular, high information asymmetry creates ambiguity, which increases cognitive load and forces auditors to rely on soft information, such as tone, to fill information gaps and assess audit risks. Thus, managerial tone can be substitutive when a firm operates in an environment with high information asymmetry (Liberti & Petersen, 2019). Prior studies have also highlighted this substitutive role. For example, Huang et al. (2014) show that auditors are more likely to scrutinize and react to tone, particularly when information in the financial statements is insufficient and inconsistent.

These dynamics can also be discussed from the perspectives of auditor demand and supply. On the demand side, in high information asymmetry environments, firms may strategically use a positive tone to signal transparency and lower perceived audit risk, thereby affecting the extent and intensity of audit scrutiny. On the supply side, auditors adjust their audit scope, opinion issuance, and audit pricing based on how they interpret tone within the broader information context (Hay et al., 2006). When hard data are limited, auditors rely more heavily on soft managerial tone in assessing risk, potentially leading to discounted and risk-adjusted audit responses.

Overall, information asymmetry shapes whether managerial tone complements or substitutes for hard information, ultimately influencing how auditors evaluate client risk and determine audit outcomes through demand- and supply-side mechanisms. Considering the opposing arguments, we develop the following hypothesis:

Hypothesis 2. (H2): *Ceteris paribus, the association between managerial tone and audit outcomes is contingent on a firm's underlying information environment.*

2.2.2. The role of corporate governance

Corporate governance, the intricate framework guiding a firm's operations and financial communication, significantly shapes the audit process and audit outcomes (Cohen et al., 2002). Based on agency theory (Jensen & Meckling, 1976), there are two opposing views on how managerial tone and corporate governance jointly influence audit outcomes. On the one hand, auditors are presented with a significantly reduced risk landscape when a firm is steered by a robust governance structure, characterized by vigilant board oversight, transparency, and unwavering ethical conduct (Zaman et al., 2011). More specifically, strong corporate governance helps firms to adopt high-quality disclosure practices. This, in turn, reduces the auditors' skepticism (Bedard & Johnstone, 2004), resulting in lower audit engagement risk, lower audit effort, lower audit fees, and favorable audit opinions. On the other

hand, firms with weak governance structures are more likely to exhibit lower quality financial reporting, prompting auditors to apply heightened scrutiny. This increases the need for more extensive and time-consuming audit procedures, resulting in higher audit fees and a greater likelihood of conservative audit opinions. Among governance mechanisms, external monitoring through institutional ownership is expected to play a dominant role relative to internal mechanisms, such as board independence, as institutional investors have the incentives and power to provide strong monitoring (Chung & Zhang, 2011). This, in turn, enhances a firm's information environment and reduces auditors' engagement risk. Jain et al. (2023) support this argument by showing that institutional ownership enhances the informativeness of disclosure tone in predicting a firm's future earnings and cash flows.

We argue that the managerial tone can be complementary or substitutive in the complicated relationship between corporate governance and audit outcomes. In firms with strong governance monitoring, a managerial tone characterized by clarity, consistency, and transparency reinforces auditors' confidence in the reliability of hard financial information. From the demand side, such client firms may require less rigorous audit scrutiny due to the stronger informational credibility conveyed through a positive and transparent managerial tone¹. On the supply side, auditors, perceiving effective governance and positive tone as a lower engagement risk, may respond with reduced audit effort, lower fees, and more favorable opinions, showing greater trust in management-provided evidence (Carcello et al., 2011; DeFond & Zhang, 2014). Thus, better governance reinforces the effect of managerial tone on audit outcomes.

However, in the context of weak governance, auditors frequently face challenges in evaluating managerial integrity and the reliability of hard information and financial reporting due to the absence of robust monitoring mechanisms (Armstrong et al., 2010). In such contexts, a positive and consistent managerial tone, when perceived as credible and aligned with financial performance, may compensate for poor governance by providing auditors with soft information that minimizes their audit engagement and risk. From a supply perspective, such lower engagement may prompt auditors to charge lower fees and refrain from issuing adverse opinions, leading to more favorable audit outcomes. Nevertheless, from a demand standpoint, one may argue that in a poor governance setting, firms may use a positive managerial tone as an impression management and obfuscation tool, thereby undermining informational credibility and necessitating more rigorous audit scrutiny. In such perspectives, auditors are likely to respond with heightened skepticism, considering an overly optimistic tone as a potential red flag that requires additional verification and a more conservative judgment to counterbalance the heightened uncertainty.

Considering these contradictory arguments, we develop the following hypothesis:

Hypothesis 3. (H3): *Ceteris paribus, the association between managerial tone and audit outcomes is contingent on a firm's underlying corporate governance.*

3. Research design

3.1. Data and sample

Our initial research population is all firms listed on US stock exchanges from 2000 through 2020. We employ Loughran and McDonald (2011)'s sentiment word lists as a proxy for managerial tone. We utilize the Audit Analytics database to collect audit outcome data, including restatements, opinions on the strength of internal controls, audit fees,

audit delays, and going concern opinions. We obtain other financial and accounting information from various sources, including Compustat, I/B/E/S, SDC Platinum, and Thomson Reuters Institutional (13f) Holdings. Our study excludes financial firms and requires non-missing data for firm-level variables. We also set a minimum total asset threshold of \$1 million, consistent with previous studies (e.g., Barua et al., 2020). To perform our regression analysis, we limit our sample to firms with data for at least two consecutive years and exclude firms that lack information on audit outcome or managerial tone variables. Continuous variables are winsorized at the first and 99th percentiles in our sample. The final sample comprises an unbalanced panel of 42,250 firm-year observations.

3.2. Model specification

We employ a panel regression methodology to conduct our analysis. The primary model is presented in equation 1, and we subsequently use each test to examine the relationship between managerial tone and audit outcomes for an appropriate subset of the data, as specified by each hypothesis. Our baseline model is expressed as follows:

$$AUD_OUT_{it} = \alpha + \beta_1 TONE_{it} + CONTROLS_{it-1} + \varepsilon_{it} \quad (1)$$

where AUD_OUT_{it} is the audit outcomes of firm i at time t , and $TONE_{it}$ is the managerial tone of firm i at time t . $TONE_{it}$ is the difference between the number of positive and negative words, divided by the total number of words in the annual report, multiplied by 100. We use the contemporaneous value of $TONE$ because it is extracted from the annual report released shortly after the fiscal year-end, aligning closely with the audit process and the determination of audit outcomes. This timing allows $TONE$ to capture managerial communication that may influence auditor judgments within the same reporting cycle, rather than relying on tone from earlier periods, which may not accurately reflect the original circumstances. This approach aligns with prior studies that highlight the importance of treating narrative disclosures as real-time reflections of managerial intent and thoughts regarding accounting and financial policies (Davis et al., 2012; Huang et al., 2014; Li, 2010).

We adopt five measures for our AUD_OUT_{it} . $RESTATE$ is an indicator variable for financial restatements. $AUDOPIC$ is an indicator variable if there is an auditor opinion on the strength of internal controls. $AUDFEE$ is the natural logarithm of the adjusted audit fee. We employ the adjusted audit fee approach proposed by Barua et al. (2020) to construct $AUDFEE$. Their study demonstrates that combining the audit fees of the successor and predecessor in the year of an auditor change helps to address the mismeasurement that can arise from omitting the predecessor's audit fees in year t . $AUDELAY$ is the natural logarithm of the time the auditor takes to complete an audit. $AUDELAY$ is computed as the number of days to complete an audit, which is the duration between the auditor's signature date and the fiscal year-end date. $GOINGCON$ is an indicator variable if the auditor issues a going concern opinion.

$CONTROLS$ is a set of control variables in our analysis. Consistent with prior research (e.g., Bryan & Mason, 2020; Costa & Habib, 2023; Dikolli et al., 2020; Hay, 2013; Jha & Chen, 2015), we control firm size ($SIZE$), non-audit fee ($NONAUDFEE$), loss firms ($LOSS$), a firm with reporting date in the period Dec-Mar ($BUSY$), operating performance (ROA), auditor opinion ($AUDOPMOD$), big auditors ($BIG4AUDIT$), geographic segments ($GEOSEGM$), business segments ($BUSSEGM$), foreign sales ($FOREIGN$), special items ($SPECIAL$), leverage (LEV), change in the auditor ($AUCHANGE$), market-to-book ratio (MB),

¹ However, Zaman et al. (2011) show that strong corporate governance demands higher audit quality, which results in greater audit effort and premium audit fees.

litigation industry (*LITIGATION*), inherent risk (*INHERENT*)², merger and acquisition activity (*M&A*), seasoned equity offerings (*SHARES+10%*), and the number of employees (*EMPLOYEES*). We also include year indicator variables to control for year-fixed effects and two-digit SIC codes for industry-fixed effects. To ensure temporal consistency and mitigate endogeneity, all control variables are lagged by one year. All variables are defined in [Appendix Table 1A](#).

3.3. Descriptive statistics

[Table 1](#) presents the descriptive statistics of the variables used in our study. The mean (median) value of *TONE* is -0.84 (-0.81), indicating that firms' 10-K disclosure tone is generally pessimistic. This means managers are typically more likely to use negative words than positive ones. The mean value of a firm's financial restatement dummy in a given year (*RESTATE*) is 16%, indicating that the sampled firms' financial restatement is low. The proportion of auditors' opinions on internal controls (*AUDOPIC*) is 6.06%, which is slightly higher than those reported in other studies (e.g., [Chen et al., 2017](#); [Ge et al., 2017](#)). The mean (median) value of the natural logarithm of corrected audit fee (*AUDFEE*) is 13.71 (13.76). Moreover, there is considerable variation in *AUDFEE* within the sample, as the standard deviation is 1.33. The mean (median) of the logarithm of non-audit fees (*NONAUDFEE*) is 7.56 (10.87). The mean (median) of the logarithm of the number of days between the signature date of the audit opinion and the date of fiscal year end (*AUDELAY*) is 4.11 (4.11). About 3% of firms have a going concern modified audit opinion.

The mean (median) logarithmic value of total assets (measured in millions of dollars) of our sample firms (*SIZE*) is 6.29 (6.32), while about 76% of our sample firms are audited by the Big 4 auditors. Over 33% of the observations experienced average loss in three consecutive years (*LOSS*). About 83% of firms have reporting dates from December to March (*BUSY*). The mean ratio of net income before extraordinary items to total assets per year (*ROA*) is -0.02. About 6% of firms receive modified audit opinions (*AUDOPMOD*). Approximately 66% of firms report special items (*SPECIAL*) in their financial statements, while 32% operate in industries prone to litigation (*LITIGATION*). The mean of the market-to-book ratio of assets (*MB*) is 1.75. Additionally, approximately 6.6% of firms have experienced a 10% or more increase in outstanding shares (*SHARES+10%*). Overall, the values of these control variables are generally consistent with those reported in prior studies on audit outcomes.

4. Empirical results

4.1. Baseline evidence

Our empirical analysis begins with an ordinary least squares (OLS) model examining the relationship between managerial tone and audit outcomes. In Panel A of [Table 2](#), we present the results of regression analysis on managerial tone and audit outcomes for each audit outcomes dimension in Models 1 to 5. The results indicate that *TONE* is negatively related to the five audit outcomes, including financial restatements (*RESTATE*) in Column 1, auditor issuing an opinion on the strength of internal controls (*AUDOPIC*) in Column 2, audit fees (*AUDFEE*) in

Column 3, auditor effort (*AUDELAY*) in Column 4, and going concern opinions (*GOINGCON*) in Column 5³. These coefficients are statistically significant at the 1% level. The marginal effects of *RESTATE*, *AUDOPIC*, and *GOINGCON* are 0.11, 0.19, and 0.13, respectively. Regarding economic significance, we find that a one-unit increase in *TONE* reduces the probability of financial restatements by 11%, internal control opinions by 19%, and going-concern opinions by 13%. We also calculate the economic significance of the impact of managerial tone on audit fees and delays. We find that a one standard deviation increase in *TONE* is associated with approximately a 6.2% reduction in audit fees and a 1.6% reduction in audit effort.⁴ Our results for the control variables are broadly consistent with the related literature.⁵

Our study results are consistent with the arguments of signaling theory that a strong, positive, and optimistic managerial tone enhances disclosure and transparency ([Lail et al., 2015](#)), reduces information asymmetry between the auditor and the client firm ([Law & Mills, 2015](#)), and consequently enhances the quality of firms' information environment. This facilitates audit planning and engagement ([Garrett et al., 2022](#); [Schmidt, 2014](#)), reducing audit engagement risk and influencing favorable audit outcomes.

We further investigate whether the relationship between managerial tone and audit outcomes differs between distressed and non-distressed firms. As discussed earlier, the relationship between positive managerial tone and audit outcomes should be stronger in non-distressed firms because auditors perceive the positive tone as a more reliable indicator of financial health in a stable environment. Consistent with prior studies (e.g., [Callaghan et al., 2009](#); [Krishnan & Wang, 2015](#)), we define a firm as financially distressed if it reports both a loss and negative operating cash flows in the current year. Panel B of [Table 2](#) presents the results. We demonstrate that the relationship between managerial tone and audit outcomes is stronger in non-distressed firms, underscoring its credibility and auditors' perception of it as a reliable indicator of firm performance. The extant literature suggests that audit fees tend to be significantly discounted in the auditor rotation year ([Hay et al., 2006](#)). Therefore, to mitigate measurement bias, we investigate the relationship between managerial tone and audit fees by comparing audit fees both before correction (unadjusted) and after correction (adjusted following [Barua et al. \(2020\)](#)). We find a positive association between managerial tone and unadjusted audit fees for distressed firms. However, this positive association reverses to a negative one for distressed firms after adjusting for audit fees, underscoring the importance of accounting for corrected audit fees. For the non-distressed firms, we find a negative relationship between tone and both unadjusted and adjusted audit fees. However, this negative association is even stronger for the corrected (adjusted) audit fees, indicating that the adjustment process amplifies the impact of managerial tone on audit fees.

We acknowledge the possibility of time-invariant firm-specific omitted variables, which can lead to under-specification bias in the observed relationship between managerial tone and audit outcomes. To

³ Additionally, in [Appendix Table 2A](#), we confirm that our findings remain robust when regressing the values of our main dependent variable, audit outcomes, in year *t* on the lagged values of managerial tone and control variables from year *t-1*.

⁴ In line with [Jha and Chen \(2015\)](#), we have also calculated economic significance by using the interquartile range. An increase in *TONE* from the 25th to the 75th percentile is associated with reductions of 18.6% in audit fees and 5.1% in audit effort.

⁵ One may argue that corporate governance characteristics could affect our baseline results. Therefore, in an additional robustness check, we augment our baseline model with several corporate governance variables: a dummy for a new CEO (*CEONEW*), board tenure (*TENURE*), board age (*AGE*), and board gender diversity (*GENDER*). As presented in [Appendix Table 3A](#), the negative relationship between managerial tone and audit outcomes remains statistically significant, confirming that our main findings are robust to the inclusion of these governance controls.

² Following extant literature (Simunic, 1980; [Costa & Habib, 2023](#)), we include a proxy for inherent risk measured as the sum of receivables and inventory scaled by total assets. This ratio captures the relative importance of accounts that are complex to value and verify, representing the inherent susceptibility of the financial statements to material misstatement.

Table 1
Descriptive statistics of main variables.

	Sample Size	Mean	P50	Minimum	P25	P75	Maximum	SD
TONE	42,250	-0.8416	-0.8128	-3.7655	-0.6889	0.7423	1.0921	0.4478
RESTATE	42,250	0.1569	0.0000	0.0000	0.0000	0.0000	1.0000	0.3638
AUDOPIC	42,250	0.0606	0.0000	0.0000	0.0000	0.0000	1.0000	0.2385
AUDFEE	42,250	13.7099	13.7637	10.5453	12.7781	14.6117	16.8284	1.3322
AUDELAY	42,250	4.1079	4.1109	2.9957	3.9890	4.3041	5.4972	0.3061
GOINGCON	42,250	0.0345	0.0000	0.0000	0.0000	0.0000	1.0000	0.2781
SIZE	42,250	6.2853	6.3198	0.0020	4.7892	7.7777	15.0058	2.1976
NONAUDFEE	42,250	7.5640	10.8686	0.0000	0.0000	12.7676	13.7705	5.9763
LOSS	42,250	0.3325	0.0000	0.0000	0.0000	1.0000	1.0000	0.4711
BUSY	42,250	0.8293	1.0000	0.0000	1.0000	1.0000	1.0000	0.3762
ROA	42,250	-0.0272	0.0300	-5.0315	-0.0238	0.0714	0.3897	0.2681
AUDOPMOD	42,250	0.0621	0.0000	0.0000	0.0000	0.0000	1.0000	0.2414
BIG4AUDIT	42,250	0.7588	1.0000	0.0000	1.0000	1.0000	1.0000	0.4278
GEOSSEG	42,250	1.6060	1.4142	1.0000	1.0000	2.0000	4.0000	0.6334
BUSSEGM	42,250	2.4888	2.4495	1.4142	1.7321	3.1623	3.8730	0.8467
FOREIGN	42,250	0.0094	0.0019	0.0001	0.0004	0.0094	0.0483	0.0151
SPECIAL	42,250	0.6628	1.0000	0.0000	0.0000	1.0000	1.0000	0.4728
LEV	42,250	0.2391	0.1892	0.0000	0.0198	0.3692	4.9429	0.2480
AUCHANGE	42,250	0.0632	0.0000	0.0000	0.0000	0.0000	1.0000	0.2434
MB	42,250	1.7474	1.4706	0.9070	1.1210	2.1574	3.4307	0.7998
LITIGATION	42,250	0.3205	0.0000	0.0000	0.0000	1.0000	1.0000	0.4667
INHERENT	42,250	0.2522	0.2153	0.0000	0.0889	0.3637	0.8831	0.1978
M&A	42,250	0.2573	0.0000	0.0000	0.0000	1.0000	1.0000	0.4371
SHARES+10%	42,250	0.0663	0.0000	0.0000	0.0000	0.0000	1.0000	0.2488
EMPLOYEES	42,250	2.3903	1.5592	1.0000	1.1247	2.7203	12.3045	2.0773

Note: [Appendix Table 1A](#) provides detailed descriptions of the variables.

address this concern, we conduct an additional robustness check using firm- and year-fixed effects. The results of this analysis are presented in [Table 3](#). Based on the results, we conclude that the negative relationship between managerial tone and audit outcomes observed in our main analysis is not driven by time-invariant firm-specific omitted variables. The inclusion of firm- and year-fixed effects provides further evidence that our findings are robust to omitted-variable bias.

We also employ a range of alternative measures of managerial tone to further test the robustness of our findings. Specifically, we utilize several alternative proxies for the managerial tone in 10-K reports that capture linguistic complexity and negativity: (i) number of words, (ii) number of complex words, (iii) number of sentences, (iv) number of uncertain financial terms, (v) number of negative financial terms, (vi) number of syllables, and (vii) number of negative words following Harvard dictionary. We employ the inverse measure of these alternative proxies, where higher values indicate lower complexity and negativity. Therefore, we expect negative relationships between these alternative proxies and audit outcomes. As shown in [Appendix Table 4A](#), the results are consistent with our expectations and baseline results presented in [Table 2](#).

4.2. Endogeneity

The study addresses the endogeneity concern in the relationship between managerial tone and audit outcomes using PSM, DiD, and two-stage least squares (2SLS).

4.2.1. Propensity score matching

We use PSM to address selection bias on the causal relationship between managerial tone and audit outcomes. Our approach uses a yearly two-digit SIC industry median of the managerial tone measures as the cut-off value, with firms having an above-median managerial tone classified as having high managerial tone (treatment) and those with a below median managerial tone classified as having low managerial tone (control). We estimate the probability of being assigned to the treatment or control group using a logit regression model that includes all explanatory variables and fixed effects, as specified in our baseline regression. We then utilize the propensity scores from this logit estimation to perform nearest neighbor matching, with replacement,

allowing each treated firm to be matched with multiple controls (i.e., 4). This matching process enables us to generate a more comparable control group of firms, but they diverge primarily in their level of managerial tone.

Panel A of [Table 4](#) compares the mean value of the variables between the treatment and control groups. The t-tests suggest that the mean differences between the treatment and control groups are not significant, indicating that the PSM eliminated noticeable differences in the control variables. Next, we estimate the impact of managerial tone on audit outcomes in the matched sample. Panel B of [Table 4](#) controls for year- and industry-fixed effects for all the regression models. The results show that managerial tone coefficients are negative and significant for all models at 5% significance levels or higher. Overall, our PSM approach confirms the findings presented in [Table 2](#) after considering self-selection bias.

4.2.2. Difference-in-differences (DiD) estimation

Our next approach to address endogeneity is to use an exogenous shock to break the correlation when the treatment is correlated with unobserved factors that also affect the outcome. We employ the CEO's sudden departure as a potential exogenous shock to establish a causal relationship between managerial tone and audit outcomes. Since the CEO is the key decision-maker and a major contributor to a firm's overall managerial tone, a CEO's sudden departure is likely to cause a short-term negative shock to the firm's positive managerial tone due to abrupt internal disruption, concerns over leadership continuity, and poor performance. This allows us to examine how the shock in the consistency of the positive managerial tone following a CEO's sudden departure impacts audit outcomes. Given that the sudden departure of a CEO reduces a firm's positive managerial tone, we expect such shocks to increase the likelihood of unfavorable audit outcomes.

To conduct our empirical analysis, we draw on CEO departure data from [Gentry et al. \(2021\)](#), which includes sudden departures due to deaths, illnesses, and other personal issues. First, we define treatment firms (*TREAT*) as those that experienced a CEO departure during the sample period and for which audit outcomes data are available for two years before and two years after the event. Second, potential control firms are identified as those that did not experience a CEO departure but have audit outcome data over the same four-year window. Third, using

Table 2

The relationship of management tone with audit outcomes.

Panel A. Management tone and audit outcomes: Baseline regression.

	Audit risk outcomes		Final audit outcomes		
	RESTATE	AUDOPIC	AUDFEE	AUDELAY	GOINGCON
<i>TONE</i>	-0.0251 (-4.12)***	-0.0476 (-11.93)***	-0.1438 (-10.79)***	-0.0366 (-6.77)***	-0.0142 (-3.03)***
<i>SIZE</i>	0.0271 (4.01)***	0.0057 (2.64)***	0.3758 (54.76)***	0.0491 (21.44)***	0.005 (2.50)**
<i>NONAUDFEE</i>	0.0012 (2.43)**	0.0022 (5.58)***	0.0306 (24.67)***	0.0025 (5.73)***	0.0025 (6.65)***
<i>LOSS</i>	0.0151 (2.68)***	0.0237 (5.53)***	0.0838 (7.40)***	0.0461 (10.30)***	0.0126 (3.20)***
<i>BUSY</i>	0.0065 (0.87)	0.0018 (0.41)	0.107 (5.93)***	0.0255 (3.84)***	0.0029 (0.54)
<i>ROA</i>	-0.0604 (-5.38)***	-0.0269 (-2.67)***	-0.1515 (-7.74)***	-0.0214 (-2.45)**	-0.0001 (-0.02)
<i>AUDOPMOD</i>	0.0219 (1.01)	0.0211 (1.10)	0.0828 (1.70)*	0.0549 (3.39)***	0.0251 (1.28)
<i>BIG4AUDIT</i>	0.0093 (1.48)	0.0373 (7.14)***	0.3278 (19.01)***	0.0437 (6.86)***	0.001 (0.21)
<i>GEOSEGM</i>	0.0105 (1.61)	0.0212 (4.53)***	0.1181 (8.78)***	0.0173 (3.35)***	0.0082 (1.52)
<i>BUSSEGM</i>	0.0174 (3.55)***	0.0014 (0.39)	0.0897 (8.60)***	0.0047 (1.14)	0.0061 (1.54)
<i>FOREIGN</i>	1.4642 (5.82)***	0.2112 (1.14)	0.2798 (0.48)	0.2291 (1.02)	0.1485 (0.79)
<i>SPECIAL</i>	0.0036 (0.81)	0.0033 (1.09)	0.1421 (15.08)***	0.0013 (0.38)	0.0157 (5.09)***
<i>LEV</i>	0.0096 (0.90)	0.036 (3.98)***	0.0131 (0.53)	0.1127 (13.04)***	0.0065 (0.91)
<i>AUCHANGE</i>	0.035 (0.96)	0.0186 (1.06)	0.1417 (1.25)	0.0116 (0.40)	0.0013 (0.06)
<i>MB</i>	0.0004 (0.13)	0.0063 (2.87)***	0.0667 (8.51)***	0.0549 (19.41)***	0.0067 (2.67)***
<i>LITIGATION</i>	0.0229 (3.74)***	0.0053 (1.20)	0.0161 (1.09)	0.0338 (6.28)***	0.0075 (1.47)
<i>INHERENT</i>	0.0148 (1.03)	0.0302 (2.53)**	0.3182 (8.06)***	0.0498 (3.81)***	0.003 (0.26)
<i>M&A</i>	0.0028 (0.52)	0.0003 (0.10)	0.1415 (11.75)***	0.0035 (0.83)	0.0132 (2.84)***
<i>SHARES+10%</i>	0.0064 (0.89)	0.0001 (0.01)	0.0388 (2.92)***	0.0185 (3.56)***	0.0063 (1.14)
<i>EMPLOYEES</i>	0.0094 (4.21)***	0.0011 (0.79)	0.0668 (11.51)***	0.0015 (0.83)	0.0073 (4.26)***
<i>CONSTANT</i>	Included	Included	Included	Included	Included
Year and Industry effects	Yes	Yes	Yes	Yes	Yes
Adjusted R ² / Pseudo R ²	0.1464	0.1549	0.8298	0.345	0.1333
Sample size	42,250	42,250	42,250	42,250	42,250

Panel B. Management tone and audit outcomes: Distressed vs. non-distressed firms.

	(1) RESTATE			(2) AUDOPIC			(3) Actual audit fees		
	<i>DISTRESS</i> (1)	<i>NONDISTRESS</i> (2)	Diff in coeff. and Chi ² Column (1) vs (2)	<i>DISTRESS</i> (1)	<i>NONDISTRESS</i> (2)	Diff in coeff. and Chi ² Column (1) vs (2)	<i>DISTRESS</i> (1)	<i>NONDISTRESS</i> (2)	Diff in coeff. and Chi ² Column (1) vs (2)
<i>TONE</i>	-0.0117 (-2.19)**	-0.0278 (-4.53)***	-0.0161 [8.32]**	-0.0166 (-3.18)***	-0.0512 (-12.85)***	-0.0346 [10.43]***	0.0389 (2.09)**	-0.1087 (-6.34)***	-0.1476 [37.89]***
<i>CONSTANT</i>	Included	Included		Included	Included		Included	Included	
<i>All Control variables</i>	Yes	Yes		Yes	Yes		Yes	Yes	
<i>Year and Industry effects</i>	Yes	Yes		Yes	Yes		Yes	Yes	
<i>Adjusted R² / Pseudo R²</i>	0.1254	0.1415		0.1429	0.1496		0.7867	0.8164	
<i>Sample size</i>	11,473	30,777		11,473	30,777		11,473	30,777	
	(4) Corrected audit fees (AUDFEE)			(5) AUDELAY			(6) GOINGCON		
	<i>DISTRESS</i> (1)	<i>NONDISTRESS</i> (2)	Diff in coeff. and Chi ² Column (1) vs (2)	<i>DISTRESS</i> (1)	<i>NONDISTRESS</i> (2)	Diff in coeff. and Chi ² Column (1) vs (2)	<i>DISTRESS</i> (1)	<i>NONDISTRESS</i> (2)	Diff in coeff. and Chi ² Column (1) vs (2)
<i>TONE</i>	-0.0427 (-1.71)*	-0.1387 (-8.48)***	-0.0960 [34.23]***	-0.0121 (-2.33)**	-0.0394 (-7.39)***	-0.0273 [9.54]**	-0.0106 (-2.52)**	-0.0221 (-3.34)***	-0.0115 [7.10]**
<i>CONSTANT</i>	Included	Included		Included	Included		Included	Included	
<i>All Control variables</i>	Yes	Yes		Yes	Yes		Yes	Yes	
<i>Year and Industry effects</i>	Yes	Yes		Yes	Yes		Yes	Yes	
<i>Adjusted R² / Pseudo R²</i>	0.8004	0.8176		0.3367	0.3421		0.1097	0.1298	
<i>Sample size</i>	11,473	30,777		11,473	30,777		11,473	30,777	

Notes: Panel A presents the results of a regression of audit outcomes on management tone and a range of control variables, including year- and industry-fixed effects. Panel B reports the OLS estimates of audit outcomes for management tone, by distressed vs. non-distressed firms. Consistent with prior studies (e.g., [Callaghan et al., 2009](#); [Krishnan & Wang, 2015](#)), we define a firm as financially distressed if it reports both a loss and negative operating cash flows in the current year. For both

panels, all continuous variables are winsorized at the 1% and 99% levels to mitigate the influence of outliers. Statistical significance is indicated by ***, **, and *, corresponding to the 1%, 5%, and 10% significance levels, respectively. The *t*-statistics are reported in parentheses, the χ^2 is in brackets, and standard errors are clustered by firm. Detailed descriptions of the variables are provided in [Appendix Table 1A](#).

financial-year data from the year preceding the CEO's departure, we rank all firms in both groups based on the full set of control variables in the baseline model. Fourth, for each treatment firm, we calculate the absolute rank differences with every potential control firm across all control variables. Finally, the control firm with the smallest total absolute rank difference is selected as the matched pair. This matching procedure yields a final sample of 73 treatment firms and 73 matched control firms, resulting in 584 firm-year observations across both the pre- and post-event periods.

Panel A of [Table 5](#) presents descriptive statistics for the baseline control variables between treatment and control firms. We find no significant differences between the two groups, supporting the validity of our matching procedure. To estimate the treatment effect, we construct a variable, *POST*, which equals 1 for years following a CEO's sudden departure and zero otherwise. Our main DiD estimator, $TREAT \times POST$, captures the differential impact in the aftermath of a CEO's departure.

We then re-estimate our regression on the matched sample, including *POST* and $TREAT \times POST$ as additional regressors in our baseline models. The results are reported on Panel B of [Table 5](#). We find that the estimated coefficient on the interaction term ($TREAT \times POST$) is positive and statistically significant, supporting our expectation. This suggests that firms experiencing a CEO's sudden departure exhibit less favorable audit outcomes due to a decline in the positive managerial tone. Overall, these findings reinforce our baseline evidence that managerial tone is critical in determining a firm's audit outcome.

4.2.3. Natural experiment using the Sarbanes-Oxley Act

We have also used the Sarbanes-Oxley Act of 2002 (SOX) as a natural experiment to investigate whether there is a causal relationship between managerial tone and audit outcomes. SOX both imposes stringent rules and record-keeping requirements and requires top managers to personally certify the accuracy of financial reports. Thus, firms are

Table 3
Firm fixed effects - Management tone and audit outcomes.

	Audit risk outcomes		Final audit outcomes		
	RESTATE	AUDOPIC	AUDFEE	AUDELAY	GOINGCON
<i>TONE</i>	-0.0222 (-2.38)**	-0.0948 (-14.83)***	-0.0683 (-5.42)***	-0.0597 (-8.12)***	-0.0092 (-2.27)**
<i>SIZE</i>	0.0211 (3.18)***	0.0058 (1.43)	0.2276 (23.66)***	0.0404 (8.13)***	0.0183 (3.92)***
<i>NONAUDFEE</i>	0.0031 (4.58)***	0.0012 (2.62)***	0.0249 (24.93)***	0.0008 (1.52)	0.0018 (4.19)***
<i>LOSS</i>	0.0042 (0.58)	0.0128 (2.54)**	0.0065 (0.74)	0.0377 (7.58)***	0.0121 (2.34)**
<i>BUSY</i>	0.0015 (0.06)	0.0121 (0.59)	0.1051 (2.37)**	0.0246 (1.38)	0.013 (0.62)
<i>ROA</i>	-0.0255 (-1.87)*	-0.0054 (-0.61)	-0.0326 (-1.85)*	-0.0056 (-0.51)	-0.0012 (-0.14)
<i>AUDOPMOD</i>	0.0119 (0.48)	0.0001 (0.01)	0.0393 (1.26)	0.0141 (0.93)	0.0032 (0.14)
<i>BIG4AUDIT</i>	0.0037 (0.32)	0.0111 (1.22)	0.1927 (9.70)***	0.0079 (0.74)	0.0117 (1.49)
<i>GEOSEGM</i>	0.0011 (0.12)	0.0163 (2.37)**	0.0597 (4.16)***	0.0241 (3.03)***	0.0137 (1.68)*
<i>BUSSEGM</i>	0.0151 (2.22)**	0.0033 (0.66)	0.0455 (4.88)***	0.0024 (0.45)	0.0187 (3.33)***
<i>FOREIGN</i>	0.069 (0.17)	0.3725 (1.59)	1.2162 (2.44)**	1.016 (3.51)***	0.3774 (1.31)
<i>SPECIAL</i>	0.0062 (1.24)	0.0008 (0.25)	0.0158 (2.70)***	0.0016 (0.47)	0.0013 (0.36)
<i>LEV</i>	0.0116 (0.68)	0.0183 (1.30)	0.0115 (0.44)	0.0683 (5.11)***	0.0209 (1.50)
<i>AUCHANGE</i>	0.0021 (0.37)	0.0034 (0.72)	0.0917 (0.88)	0.0083 (0.21)	0.0001 (0.01)
<i>MB</i>	0.0016 (0.32)	0.0019 (0.57)	0.0098 (1.45)	0.0383 (10.34)***	0.0039 (1.03)
<i>LITIGATION</i>	0.0213 (1.58)	0.0051 (0.62)	0.0294 (1.80)*	0.0082 (1.42)	0.0159 (1.31)
<i>INHERENT</i>	0.0829 (2.65)***	0.0269 (1.10)	0.2143 (4.23)***	0.0293 (1.10)	0.0294 (1.11)
<i>M&A</i>	0.0044 (0.75)	0.0064 (1.73)*	0.0136 (1.97)**	0.0041 (0.99)	0.013 (2.37)**
<i>SHARES+10%</i>	0.007 (0.85)	0.0078 (1.56)	0.0207 (2.18)**	0.0011 (0.21)	0.0081 (1.29)
<i>EMPLOYEES</i>	0.0223 (3.50)***	0.0002 (0.06)	0.1259 (12.66)***	0.0029 (0.67)	0.0268 (4.58)***
<i>CONSTANT</i>	Included	Included	Included	Included	Included
<i>Firm and year effects</i>	Yes	Yes	Yes	Yes	Yes
<i>Adj. R² / Pseudo R²</i>	0.2795	0.3755	0.9369	0.6133	0.2529
<i>Sample size</i>	27,438	24,842	42,250	42,250	23,864

Notes: This table presents the results of a regression of audit outcomes on management tone and a range of control variables, including year- and firm-fixed effects. All continuous variables are winsorized at the 1% and 99% levels. ***, **, and * denote statistical significance levels at the 1%, 5%, and 10% levels, respectively. The *t*-statistics are reported in parentheses. Standard errors are clustered by firm. [Appendix Table 1A](#) provides detailed descriptions of the variables.

Table 4

Propensity score matching (PSM) analysis of managerial tone and audit outcomes relationships.

Panel A. Comparison of variables between PSM treatment and control groups.					
	Treatment (Higher Tone)		Control (Lower Tone)		t-test
SIZE	6.1682		5.9391		1.27
NONAUDFEE	7.3275		6.9827		1.13
LOSS	0.3204		0.4180		1.59
BUSY	0.8452		0.8306		0.19
ROA	-0.0485		-0.0754		1.11
AUDOPMOD	0.0534		0.0684		0.79
BIG4AUDIT	0.7913		0.7873		0.97
GEOSEGM	1.5426		1.4843		0.43
BUSSEGM	2.4335		2.3492		0.66
FOREIGN	0.0138		0.0131		1.56
SPECIAL	0.7039		0.6963		0.84
LEV	0.2354		0.2599		1.40
AUCHANGE	0.0534		0.0482		1.23
MB	1.7181		1.7036		1.61
LITIGATION	0.3398		0.3627		0.62
INHERENT	0.2401		0.2387		1.00
M&A	0.2379		0.1994		1.31
SHARES+10%	0.0671		0.0662		0.16
EMPLOYEES	2.1321		1.9661		1.61
Panel B. PSM Regression.					
	Audit risk outcomes		Final audit outcomes		
	RESTATE	AUDOPIC	AUDFEE	AUDELAY	RESTATE
TONE	-0.0349 (-2.04)**	-0.0248 (-5.19)**	-0.0652 (-4.67)***	-0.0184 (-2.98)**	-0.0349 (-2.04)**
CONSTANT	Included	Included	Included	Included	Included
All Control variables	Yes	Yes	Yes	Yes	Yes
Year and Industry effects	Yes	Yes	Yes	Yes	Yes
Adjusted R ² / Pseudo R ²	0.1417	0.1489	0.8091	0.3294	0.1417
Sample size	1,840	1,840	1,840	1,840	1,840

Notes: Panel A shows the average treatment effects obtained from PSM. Treatment firms have a higher management tone (above the yearly two-digit SIC industry median), whereas control firms have a lower management tone (equal to or lower than the yearly two-digit SIC industry median). Panel B presents the results based on PSM regression. We use year- and industry-fixed effects in both regressions. All continuous variables are winsorized at the 1% and 99% levels. ***, **, and * denote statistical significance levels at the 1%, 5%, and 10% levels, respectively. In Panel B, the *t*-statistics are reported in parentheses. Standard errors are clustered by firm. [Appendix Table 1A](#) provides detailed descriptions of the variables.

encouraged to adopt a culture of compliance and regulatory awareness, thereby increasing managerial incentives to project confidence and transparency through narrative disclosures. This ultimately fosters a positive and ethical managerial tone, leading to more favorable audit outcomes. To conduct empirical analysis, we exclude the 2003 fiscal year because several SOX requirements were implemented in annual reports due on or after August 14, 2003. We define the years 2000 to 2002 as the pre-SOX period and 2004 to 2006 as the post-SOX period. The baseline models are run separately for both periods, and the results are presented in [Table 6](#). Our findings indicate that the coefficients of *TONE* on *RESTATE*, *AUDOPIC*, *AUDFEE*, *AUDELAY*, and *GOINGCON*, are negative and significant for both periods. However, the coefficients are more negative for the post-SOX period than the pre-SOX period, and the differences are statistically significant. These results suggest that the relationship between managerial tone and audit outcomes is stronger in the post-SOX period, implying a causal relationship between managerial tone and audit outcomes.

4.2.4. Instrumental variable approach

To address potential endogeneity concerns arising from reverse causality and omitted-variable bias, we employ a 2SLS regression. Drawing from prior studies (e.g., [Ertugrul et al., 2017](#); [Hossain et al., 2020](#)), we use the yearly two-digit SIC industry median firm-level management tone as an instrumental variable (IV). This instrument is rationalized based on the premise that industry-wide average qualitative characteristics, such as managerial tone, can influence a specific firm's narrative disclosures. Specifically, when the average industry managerial tone is positive (negative), a firm's tone is likely to follow a similar trend. Furthermore, there is limited theoretical or empirical justification for the claim that the industry-year median tone is directly related to firm-specific audit outcomes. This supports the exclusion criteria of our

instrument. To ensure the instrument's validity and avoid mechanical correlations, we exclude each focal firm from the construction of its corresponding industry-year median tone. This approach prevents the instrument from being mechanically correlated with the firm-specific error term, thereby strengthening the identification strategy in a panel context.

In the first stage, we regress the industry-year average managerial tone along with control variables on the firm-specific managerial tone (*TONE*). The results in Panel A of [Table 7](#) demonstrate a significant positive association between the industry average management tone (*INDTONE*) and *TONE*, affirming the relevance of our chosen IV. Using the first-stage coefficients, we compute the predicted values of managerial tone (*EXPTONE*), which are then used as an independent variable in the second stage. Panel A also presents the second-stage results, which show that *EXPTONE* is negatively associated with all proxies of audit outcomes. The F-statistics for the instrument, along with the Cragg-Donald Wald F-statistic, both exceed commonly accepted thresholds by a substantial margin, indicating that the instrument is highly relevant and not subject to weak instrument concerns. These results provide robust evidence supporting the importance of managerial tone in determining audit outcomes.

While our IV in the analysis of [Table 7](#) meets both exclusion and relevance criteria, one may still argue that our IV may be correlated with the error term. To address this concern, we have employed a heteroscedasticity-based instrumental variable approach developed by [Lewbel \(2012\)](#). Lewbel's method offers a way to construct instruments internally using heteroscedastic errors, and constructed instruments are uncorrelated with the error term. Several recent studies, including [Alam](#)

Table 5

Difference-in-differences (DiD) analysis of the relationships between managerial tone and audit outcomes.

Panel A. Comparison of variables between DiD treatment and control groups					
	Treatment (Experienced a sudden CEO departure)	Control (Did not experience a sudden CEO departure)	t-test		
SIZE	5.2029	5.4049	1.16		
NONAUDFEE	6.1195	6.3181	1.08		
LOSS	0.3160	0.2956	0.87		
BUSY	0.7278	0.7436	0.48		
ROA	-0.0576	-0.0491	0.74		
AUDOPMOD	0.0515	0.0460	0.79		
BIG4AUDIT	0.6957	0.6930	0.56		
GEOSGM	1.2998	1.3116	0.16		
BUSSEGM	2.0579	2.1312	0.23		
FOREIGN	0.0106	0.0117	1.24		
SPECIAL	0.6097	0.6171	0.78		
LEV	0.2273	0.2084	1.16		
AUCHANGE	0.0422	0.0460	1.01		
MB	1.4921	1.5049	1.17		
LITIGATION	0.3182	0.2979	0.65		
INHERENT	0.2095	0.2103	0.52		
M&A	0.1746	0.1983	1.19		
SHARES+10%	0.0581	0.0585	0.53		
EMPLOYEES	1.7223	1.8374	1.21		
Panel B. DiD estimation results.					
	Audit risk outcomes		Final audit outcomes		
	RESTATE	AUDOPIC	AUDFEE	AUDELAY	GOINGCON
TREAT	0.0611 (1.04)	0.0148 (0.61)	0.0880 (1.34)	0.0502 (1.11)	0.0400 (1.25)
POST	0.0367 (0.53)	0.0109 (0.37)	0.0625 (1.56)	0.0619 (1.48)	0.0394 (1.09)
TREAT × POST	0.0360 (1.95)*	0.0491 (2.40)**	0.2512 (2.74)***	0.0530 (2.05)**	0.0566 (1.80)*
CONSTANT	Included	Included	Included	Included	Included
All Control variables	Yes	Yes	Yes	Yes	Yes
Year and Industry effects	Yes	Yes	Yes	Yes	Yes
Adjusted R ² / Pseudo R ²	0.1128	0.1164	0.7673	0.2745	0.1024
Sample size	584	584	584	584	584

Notes: Panel A compares the mean value of the variables between the DiD treatment and control groups. Treatment firms experienced a sudden CEO departure during the sample period, whereas control firms did not. Panel B presents DiD estimation results. We use year- and industry-fixed effects in regressions. All continuous variables are winsorized at the 1% and 99% levels. ***, **, and * denote statistical significance levels at the 1%, 5%, and 10% levels, respectively. The *t*-statistics are reported in parentheses. Standard errors are clustered by firm. [Appendix Table 1A](#) provides detailed descriptions of the variables.

et al. (2024), Hasan et al. (2022), and Mavis et al. (2020), have employed this method. Panel B presents the results of this analysis. In the second stage⁶, we observe significant negative coefficients between the instrumented *TONE* measure and all proxies for audit outcomes. The Kleibergen-Paap LM statistics across specifications confirm that the models are correctly identified, while the Hansen J test results yield *p*-values well above conventional significance thresholds, indicating the instruments are valid. Together, these diagnostic tests support the validity and exogeneity of the internally constructed instruments.

Overall, our IV analysis provides strong empirical support for the credibility of our primary findings, which suggest that a more positive managerial tone is associated with more favorable audit outcomes. It demonstrates that our conclusions remain robust even when accounting for potential endogeneity stemming from reverse causality and omitted variables, and it further highlights the critical role that managerial tone plays in shaping audit outcomes.

5. Cross-sectional analysis

5.1. Moderating effect of information asymmetry

We examine the impact of information asymmetry on the relationship between managerial tone and audit outcomes. To measure information asymmetry, we employ three key proxies: (1) the number of analysts making annual earnings forecasts (*ANALYST*) (see [Brown &](#)

[Hillegeist, 2007](#); [Kim et al., 2016](#)), (2) financial analyst forecast error (*FORCERROR*) ([Hughes et al., 2008](#)), and (3) the presence of industry-specialist auditors (*SPECIALIST*) ([Balsam et al., 2003](#); [Krishnan, 2003](#)). We select these proxies to capture key aspects of a firm's information environment: analyst coverage reflects external transparency, forecast error demonstrates the discrepancy between analyst forecasts and actual earnings, and industry-specialist auditors represent the depth of audit-relevant information. These measures help us assess the degree to which information is unevenly distributed between managers and external stakeholders, particularly auditors and investors.

To better understand how information asymmetry affects the relationship between managerial tone and audit outcomes, we categorize firms into distinct groups based on their level of information transparency. First, we divide firms into high- and low-information environments. Specifically, firms with a higher number of analysts following them (above the median) are categorized as a better information environment group (*HANALYST*), as they are likely to be subject to greater external scrutiny. Conversely, firms with fewer analysts following them (equal to or below the median) are placed in the poorer information environment group (*LANALYST*), where external monitoring is relatively weaker. We perform subgroup analysis by running our baseline regression for each subgroup and report the results in Panel A of [Table 8](#). Our findings indicate that *TONE* coefficients are consistently negative and significant in both groups. However, the Chi-Sq tests suggest that the negative effects are more pronounced in the *LANALYST* group, indicating that managerial tone plays a stronger role in influencing audit-related outcomes when the information asymmetry is greater.

Second, we classify firms as high or low based on their forecast error

⁶ First-stage results are not reported due to space constraints.

Table 6
Natural experiments using the Sarbanes-Oxley Act to examine relationships between managerial tone and audit outcomes.

Audit risk outcomes						
	(1) RESTATE			(2) AUDOPIC		
	Pre-SOX (2000-2002) (1)	Post-SOX (2004-2006) (2)	Diff in coeff. and Chi ² Column (1) vs (2)	Pre-SOX (2000-2002) (1)	Post-SOX (2004-2006) (2)	Diff in coeff. and Chi ² Column (1) vs (2)
<i>TONE</i>	-0.0123 (-1.25)	-0.0351 (-2.78)***	0.0228 [9.87]**	-0.0127 (-3.07)***	-0.0753 (-8.52)***	0.0626 [19.84]***
<i>CONSTANT</i>	Included	Included		Included	Included	
<i>All Control variables</i>	Yes	Yes		Yes	Yes	
<i>Year and Industry effects</i>	Yes	Yes		Yes	Yes	
<i>Adjusted R² / Pseudo R²</i>	0.177	0.2174		0.1470	0.1772	
<i>Sample size</i>	4,484	5,533		4,484	5,533	
<i>Final audit outcome</i>						
	(3) AUDFEE			(4) AUDELAY		
	Pre-SOX (2000-2002) (1)	Post-SOX (2004-2006) (2)	Diff in coeff. and Chi ² Column (1) vs (2)	Pre-SOX (2000-2002) (1)	Post-SOX (2004-2006) (2)	Diff in coeff. and Chi ² Column (1) vs (2)
<i>TONE</i>	-0.1159 (-4.61)***	-0.1687 (-8.12)***	0.0528 [17.40]***	-0.0498 (-3.49)***	-0.0903 (-7.30)***	0.0405 [14.39]***
<i>CONSTANT</i>	Included	Included		Included	Included	
<i>All Control variables</i>	Yes	Yes		Yes	Yes	
<i>Year and Industry effects</i>	Yes	Yes		Yes	Yes	
<i>Adjusted R² / Pseudo R²</i>	0.7450	0.7957		0.1771	0.2113	
<i>Sample size</i>	4,484	5,533		4,484	5,533	
	(5) GOINGCON					
	Pre-SOX (2000-2002) (1)	Post-SOX (2004-2006) (2)	Diff in coeff. and Chi ² Column (1) vs (2)			
<i>TONE</i>	-0.0101 (-2.39)**	-0.0442 (-4.08)***	0.0341 [10.28]***			
<i>CONSTANT</i>	Included	Included				
<i>All Control variables</i>	Yes	Yes				
<i>Year and Industry effects</i>	Yes	Yes				
<i>Adjusted R² / Pseudo R²</i>	0.1253	0.1410				
<i>Sample size</i>	4,484	5,533				

Notes: This table reports the results of tests of the causal relationship between management tone and audit outcomes using the Sarbanes-Oxley Act (SOX) as the exogenous shock to management tone. The regression included all control variables, including year- and industry-fixed effects. All continuous variables are winsorized at the 1% and 99% levels. ***, **, and * denote statistical significance levels at the 1%, 5%, and 10% levels, respectively. The t-statistics are reported in parentheses, the Chi² is in brackets, and the standard errors are clustered by firm. [Appendix Table 1A](#) provides detailed descriptions of the variables.

Table 7

Two-stage least squares regression analysis.

Panel A. Yearly two-digit SIC industry median firm-level management tone as an instrumental variable						
	1stStage	2ndStage		Final audit outcomes		
	TONE	Audit risk outcomes RESTATE	AUDOPIC	AUDFEE	AUDELAY	GOINGCON
INDTONE	0.6798 (9.89)***					
EXPTONE		-0.0254 (-3.24)***	-0.0186 (-3.90)***	-0.1491 (-6.23)***	-0.0538 (-3.48)***	-0.0958 (-6.89)***
CONSTANT	Included	Included	Included	Included	Included	Included
All Control variables	Yes	Yes	Yes	Yes	Yes	Yes
Year and Industry effects	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R ² / Pseudo R ²	0.1748	0.0454	0.0482	0.8274	0.3420	0.0331
Sample size	41,589	41,589	41,589	41,589	41,589	41,589
F Statistics						94.14
Weak identification test: (Cragg-Donald Wald F statistic)						898.78
Panel B. A heteroscedasticity-based instrumental variable approach, following the methodology of Lewbel (2012)						
TONE		-0.0218 (-3.13)***	-0.0323 (-5.67)***	-0.1098 (-4.70)***	-0.0308 (-4.53)***	-0.0091 (-2.57)**
CONSTANT		Included	Included	Included	Included	Included
All Control variables		Yes	Yes	Yes	Yes	Yes
Year and Industry effect		Yes	Yes	Yes	Yes	Yes
Adjusted R ² / Pseudo R ²		0.1431	0.1452	0.8254	0.3411	0.1310
Sample size		42,250	42,250	42,250	42,250	42,250
Kleibergen-Paap rk LM statistic		234.83	342.94	311.62	278.61	147.52
Hansen J statistic		4.78	6.43	5.93	5.49	3.11
p-value		0.38	0.20	0.27	0.31	0.44

Notes: This table presents the results addressing endogeneity using the two-stage least squares (2SLS) method. Panel A reports the first-stage regression results considering the yearly two-digit SIC industry median firm-level managerial tone (*INDTONE*) as an instrument. Panel B presents the second-stage results with *EXPTONE*, the predicted values of managerial tone based on the first-stage coefficients. Panel B employs a heteroscedasticity-based instrumental variable approach, following the methodology of Lewbel (2012). All variables used in Table 2 are used as controls. All continuous variables are winsorized at the 1% and 99% levels. ***, **, and * denote statistical significance levels at the 1%, 5%, and 10% levels, respectively. The t-statistics are reported in parentheses. Standard errors are clustered by firm. Appendix Table 1A provides detailed descriptions of the variables.

(*FORCERROR*). Firms with *FORCERROR* values above the annual median are categorized as high forecast error (*HFORCERROR*), suggesting higher levels of information asymmetry. Firms with *FORCERROR* values at or below the median are classified as low forecast error (*LFORCERROR*), indicating relatively lower information asymmetry. We conduct subgroup analyses by running our baseline regression separately for each group, with the results presented in Panel B of Table 8. The results show that the coefficients on *TONE* in the *HFORCERROR* group are significantly higher than those in the *LFORCERROR* group. This suggests that managerial tone has a stronger association with favorable audit outcomes when information asymmetry is high.

Third, we distinguish between firms audited by industry-specialist versus non-specialist auditors. Following Srinidhi et al. (2014), we define industry-specialist auditors (*SPECIALIST*) as those with the highest or second-highest market share in a given year within their SIC two-digit industry classification. All others are considered non-specialist auditors (*NONSPECIALIST*), as they may lack the same level of industry expertise. In panel C of Table 8, our results confirm that the coefficients of *TONE* are significantly more negative for firms in the *NONSPECIALIST* group than those in the *SPECIALIST* group. This suggests that in the absence of specialized industry knowledge, auditors may be more reliant on managerial tone as an indicator of in-depth information, whereas specialist auditors may depend more on their own expertise and industry insights⁷.

Across the three panels, our results consistently indicate that the

negative relationship between managerial tone and audit outcomes is more pronounced in firms with weaker information environments. These findings support the substitute role of managerial tone, in which it serves as a compensatory mechanism in settings with greater information asymmetry and uncertainty.

5.2. Moderating effect of corporate governance

In sub-Section 2.2, we argue that corporate governance plays a complementary or substitutive role in the relationship between managerial tone and audit outcomes. To test this, we examine how governance mechanisms influence this relationship with two external proxies. Following Nguyen et al. (2020) and Bushee (1998), we use dedicated institutional ownership (*INSTOWN*) to capture long-term monitoring-oriented external investors. Following Cain et al. (2017), we use the takeover index (*TOINDEX*) to reflect firms' experience of market-based disciplinary pressure. These measures indicate the level of monitoring that affects managerial discretion and shapes how managerial tone affects audit outcomes. We divide the sample at the median values of *INSTOWN* and *TOINDEX* to test moderation effects. Firms classified as having high institutional ownership (*HINSTOWN*) or a low takeover index (*LTOINDEX*) are generally associated with stronger governance and monitoring, while firms with low institutional ownership (*LINSTOWN*) or a high takeover index (*HTOINDEX*) tend to exhibit weaker governance. Table 9 presents our findings. The negative association between managerial tone and audit outcomes appears stronger in firms with weak governance. Specifically, the negative relationships between managerial tone and audit outcomes are more pronounced in firms with low dedicated ownership (*LINSTOWN*) and high takeover index (*HTOINDEX*). These results support our prediction that managerial tone substitutes for weak governance and exert a more substantial influence when monitoring is limited.

⁷ One may argue that new auditors are less familiar with the client and its personnel than experienced ones, making them more likely to rely on management tone in corporate disclosures. To examine this issue, we grouped firms into two groups: those that appointed a new auditor and those that retained their existing auditor. As shown in Appendix Table 5A, the favorable impact of managerial tone on audit outcomes is more pronounced for firms with a new auditor.

Table 8

Moderating effects of information asymmetry on the management tone-audit outcomes relationship.

Panel A. High Analyst Coverage (HANALYST) Vs Low Analyst Coverage (LANALYST).									
	(1) RESTATE			(2) AUDOPIC			(3) AUDFEE		
			Diff in coeff. and Chi ² Column (1) vs (2)			Diff in coeff. and Chi ² Column (1) vs (2)			Diff in coeff. and Chi ² Column (1) vs (2)
	HANALYST (1)	LANALYST (2)		HANALYST (1)	LANALYST (2)		HANALYST (1)	LANALYST (2)	
TONE	-0.0161 (-2.01)**	-0.0351 (-4.17)***	0.0190 [7.48]**	-0.0210 (-2.45)**	-0.0752 (-8.39)***	0.0542 [29.00]***	-0.0817 (-4.71)***	-0.1942 (-10.82)***	0.1125 [39.09]***
CONSTANT	Included	Included		Included	Included		Included	Included	
All Control variables	Yes	Yes		Yes	Yes		Yes	Yes	
Year and Industry effects	Yes	Yes		Yes	Yes		Yes	Yes	
Adjusted R ² / Pseudo R ²	0.1489	0.1534		0.1462	0.1527		0.7657	0.7775	
Sample size	21,134	21,116		21,134	21,116		21,134	21,116	
	(4) AUDELAY			(5) GOINGCON					
			Diff in coeff. and Chi ² Column (1) vs (2)			Diff in coeff. and Chi ² Column (1) vs (2)			
	HANALYST (1)	LANALYST (2)		HANALYST (1)	LANALYST (2)				
TONE	-0.0151 (-2.50)**	-0.0436 (-6.10)***	0.0285 [9.82]**	-0.0135 (-1.69)*	-0.0421 (-3.44)***	0.0286 [11.23]***			
CONSTANT	Included	Included		Included	Included				
All Control variables	Yes	Yes		Yes	Yes				
Year and Industry effects	Yes	Yes		Yes	Yes				
Adjusted R ² / Pseudo R ²	0.3066	0.3156		0.1885	0.2254				
Sample size	21,134	21,116		21,134	21,116				
Panel B. High Financial Analyst Forecast Error (HFORCERROR) Vs Low Financial Analyst Forecast Error (LFORCERROR).									
	(1) RESTATE			(2) AUDOPIC			(3) AUDFEE		
			Diff in coeff. and Chi ² Column (1) vs (2)			Diff in coeff. and Chi ² Column (1) vs (2)			Diff in coeff. and Chi ² Column (1) vs (2)
	HFORCERROR (1)	LFORCERROR (2)		HFORCERROR (1)	LFORCERROR (2)		HFORCERROR (1)	LFORCERROR (2)	
TONE	-0.0277 (-2.40)**	-0.0160 (-1.52)	0.0117 [7.34]**	-0.0787 (-7.79)***	-0.0131 (-3.30)***	0.0656 [19.43]***	-0.1590 (-5.90)***	-0.1124 (-3.68)***	0.0466 [13.93]***
CONSTANT	Included	Included		Included	Included		Included	Included	
All Control variables	Yes	Yes		Yes	Yes		Yes	Yes	
Year and Industry effects	Yes	Yes		Yes	Yes		Yes	Yes	
Adjusted R ² / Pseudo R ²	0.1743	0.0673		0.1847	0.1512		0.7738	0.7443	
Sample size	12,893	12,894		12,893	12,894		12,893	12,894	
	(4) AUDELAY			(5) GOINGCON					
			Diff in coeff. and Chi ² Column (1) vs (2)			Diff in coeff. and Chi ² Column (1) vs (2)			
	HFORCERROR (1)	LFORCERROR (2)		HFORCERROR (1)	LFORCERROR (2)				
TONE	-0.0713 (-5.75)***	-0.0286 (-2.16)**	0.0427 [11.78]***	-0.0241 (-2.47)**	-0.0046 (-1.00)	0.0195 [10.17]***			
CONSTANT	Included	Included		Included	Included				
All Control variables	Yes	Yes		Yes	Yes				
Year and Industry effects	Yes	Yes		Yes	Yes				
Adjusted R ² / Pseudo R ²	0.3332	0.3140		0.1752	0.1411				
Sample size	12,893	12,894		12,893	12,894				
Panel C. Specialist Vs Non-Specialist.									
	(1) RESTATE			(2) AUDOPIC			(3) AUDFEE		
			Diff in coeff. and Chi ² Column (1) vs (2)			Diff in coeff. and Chi ² Column (1) vs (2)			Diff in coeff. and Chi ² Column (1) vs (2)
	SPECIALIST (1)	NONSPECIALIST (2)		SPECIALIST (1)	NONSPECIALIST (2)		SPECIALIST (1)	NONSPECIALIST (2)	
TONE	-0.0266 (-1.86)*	-0.0442 (-3.46)***	0.0176 [7.78]**	-0.0237 (-4.83)***	-0.0568 (-8.78)***	0.0331 [11.24]***	-0.0808 (-2.64)***	-0.1382 (-6.12)***	0.0574 [17.98]***
CONSTANT	Included	Included		Included	Included		Included	Included	
All Control variables	Yes	Yes		Yes	Yes		Yes	Yes	
Year and Industry effects	Yes	Yes		Yes	Yes		Yes	Yes	
Adjusted R ² / Pseudo R ²	0.1594	0.1702		0.1686	0.1821		0.7952	0.8080	
Sample size	5,259	12,537		5,259	12,537		5,259	12,537	
	(4) AUDELAY			(5) GOINGCON					
			Diff in coeff. and Chi ² Column (1) vs (2)			Diff in coeff. and Chi ² Column (1) vs (2)			
	SPECIALIST (1)	NONSPECIALIST (2)		SPECIALIST (1)	NONSPECIALIST (2)				
TONE	-0.0283 (-1.37)	-0.0734 (-3.96)***	0.0451 [13.90]***	-0.0144 (-1.13)	-0.0303 (-2.42)***	0.0159 [7.23]**			
CONSTANT	Included	Included		Included	Included				
All Control variables	Yes	Yes		Yes	Yes				
Year and Industry effects	Yes	Yes		Yes	Yes				
Adjusted R ² / Pseudo R ²	0.3349	0.3525		0.1429	0.1708				
Sample size	5,259	12,537		5,259	12,537				

Notes: This table examines the moderating influence of (1) *ANALYST*, analyst following of the client firm, (2) *FORCERROR*, forecast error, and (3) *SPECIALIST*, specialist auditor, associated with the client firm on the relationship between management tone and audit outcomes in Panels A, B, and C, respectively. All continuous variables are winsorized at the 1% and 99% levels. ***, **, and * denote statistical significance levels at the 1%, 5%, and 10% levels, respectively. The t-statistics are reported in parentheses, the Chi² is in brackets, and the standard errors are clustered by firm. [Appendix Table 1A](#) provides detailed descriptions of the variables.

Table 9

Moderating effects of governance monitoring on the management tone-audit outcomes relationship.

Panel A. High dedicated ownership (HINSTOWN) VS Low dedicated ownership (LINSTOWN).									
	(1) RESTATE			(2) AUDOPIC			(3) AUDFEE		
	HINSTOWN	LINSTOWN	Diff in coeff. and Chi ² Column (1) vs (2)	HINSTOWN	LINSTOWN	Diff in coeff. and Chi ² Column (1) vs (2)	HINSTOWN	LINSTOWN	Diff in coeff. and Chi ² Column (1) vs (2)
<i>TONE</i>	(1) -0.0128 (-1.47)	(2) -0.0355 (-2.72)***	0.0277 [9.28]**	(1) -0.0243 (-3.68)***	(2) -0.0613 (-9.25)***	0.0370 [13.48]***	(1) -0.0435 (-2.48)**	(2) -0.1572 (-7.56)***	0.1137 [44.90]***
<i>CONSTANT</i>	0.115 (1.83)*	0.0411 (0.66)		0.0066 (0.22)	0.0215 (0.57)		8.8278 (80.71)***	8.5249 (29.93)***	
<i>Control variables</i>	Yes	Yes		Yes	Yes		Yes	Yes	
<i>Year and Industry effects</i>	Yes	Yes		Yes	Yes		Yes	Yes	
<i>R² /Pseudo R²</i>	0.1407	0.1777		0.155	0.168		0.8587	0.7667	
<i>Obs (Firm Years)</i>	14,226	13,538		14,226	13,538		14,226	13,538	
	(4) AUDELAY			(5) GOINGCON					
	HINSTOWN	LINSTOWN	Diff in coeff. and Chi ² Column (1) vs (2)	HINSTOWN	LINSTOWN	Diff in coeff. and Chi ² Column (1) vs (2)			
<i>INTEG</i>	(1) -0.0084 (-1.82)*	(2) -0.0413 (-4.65)***	0.0329 [11.21]**	(1) -0.0079 (-1.08)	(2) -0.0222 (-2.30)**	0.0143 [4.37]*			
<i>CONSTANT</i>	4.1392 (90.02)***	4.2719 (70.43)***		0.0405 (1.27)	0.0703 (2.21)**				
<i>Control variables</i>	Yes	Yes		Yes	Yes				
<i>Year and Industry effects</i>	Yes	Yes		Yes	Yes				
<i>R² /Pseudo R²</i>	0.3732	0.3315		0.1306	0.1412				
<i>Sample size</i>	14,226	13,538		14,226	13,538				

Panel B. High takeover index (HTOINDEX) Vs Low takeover index (LTOINDEX).									
	(1) RESTATE			(2) AUDOPIC			(3) AUDFEE		
	HTOINDEX	LTOINDEX	Diff in coeff. and Chi ² Column (1) vs (2)	HTOINDEX	LTOINDEX	Diff in coeff. and Chi ² Column (1) vs (2)	HTOINDEX	LTOINDEX	Diff in coeff. and Chi ² Column (1) vs (2)
<i>TONE</i>	(1) -0.0392 (-3.09)***	(2) -0.0115 (-1.31)	0.0277 [8.27]**	(1) -0.0594 (-8.82)***	(2) -0.0158 (-1.95)*	0.0436 [14.89]***	(1) -0.1558 (-7.40)***	(2) -0.0870 (-3.57)***	0.0688 [30.78]***
<i>CONSTANT</i>	0.0489 (0.77)	0.1179 (1.79)*		0.0256 (0.68)	0.0093 (0.29)		8.5724 (49.93)***	8.825 (76.61)***	
<i>Control variables</i>	Yes	Yes		Yes	Yes		Yes	Yes	
<i>Year and Industry effects</i>	Yes	Yes		Yes	Yes		Yes	Yes	
<i>R² /Pseudo R²</i>	0.1703	0.1434		0.1681	0.1584		0.7622	0.8599	
<i>Obs (Firm Years)</i>	12,940	12,971		12,940	12,971		12,940	12,971	
	(4) AUDELAY			(5) GOINGCON					
	HTOINDEX	LTOINDEX	Diff in coeff. and Chi ² Column (1) vs (2)	HTOINDEX	LTOINDEX	Diff in coeff. and Chi ² Column (1) vs (2)			
<i>TONE</i>	(1) -0.0428 (-4.78)***	(2) -0.0122 (-2.00)**	0.0306 [10.41]**	(1) -0.0336 (-2.48)**	(2) -0.0088 (-1.17)	0.0248 [7.09]**			
<i>CONSTANT</i>	4.2727 (69.27)***	4.1255 (86.06)***		0.0084 (0.17)	0.0438 (1.41)				
<i>Control variables</i>	Yes	Yes		Yes	Yes				
<i>Year and Industry effects</i>	Yes	Yes		Yes	Yes				
<i>R² /Pseudo R²</i>	0.3705	0.3358		0.1381	0.1217				
<i>Sample size</i>	12,940	12,971		12,940	12,971				

Notes: This table examines the moderating influence of (1) dedicated institutional ownership (*INSTOWN*) and (2) takeover index (*TOINDEX*) on the relationship between management tone and audit outcomes. Panel A presents the results of regressions for firms with high dedicated ownership (*HINSTOWN*) versus those with low dedicated ownership (*LINSTOWN*). Panel B reports the corresponding results for firms with a high takeover index (*HTOINDEX*) versus those with a low takeover index (*LTOINDEX*). All continuous variables are winsorized at the 1% and 99% levels. ***, **, and * denote statistical significance levels at the 1%, 5%, and 10% levels, respectively. The t-statistics are reported in parentheses, the Chi² is in brackets, and the standard errors are clustered by firm. [Appendix Table 1A](#) provides detailed descriptions of the variables.

6. Managerial tone and audit outcomes: Underlying mechanisms

This section examines the underlying channels driving the negative relationship between managerial tone and audit outcomes. Specifically, we investigate whether tone negatively affects audit outcomes via its

influence on earnings management and whistleblowing, as auditors consider these two dimensions important for client risk.

6.1. Managerial tone and earnings management

First, we investigate whether earnings management, as measured by

Table 10

Underlying Channels: Managerial tone, Discretionary accruals, and whistleblowing.

Panel A. Impact of management tone on discretionary accruals using Kothari et al. (2005).		DA(KLW)
TONE		-0.0343 (-2.89)***
CONSTANT	Included	
All Control variables	Yes	
Year and Industry effects	Yes	
Adjusted R ²		0.2842
Sample size		32,384
Panel B. Impact of management tone on discretionary accruals using Dechow and Dichev (2002) adjusted by McNichols (2002).		DA(DD)
TONE		-0.0198 (-2.46)**
CONSTANT	Included	
All Control variables	Yes	
Year and Industry effects	Yes	
Adjusted R ²		0.2487
Sample size		32,312
Panel C. The relationship between managerial tone and whistleblowing.		Whistleblowing
TONE		-0.1858 (-2.56)**
CONSTANT	Included	
All Control variables	Yes	
Year and Industry effects	Yes	
Pseudo R ²		0.4298
Sample size		417

Notes: Panel A reports the regression results examining the impact of management tone on discretionary accruals, estimated using the performance-adjusted model of Kothari et al. (2005). Panel B presents results based on a modified version of the Dechow and Dichev (2002) model, following the adjustments proposed by McNichols (2002). Panel C shows the regression results analyzing the relationship between managerial tone and whistleblowing. All regressions include year and industry fixed effects. Continuous variables are winsorized at the 1% and 99% levels to mitigate the influence of outliers. Standard errors are clustered at the firm level. T-statistics are reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. Detailed variable definitions are provided in Appendix Table 1A.

discretionary accruals, can serve as a channel in the relationship between managerial tone and audit outcomes. If a positive managerial tone is credible and consistent with actual financial performance, it is likely to be associated with lower discretionary accruals and high-quality earnings. This signals stronger internal controls, which increases auditors' confidence in governance and risk management practices (Loughran & McDonald, 2011). Consequently, this reduces perceived audit risk and the need for extensive substantive testing, ultimately leading to favorable audit outcomes. Conversely, if the positive managerial tone is not accompanied by improved earnings quality, auditors may question its credibility, which can lead to increased risk assessments and unfavorable audit outcomes.

To test these contrasting conjunctures, we employ the Kothari et al. (2005) model to estimate discretionary accruals in variable *DA(KLW)* and present the findings in panel A of Table 10. We find that a positive tone is associated with a significant reduction in discretionary accruals. This implies that a positive tone signals high earnings quality, potentially lowering auditor concern about misstatements and aggressive accounting practices. We also employed the modified Dechow and Dichev (2002) model in variable *DA(DD)*. Panel B shows consistent results, reinforcing the negative association between managerial tone and discretionary accruals. These findings across both accrual estimations indicate that positive managerial tone is associated with higher quality earnings. Consequently, this enhances the reliability of financial reporting, thereby reducing perceived audit risk and leading to favorable audit outcomes.

6.2. Managerial tone and whistleblowing

We further consider whistleblowing as a channel linking the managerial tone and audit outcomes. Whistleblowing serves as a crucial indicator of underlying issues in a firm's financial reporting, governance, and ethical climate (Smaili & Arroyo, 2022). When employees or other insiders report irregularities and misconduct, it generally indicates an elevated reporting risk and potential regulatory scrutiny, which in turn increases auditors' risk assessments and procedures (Kuang et al., 2021). Thus, whistleblowing can be considered as a proxy for client risk, specifically reporting and regulatory risk, which auditors consider when planning audit engagements. We argue that if a positive managerial tone serves as a credible signal of transparency and integrity, it may reduce the likelihood of whistleblowing incidents, which in turn lowers auditors' perception of engagement risk and leads to more favorable audit outcomes. Conversely, a tone that masks underlying problems could be associated with increased whistleblowing, triggering more intensive audit procedures.

Following Karpoff et al. (2017), we test these contentions by constructing a dummy variable (*Whistleblowing*) coded 1 if a whistleblower is associated with an SEC enforcement action, and 0 otherwise. This measure is appropriate for our setting because whistleblower cases tied to SEC enforcement actions typically involve confirmed instances of financial misrepresentation. Supporting this approach, Jha and Chen (2015) argue that this variable effectively captures the dimensions of financial reporting and business risk relevant to auditors. As shown in Panel C of Table 10, our analysis reveals a statistically significant negative association between managerial tone and whistleblowing at the 5% level. This result suggests that a positive managerial tone serves as a credible signal of transparency and integrity, thereby reducing regulatory and reporting risks. This reduced risk perception helps explain the more favorable audit outcomes observed for firms with a more positive disclosure tone.

Overall, our channel analysis suggests that a positive managerial tone helps achieve favorable audit outcomes through higher earnings quality and a lower probability of whistleblowing. Our results indicate that managerial tone is more than a superficial linguistic feature, as it reflects substantive aspects of firm behavior that shape both financial reporting and regulatory risk, both of which are key considerations in the auditor's risk assessment process. By influencing these risk dimensions, managerial tone plays a vital role in determining audit outcomes.

7. Conclusion

Our study investigates the association between managerial tone and audit outcomes. Using a large sample of US non-financial firms during 2000-2020, we find that positive managerial tone in 10-K filings has a significant beneficial influence on a client firm's audit outcomes. This is evidenced by fewer financial restatements and auditor opinions on the strength of internal controls as well as lower audit fees, less audit effort, and fewer going concern opinions. We also find that the favorable effect of positive managerial tone is more substantial in non-distressed firms, underscoring auditors' perception of it as a reliable signal. Our main findings are robust across various sensitivity tests, such as firm-fixed effects, PSM, DiD analysis, and instrumental variable approaches. Our cross-sectional analyses reveal that the relationship between managerial tone and audit outcomes is more pronounced for firms with poor information asymmetry (characterized by lower analyst following, higher forecast error, and the presence of non-specialist auditors) and weaker governance quality (manifested by lower dedicated institutional ownership and higher takeover protection). Finally, our channel analysis suggests that managerial tone is negatively associated with both earnings management and the likelihood of whistleblowing, thereby reducing audit risk and favorably influencing audit outcomes. Overall, our empirical results demonstrate the significant influence of client-firm

managerial tone on audit outcomes.

Our study results have implications for corporations, auditors, and policymakers. First, our evidence suggests that firms' corporate boards and executive management teams need to recognize the importance of a reliable and positive tone in corporate disclosures to enhance the quality of the firms' information environment, thereby facilitating favorable audit outcomes. Second, our results corroborate the guidelines of policymakers, such as the IAASB, the PCAOB, and the COSO, regarding the significance of the 'tone at the top' in developing an integrated framework for external and internal audits. Finally, our results imply that managerial tone can be informative for auditors when designing audit plans and assessing audit engagement risks, particularly in environments with poor-quality information and weak governance monitoring in client firms.

While we argue that our US-based analysis has significant implications for both developed and developing countries, we acknowledge that further cross-country studies in this context may add new insights to this stream of research. Additionally, our tone measure is based on textual

sentiment analysis, which, while widely used in recent literature, may not fully capture differences such as strategic ambiguity and cultural variation in tone interpretation. Future studies may employ alternative tone measurement techniques, such as those utilizing machine learning and contextual sentiment models, to achieve greater precision.

Declaration of competing interest

The authors do not have any financial or non-financial interests to disclose that are relevant to the content of this article. This study is based on publicly available data and does not involve human participants and/or animals, their data or biological material.

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Appendix

Table 1A
Variable Definitions.

TONE	100 multiplied by the difference between the number of positive words and the number of negative words, divided by the total number of words in the annual report. (Data source: Notre Dame Software Repository for Accounting and Finance (SRAF), available at: https://sraf.nd.edu/)
RESTATE	An indicator variable coded 1 if a firm restates its financial statements in a given year, and 0 otherwise.
AUDOPIC	An indicator variable coded 1 if the auditor issues a SOX 404(b) audit opinion on internal controls, and 0 otherwise.
AUDFEE	Logarithm of corrected audit fee in \$ at the balance sheet date in year t. Following Barua et al. (2020), we corrected audit fees during the auditor change year.
AUDELAY	Logarithm of the number of days between the signature date of the audit opinion and the date of the fiscal year end.
GOINGCON	An indicator variable coded 1 if the auditor issues a going concern opinion, and 0 otherwise.
SIZE	The logarithm of total assets.
NONAUDFEE	Logarithm of non-audit fee paid to the firm's auditor for the year
LOSS	An indicator variable coded 1 if a firm's average ROA during the periods t-1, t, and t+1 is negative, and 0 otherwise.
BUSY	An indicator variable coded 1 for a firm with a reporting date in the period Dec-Mar, and 0 otherwise.
ROA	Return on Assets defined as the ratio of net income before extraordinary items to total assets.
AUDOPMOD	An indicator variable coded 1 for a modified audit opinion, and 0 for others (Item 149).
BIG4AUDIT	An indicator variable coded 1 for a Big 4 audit firm, and 0 for other firms.
GEOSEGM	The square root of the number of geographic segments
BUSSEGM	The square root of the number of business segments
FOREIGN	An indicator variable coded 1 if a firm reports foreign sales, and 0 otherwise.
SPECIAL	An indicator variable coded 1e if the firm reports special items, and 0 otherwise.
LEV	The ratio of total debt to total assets in year t. Total debt equals long-term debt + current liabilities
AUCHANGE	An indicator variable coded 1 if there is a change in the auditor, and 0 otherwise.
MB	The market value of equity is divided by the stockholders' equity.
INHERENT	This is the sum of receivables and inventory, scaled by total assets.
LITIGATION	Following Hogan and Jeter, (1999), we label the following two-digit SIC codes as belonging to the litigation industry: 28, 35, 36, 38, 60, 67, and 73.
M&A	An indicator variable coded 1 if the firm is engaged in a merger or acquisition, and 0 otherwise.
SHARES+10%	An indicator variable coded 1 if the number of shares outstanding increased by 10% or more, and 0 otherwise.
DISTRESS	A firm is financially distressed if it reports both a loss and negative operating cash flows in the current year.
NONDISTRESS	A firm is not financially distressed if it reports only a loss or negative operating cash flows in the current year, or if it reports neither.
POST	An indicator variable coded 1 for years following a sudden CEO departure, and 0 otherwise.
TREAT	Firms that had a sudden CEO departure during the sample period.
ANALYST	Monthly average number of analysts following a firm over 12 months.
HANALYST	High analyst coverage firms have values above the median ANALYST.
LANALYST	Low analyst coverage firms have values equal to or below the median value of ANALYST.
FORCERROR	Forecast Error is the absolute value of the difference between the median analyst quarterly earnings-per-share forecast and the actual earnings per share, divided by the fiscal year-end share price.
HFORCERROR	High financial analyst forecast error firms have values above the annual median of FORCERROR.
LFORCERROR	Low financial analyst forecast error firms have values at or below the median of FORCERROR.
SPECIALIST	When an audit office holds the largest or second-largest market share in a given year within a two-digit industry, we classify it as a specialist auditor in that year.
NONSPECIALIST	When an audit office does not hold the largest or second-largest market share in a given year within a two-digit industry, we classify it as a non-specialist auditor in that year.

(continued on next page)

Table 1A (continued)

TONE	100 multiplied by the difference between the number of positive words and the number of negative words, divided by the total number of words in the annual report. (Data source: Notre Dame Software Repository for Accounting and Finance (SRAF), available at: https://sraf.nd.edu/)
EMPLOYEES	The square root of the number of employees.
INSTOWN	Percentage of dedicated institutional ownership. We calculate the yearly percentage of shares outstanding held by dedicated institutional investors, averaging the four quarters of the firm's financial year t, using data from the Thomson Reuters Institutional Holdings (13F) database. Our classification of long-term dedicated institutions is based on Bushee (1998) .
HINSTOWN	High institutional ownership firms have values above the median of INSTOWN.
LINSTOWN	Low institutional ownership firms have values equal to or below the median of INSTOWN.
TOINDEX	The takeover index in year t, obtained from Cain et al. (2017) . We thank Cain et al. (2017) for making this data available to us.
HTOINDEX	High takeover index firms have values above the median value of TOINDEX.
LTOINDEX	Low takeover index firms have values equal to or below the median value of INSTOWN.
DA(KLW)	Discretionary accruals are estimated using the Kothari et al. (2005) model.
DA(DD)	Discretionary accruals are estimated using the modified Dechow and Dichev (2002) model.
Whistleblowing	Following Karpoff et al. (2017) , a dummy variable was coded 1 if a whistleblower was associated with an SEC enforcement action and 0 otherwise.
TONE_TWDCNT	- 1 x the natural logarithm of the total number of words in the 10-K filing.
TONE_TCOMWDCNT	- 1 x the natural logarithm of the total number of complex words in the 10-K filing.
TONE_TSENTCNT	- 1 x the natural logarithm of the total number of sentences in the 10-K filing.
TONE_TFINUNCCNT	- 1 x the natural logarithm of the total number of uncertain financial terms in the 10-K filing.
TONE_TFINNEG CNT	- 1 x the natural logarithm of the total number of negative financial terms in the 10-K filing.
TONE_TSYLLCNT	- 1 x the natural logarithm of the total number of syllables in the 10-K filing.
TONE_THDNEG CNT	- 1 x the natural logarithm of the total number of negative word counts following the Harvard dictionary in the 10-K filing.

Table 2A

Management tone and audit outcomes: Lagged managerial tone.

	Audit risk outcomes		Final audit outcomes		
	RESTATE	AUDOPIC	AUDFEE	AUDELAY	GOINGCON
TONE	-0.0211 (-3.46)***	-0.0382 (-9.87)***	-0.1238 (-10.23)***	-0.0278 (-5.68)***	-0.0111 (-2.78)***
CONSTANT	Included	Included	Included	Included	Included
All control variables	Yes	Yes	Yes	Yes	Yes
Year and Industry effects	Yes	Yes	Yes	Yes	Yes
Adjusted R ² / Pseudo R ²	0.1461	0.1545	0.8294	0.3448	0.1328
Sample size	41,989	41,989	41,989	41,989	41,989

Notes: This table presents the results of a regression of audit outcomes on lagged managerial tone_{t-1} and a range of control variables, including year and industry fixed effects. All continuous variables are winsorized at the 1% and 99% levels. ***, **, and * denote statistical significance levels at the 1%, 5%, and 10% levels, respectively. The t-statistics are reported in parentheses. Standard errors are clustered by firm. [Appendix Table 1A](#) provides detailed descriptions of the variables.

Table 3A

Additional controls.

	RESTATE	AUDOPIC	AUDFEE	AUDELAY	GOINGCON
TONE	-0.0238 (-3.76)***	-0.0348 (-9.14)***	-0.1124 (-8.42)***	-0.0298 (-5.46)***	-0.0123 (-2.94)***
CEONEW	0.0166 (1.25)	0.0433 (5.16)***	0.1130 (7.16)***	0.0785 (4.66)***	0.0188 (1.57)
TENURE	-0.034 (-2.50)**	-0.038 (-4.50)***	-0.083 (-5.00)***	-0.0789 (-4.39)***	-0.0023 (-0.20)
AGE	-0.0362 (-2.65)***	-0.0271 (-3.07)***	-0.0712 (-4.21)***	-0.0741 (4.62)***	-0.0067 (-0.55)
GENDER	-0.0388 (-2.80)***	-0.0198 (-2.18)**	-0.0307 (-1.73)*	-0.0867 (-3.23)***	0.0422 (3.29)***
Baseline control variables	Yes	Yes	Yes	Yes	Yes
CONSTANT	Included	Included	Included	Included	Included
Industry and year effects	Yes	Yes	Yes	Yes	Yes
Adjusted R ² / Pseudo R ²	0.1354	0.151	0.7876	0.2986	0.1287
Sample size	17,647	17,647	17,647	17,647	17,647

Notes: This table presents the results of a regression of audit outcomes based on management tone and a range of corporate governance-related control variables, along with control variables used in the baseline models. *CEONEW* is a dummy variable coded 1 if the CEO is new, and 0 otherwise. *TENURE* is the average number of years that directors have served in the firm. *AGE* is the logarithm of the average age of the directors in the firm. *GENDER* is the ratio of female directors to the total number of directors on the board. All continuous variables are winsorized at the 1% and 99% levels. ***, **, and * denote statistical significance levels at the 1%, 5%, and 10% levels, respectively. The t-statistics are reported in parentheses. Standard errors are clustered by firm. [Appendix Table 1A](#) provides detailed descriptions of the other variables.

Table 4A
Alternative measures of Management tone.

	RESTATE	AUDOPIC	AUDFEE	AUDELAY	GOINGCON
Panel A. Total number of words in 10-K filing.					
<i>TONE_TWDCNT</i>	-0.0161 (-2.97)***	-0.0588 (-13.85)***	-0.3093 (-21.00)***	-0.0805 (-15.33)***	-0.0267 (-6.31)***
<i>CONSTANT</i>	Included	Included	Included	Included	Included
<i>All Control variables</i>	Yes	Yes	Yes	Yes	Yes
<i>Pseudo R²/Adjusted R²</i>	0.1456	0.1572	0.8357	0.3527	0.1346
<i>Sample size</i>	42,250	42,250	42,250	42,250	42,250
Panel B. Total number of complex words in 10-K filing.					
<i>TONE_TCOMWDCNT</i>	-0.0156 (-2.88)***	-0.0611 (-13.98)***	-0.3333 (-21.94)***	-0.0831 (-15.42)***	-0.0284 (-6.52)***
<i>CONSTANT</i>	Included	Included	Included	Included	Included
<i>All Control variables</i>	Yes	Yes	Yes	Yes	Yes
<i>Pseudo R²/Adjusted R²</i>	0.1456	0.1575	0.8367	0.3530	0.1347
<i>Sample size</i>	42,250	42,250	42,250	42,250	42,250
Panel C. Total number of sentences in 10-K filing.					
<i>TONE_TSENTCNT</i>	-0.0155 (-2.77)***	-0.0681 (-13.91)***	-0.3535 (-20.33)***	-0.0918 (-15.17)***	-0.0306 (-6.44)***
<i>CONSTANT</i>	Included	Included	Included	Included	Included
<i>All Control variables</i>	Yes	Yes	Yes	Yes	Yes
<i>Pseudo R²/Adjusted R²</i>	0.1456	0.1577	0.8360	0.3530	0.1346
<i>Sample size</i>	42,250	42,250	42,250	42,250	42,250
Panel D. Total number of uncertain financial terms in 10-K filing.					
<i>TONE_TFINUNCCNT</i>	-0.0205 (-3.19)***	-0.0405 (-10.23)***	-0.3025 (-21.28)***	-0.0543 (-10.32)***	-0.0236 (-6.03)***
<i>CONSTANT</i>	Included	Included	Included	Included	Included
<i>All Control variables</i>	Yes	Yes	Yes	Yes	Yes
<i>Pseudo R²/Adjusted R²</i>	0.1456	0.1530	0.8363	0.3477	0.1344
<i>Sample size</i>	42,250	42,250	42,250	42,250	42,250
Panel E. Total number of negative financial terms in 10-K filing.					
<i>TONE_TFINNEGCNT</i>	-0.0177 (-3.00)***	-0.0548 (-13.55)***	-0.3231 (-22.05)***	-0.0661 (-12.62)***	-0.0248 (-6.11)***
<i>CONSTANT</i>	Included	Included	Included	Included	Included
<i>All Control variables</i>	Yes	Yes	Yes	Yes	Yes
<i>Pseudo R²/Adjusted R²</i>	0.1457	0.1564	0.837	0.3498	0.1345
<i>Sample size</i>	42,250	42,250	42,250	42,250	42,250
Panel F. Total number of syllables in 10-K filing.					
<i>TONE_TSYLLCNT</i>	-0.0158 (-2.92)***	-0.0591 (-13.81)***	-0.3206 (-21.41)***	-0.0802 (-15.13)***	-0.0273 (-6.40)***
<i>CONSTANT</i>	Included	Included	Included	Included	Included
<i>All Control variables</i>	Yes	Yes	Yes	Yes	Yes
<i>Pseudo R²/Adjusted R²</i>	0.1456	0.1572	0.8362	0.3525	0.1346
<i>Sample size</i>	42,250	42,250	42,250	42,250	42,250
Panel G. Total number of negative words count following the Harvard dictionary in the 10-K filing.					
<i>TONE_THDNEGCNT</i>	-0.0095 (-1.95)*	-0.0525 (-15.62)***	-0.2566 (-23.26)***	-0.0583 (-13.72)***	-0.0173 (-5.53)***
<i>CONSTANT</i>	Included	Included	Included	Included	Included
<i>All Control variables</i>	Yes	Yes	Yes	Yes	Yes
<i>Pseudo R²/Adjusted R²</i>	0.1458	0.1601	0.8369	0.3514	0.1342
<i>Sample size</i>	42,250	42,250	42,250	42,250	42,250

Notes: This table presents the results of an OLS regression of audit outcomes on alternative measures of management tone and a range of control variables, including year- and industry-fixed effects. All continuous variables are winsorized at the 1% and 99% levels. ***, **, and * denote statistical significance levels at the 1%, 5%, and 10% levels, respectively. The t-statistics are reported in parentheses. Standard errors are clustered by firm. [Appendix Table 1A](#) provides detailed descriptions of the variables.

Table 5A

Variation in the strength of the management tone-audit outcomes relationship following the new auditor appointment.

Panel A. Comparison of variables between DiD treatment and control groups			
	Treatment (Experienced a sudden CEO departure)	Control (Did not experience a sudden CEO departure)	t-test
SIZE	5.2029	5.4049	1.16
NONAUDFEE	6.1195	6.3181	1.08
LOSS	0.3160	0.2956	0.87
BUSY	0.7278	0.7436	0.48
ROA	-0.0576	-0.0491	0.74
AUDOPMOD	0.0515	0.0460	0.79
BIG4AUDIT	0.6957	0.6930	0.56
GEOSEGMENT	1.2998	1.3116	0.16
BUSSEGMENT	2.0579	2.1312	0.23
FOREIGN	0.0106	0.0117	1.24
SPECIAL	0.6097	0.6171	0.78
LEV	0.2273	0.2084	1.16
AUCHANGE	0.0422	0.0460	1.01
MB	1.4921	1.5049	1.17
LITIGATION	0.3182	0.2979	0.65
INHERENT	0.2095	0.2103	0.52
M&A	0.1746	0.1983	1.19
SHARES+10%	0.0581	0.0585	0.53
EMPLOYEES	1.7223	1.8374	1.21

Notes: This table reports the results of a cross-sectional test comparing the strength of the management tone-audit fees relationship across the appointment of a new auditor. It presents the results of a regression analysis between client-firm management tone and audit outcomes, controlling a range of variables, including year- and industry-fixed effects. All continuous variables are winsorized at the 1% and 99% levels. ***, **, and * denote statistical significance levels at the 1%, 5%, and 10% levels, respectively. The t-statistics are reported in parentheses, the Chi2 is in brackets, and the standard errors are clustered by firm. Appendix Table 1A provides detailed descriptions of the variables.

Data availability

The authors do not have permission to share data.

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