**Signaling or Greenwashing? ESG Performance and the Narrative Tone of ESG Reports**

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## Abstract

This study examines the relationship between firms' environmental, social, and governance (ESG) performance and the linguistic tone of ESG reports to assess whether such communication serves either as a genuine signal of sustainability commitment or a symbolic tool for legitimacy seeking and impression management. Using a panel dataset of Chinese A-share listed firms from 2007 to 2022, the study analyzes how companies strategically employ narrative tone within an institutional environment characterized by strong conformity pressures and weak validation mechanisms. It advances the corporate social responsibility decoupling literature by empirically addressing the symbolic-substantive gap in corporate disclosure and highlighting internal organizational factors that affect greenwashing practices. Finally, it offers insights into strengthening the credibility and transparency of ESG reporting.

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# 1 Introduction

The contemporary business environment is increasingly described as turbulent. This term signifies an environment that is not only complex, ill-defined, interdependent, and contentious (McMillan and Overall, 2016), but also fundamentally surprising, inconsistent, unpredictable, and uncertain (Ansell et al., 2021; Niesten et al., 2024). The inherent volatility of the modern market therefore requires firms to build organizational capacity for long-term adaptation and resilience (Adomako and Tran, 2025; Niesten et al., 2024). Fulfilling a mandate for survival and growth necessitates creating value that transcends purely financial outcomes to address broader societal and environmental well-being (Deng and Karia, 2025).

One critical mechanism through which firms build adaptive capacity and demonstrate broader value creation involves integrating corporate social responsibilities (CSR) and/or environmental, social, and governance (ESG) considerations into core business operations (Deng et al., 2025). However, operational commitments to sustainability remain largely invisible to external audiences unless firms actively communicate their initiatives and outcomes. ESG reporting[3] has thus emerged as the essential information source through which capital markets, regulatory authorities, and civil society assess corporate sustainability performance (Deng et al., 2025; Hossain et al., 2025; R. Li et al., 2024; Ma and Ahmad, 2024). Intensifying pressures from multiple constituencies has transformed ESG reporting from voluntary peripheral activity into a central component of corporate communication strategy (Al Astal et al., 2025; Damtoft et al., 2024).

[3] Following prior research (e.g., R. Li et al., 2024; Luo et al., 2025), we acknowledge that corporate disclosures on sustainability are issued under various titles, including CSR reports, sustainability reports, and environmental reports. For the sake of consistency and conciseness, this study uses ‘ESG reports’ as an umbrella term to refer to all such non-financial reports.

Nevertheless, the structural characteristics of ESG reporting differ fundamentally from traditional financial disclosure (Gorovaia and Makrominas, 2025). Whereas financial statements operate under standardized accounting principles and mandatory external audits, ESG reports exhibit substantial heterogeneity in content, format, and quality (Haji et al., 2022; Marquis and Qian, 2014). No universal standard commands widespread adoption, and adherence remains largely voluntary across most jurisdictions (Gorovaia and Makrominas, 2025; Wanli Li et al., 2023). The resulting regulatory ambiguity, compounded by limited assurance requirements and underdeveloped enforcement mechanisms, grants firms considerable discretion in determining what to disclose and how to frame their ESG performance (Yu et al., 2020). Such discretion creates opportunities for greenwashing, particularly when a firm's substantive actions fail to meet stakeholder expectations. In these situations, firms may decouple their symbolic disclosures from their actual performance, effectively misleading stakeholders (Marquis et al., 2016; Zhang et al., 2023).

Among the multiple dimensions through which firms can strategically manage ESG disclosure, linguistic tone represents a particularly potent mechanism (R. Li et al., 2024; Sun et al., 2024). The narrative flexibility inherent in ESG reporting magnifies opportunities for tone-based impression management (Martínez-Ferrero et al., 2019). Unlike factual omissions or numerical manipulations that may trigger regulatory scrutiny or legal liability, linguistic choices appear stylistic rather than substantive (Du and Yu, 2021). Prior research in financial reporting contexts demonstrates that textual tone significantly shapes investor beliefs, affects stock market reactions, and predicts future firm outcomes independently of hard numerical data (Huang et al., 2022; Mayew et al., 2015; Mousa et al., 2022; Price et al., 2012). More specifically, managers strategically manipulate tone in earnings announcements and management discussion sections to

influence market perceptions, obscure negative information, or deflect attention from controversies (Huang et al., 2014; Wanli Li et al., 2023). The documented malleability of narrative communication suggests that tone represents a strategic instrument through which organizations construct and project desired images to external audiences (Hamza and Jarboui, 2021; R. Li et al., 2024; Sun et al., 2024). In the ESG domain, where performance measurement remains far less standardized than financial accounting and where narrative disclosure occupies greater relative prominence, linguistic tone assumes heightened importance as a mechanism for shaping stakeholder interpretations and managing organizational legitimacy (Du and Yu, 2021; Luo et al., 2025; Martínez-Ferrero et al., 2019).

Thus, the role of linguistic tone within ESG reports resides at the nexus of a fundamental debate concerning the nature of voluntary corporate disclosure. From one perspective, rooted in signaling theory, voluntary disclosures are conceptualized as mechanisms to reduce information asymmetry, whereby firms with superior performance convey their quality to external stakeholders (Kang and Lam, 2023; Mahoney et al., 2013). This view implies that narrative tone should function as a credible signal, authentically reflecting a firm's underlying sustainability performance (Sun et al., 2024). A competing perspective, informed by impression management theory, contends that the discretion inherent in such disclosures provides a powerful tool for opportunistic self-presentation (Hamza et al., 2023). This latter view anticipates that firms, especially those with weaker performance, will strategically employ optimistic language to mask substantive deficiencies (He et al., 2025; Wanli Li et al., 2023). The existing literature, therefore, leaves a critical question unresolved: *Does the linguistic tone of ESG reports primarily function as a genuine signal or as an instrument of greenwashing*?

Employing a panel dataset of Chinese A-share listed companies from 2007 to 2022, this

study is designed to adjudicate the competing predictions outlined above. The Chinese market provides a particularly revealing context, characterized by a confluence of strong state-driven pressure for ESG conformity and relatively weak mechanisms for verifying substantive performance (Kim and Lee, 2025; Lian et al., 2023). China's institutional setting creates an environment ripe for the decoupling of 'talk' from 'walk,' making it an ideal laboratory to test our hypotheses (Hossain et al., 2025; Luo et al., 2025). We first investigate the primary relationship between actual ESG performance and the narrative tone of ESG reports. Subsequently, we extend the analysis to examine whether this relationship is contingent upon internal organizational governance. While much of the literature has focused on external drivers (e.g., government regulation, media, auditors, etc.) (Deng et al., 2025; Hossain et al., 2025; R. Li et al., 2024; Wei Li et al., 2023a; Ouyang et al., 2025; Sun et al., 2024), internal governance has been paid comparatively less attention. We therefore focus on them – specifically, the presence of a dedicated CSR committee and the provision of CSR-related training – to understand the firm-level heterogeneity in communication strategies that external pressures alone cannot explain.

The contributions of this research are threefold. First and foremost, we contribute to the corporate disclosure literature by providing empirical evidence in the enduring debate between signaling and impression management theories within the critical context of corporate sustainability communication. Our study directly addresses the question of whether ESG 'talk' reflects ESG 'walk.' Second, moving beyond a simplistic documentation of decoupling, we offer a more detailed understanding of greenwashing by identifying specific internal governance mechanisms that can foster more credible corporate disclosures, thereby delineating important boundary conditions of the main effect. Practically, our findings equip investors, regulators, and other stakeholders with tangible organizational indicators to better discern sincere ESG

commitments from merely symbolic rhetoric in an environment fraught with information ambiguity.

## 2 Theoretical Background and Hypothesis Development

### 2.1 ESG performance and ESG reporting: a genuine signal or greenwashing?

While a substantial body of research suggests that strong ESG performance enhances firm value (Cheng et al., 2014; Xie et al., 2019), the neo-institutional theory offers another explanation for the increasing adoption of ESG. It interprets the global ascent of ESG through the concept of a "rationalized myth" (Meyer and Rowan, 1977, p. 347), referring to a widely held belief about appropriate organizational practice that is adopted for legitimacy rather than for proven technical-operational efficiency. Consequently, firms feel compelled to conform to the expectations surrounding ESG due to powerful isomorphic mechanisms (DiMaggio and Powell, 1983). For instance, coercive mechanisms arise from government mandates for ESG disclosure. Mimetic pressure stems from firms imitating the reporting practices of industry competitors to maintain competitive parity. Normative mechanisms are exerted by professional bodies and consulting firms promoting standardized reporting frameworks as desirable best practices (Paynter et al., 2018). The convergence of these institutional pressures incentivizes firms to establish formal ESG structures, often irrespective of their substantive operational integration.

The concomitant discrepancy between symbolic ESG commitments and substantive action gives rise to the practice of greenwashing under the theoretical framework of "decoupling" (Bothello et al., 2023; Gorovaia and Makrominas, 2025; Hamza and Jarboui, 2021; Meyer and Rowan, 1977). Decoupling describes the deliberate gap organizations create between externally-

facing policies designed to secure legitimacy, and internal work activities governed by efficiency demands (Meyer and Rowan, 1977). When achieving genuine ESG improvements requires significant and costly reforms, firms have a strong incentive to utilize ESG reports as instruments for purely symbolic communication (Kopyrina et al., 2023; Li and Wu, 2020; Seele and Gatti, 2017; Tashman et al., 2019). Moreover, the general ambiguity of reporting standards and a lack of mandatory audits create an environment where favorable narratives can be constructed without undertaking expensive operational changes (Mahoney et al., 2013; Marquis et al., 2016; Ren et al., 2023).

Against this backdrop, the strategic use of linguistic tone emerges as a critical tool for impression management and brings a compelling theoretical puzzle into sharp relief. Two competing theories offer opposing predictions about the relationship between a firm's actual ESG performance and its disclosure tone. On one hand, signaling theory predicts a positive relationship (Kang and Lam, 2023; Sun et al., 2024). Firms with superior ESG outcomes can use optimistic language as a credible signal of their high quality to investors and stakeholders. On the other hand, legitimacy and impression management theories predict a negative relationship (Hamza et al., 2023; He et al., 2025; R. Li et al., 2024; Wanli Li et al., 2023; Luo et al., 2025). Specifically, firms with weak ESG performance face greater legitimacy deficits and, therefore, are more motivated to employ positive language. For such underperforming firms, effusive tone serves to obscure operational shortcomings and construct a favorable public image.

To adjudicate between the competing predictions of signaling theory and legitimacy theory, the Chinese market offers a particularly revealing institutional context (e.g., Du, 2015; He et al., 2023). On one hand, the country's ambitious national ESG initiatives create strong coercive pressure, mandating that listed firms publish ESG reports (Wanli Li et al., 2023; Luo et

al., 2025). On the other hand, China's institutional environment lacks both a robust monitoring mechanism to verify disclosure credibility and a comprehensive framework to ensure overall report quality (Wanli Li et al., 2023; Wei Li et al., 2023a). A confluence of high pressure for symbolic conformity and low scrutiny of substantive action provides firms with considerable latitude to shape their narratives, strengthening both the incentives and opportunities for decoupling in terms of greenwashing (de Freitas Netto et al., 2020). In such a context, the logic of impression management becomes especially salient.

In sum, empirical findings regarding the ESG "walk and talk" remain yet inconclusive. The persistent tension between signaling and legitimacy theories highlights a compelling need to further adjudicate between their competing predictions. Therefore, our investigation proceeds from a legitimacy-based perspective to test this relationship. We propose that firms possessing strong and verifiable ESG achievements face diminished pressure for rhetorical embellishment. Conversely, firms exhibiting weaker substantive performance are more acutely compelled to leverage positive tone as a mechanism to secure public approval and bridge legitimacy gaps. The strategic decoupling of reporting tone from actual performance is thus conceptualized as a measurable greenwashing behavior, leading to our hypothesis:

**H1***: A firm's ESG performance is negatively associated with the tone of its ESG report.*

## 2.2 The moderating role of internal governance

The preceding discussion has established the conditions under which firms are incentivized to decouple their symbolic communications from their substantive ESG actions. Specifically, firms adopt symbolic structures, including the publication of ESG reports, to conform to external

institutional pressures and thereby secure legitimacy. However, the institutional perspective alone offers limited explanation for the variation among firms. It does not fully account for why some organizations limit their response to symbolic conformity while other organizations advance toward substantive change (Shahab et al., 2022). Subsequently, a question emerges regarding what counteracts the corporate proclivity for decoupling and foster "recoupling" to realign corporate talk with action (Haack et al., 2021; Talpur et al., 2023).

Although a substantial body of research has examined the impact of external factors – such as market scrutiny and auditor assurance – on corporate ESG strategies (Deng et al., 2025; R. Li et al., 2024; Wei Li et al., 2023b; Ouyang et al., 2025; Sun et al., 2024; Zhang, 2022), less attention has been devoted to the internal mechanisms that process these external signals and convert them into corporate decisions. We posit that internal governance is a critical mechanism that moderates the relationship between corporate action and communication (Al Astal et al., 2025; Liu et al., 2023). In particular, how a firm interprets external demands, allocates resources accordingly, and translates commitments into concrete actions is ultimately contingent upon its internal decision-making and control systems (Liu et al., 2023; Shahab et al., 2022). Thus, internal governance represents the key mechanism for moderating external pressures and an organization's ultimate behavioral response (Liu et al., 2025). Indeed, empirical evidence has shown a variety of internal governance proxies, e.g., top management team stability and board composition, mitigate greenwashing by reducing agency costs, enhancing informational transparency, and improving responsiveness to stakeholder demands (Ma and Ahmad, 2024; Wang et al., 2024; Zhang et al., 2023).

Against this backdrop, a critical yet underexplored area of inquiry concerns the influence of internal governance on the strategic management of ESG report tone. Extending the preceding

logic, our study posits that the mitigation of greenwashing through tone is contingent upon effective internal governance. To develop our argument, we draw upon the Management Control Systems (MCS) literature (Shahab et al., 2022).

The MCS framework posits that management strategically uses a package of internal governance mechanisms, encompassing organizational structures, rules, practices, and beliefs, to align employee behavior with strategic objectives (Strauß and Zecher, 2013). While traditionally effective for achieving clear financial targets, the alignment function of MCS faces a test when firms adopt the complex, multifaceted, and often ambiguous aims associated with sustainability (Crutzen et al., 2017). The escalating integration of sustainability aims into corporate strategy introduces a significant managerial challenge, mirroring the previously discussed concept of decoupling. As a result, successfully meeting the strategic objective of ESG requires the establishment of new formal structures and, in parallel, the internalization of ESG-oriented values (Crutzen et al., 2017; Riccaboni and Leone, 2010). These two requirements directly correspond to the distinct pillars of internal governance we conceptualize and examine: the *formal-structural* and the *informal-normative*.

The formal-structural pillar comprises the explicit and codified elements of governance, such as clearly defined evaluation metrics, performance-based rewards, and structured budgeting (Norris and O'Dwyer, 2004), which are often institutionalized and executed through a dedicated organization within the firm. In contrast, the informal-normative pillar governs behavior through less tangible, unwritten means. It encompasses the shared values, organizational beliefs, and ingrained traditions that collectively constitute a firm's culture and guide employee conduct (Abernethy and Vagnoni, 2004; Laguir et al., 2019a).

Therefore, the analytical power of the MCS framework originates from its capacity to

distinctly conceptualize and address diverse dimensions of internal governance. It provides a robust theoretical foundation for separately examining how a formal-structural mechanism and an informal-normative mechanism can each function to reduce the gap between strategic commitments and substantive actions, thereby mitigating greenwashing. Building on this foundation, our study applies the dual-governance lens afforded by MCS to the context of corporate tone management with the following hypothesis:

**H2**: *Internal governance will weaken the negative relationship between a firm's ESG performance and the tone of its ESG report.*

#### 2.2.1 Formal-structural internal governance: CSR organization

We first examine the formal-structural pillar of internal governance, operationalized herein as the presence of a dedicated Corporate Social Responsibility (CSR) organization. A CSR organization, typically manifesting as a formal department or a board-level committee, is tasked with the systematic formulation, execution, and oversight of the firm's comprehensive CSR strategy. The organization's primary mandate is to critically scrutinize prevailing business practices, assess complex environmental and social exigencies, and develop strategies that integrate sustainable development objectives with core financial imperatives (Fu et al., 2020; Velte and Stawinoga, 2020). Establishing a formal CSR body signifies that a firm's commitment to ESG principles has transcended mere symbolic posturing to become a substantive component of the corporate governance framework, underpinned by allocated resources and delineated responsibilities (Gull et al., 2023; Yeh et al., 2024). A dedicated CSR body therefore institutionalizes internal scrutiny, professionalizes ESG management, and embeds accountability directly within the corporate hierarchy (Godos-Díez et al., 2018; Sauerwald and Su, 2019; Velte and Stawinoga, 2020).

Consequently, the presence of a dedicated CSR organization functions as a prototypical formal control mechanism (Al Astal et al., 2025).

Agency theory provides a compelling theoretical lens to elucidate how the formal-structural internal governance introduced above operates in practice. Specifically, the theory explains the mechanism through which a formal control structure mitigates the tone manipulation inherent in greenwashing (Abweny et al., 2025). From an agency perspective, effusive tone can be a tool for managerial opportunism. Managers (i.e., agents) may use rhetorical embellishment to obscure operational deficiencies, thereby maximizing personal reputational benefits at the expense of shareholders and other stakeholders (i.e., principals) (Merkl-Davies and Brennan, 2011; Sun et al., 2024; Wang et al., 2024). A dedicated CSR organization is the formal governance structure engineered to address such a managerial opportunism (Jain and Zaman, 2020). By executing an effective monitoring function over ESG matters, the organization structurally curtails managers' incentives for opportunistic misrepresentation and demands greater transparency in corporate communications (Eberhardt-Toth, 2017; Godos-Díez et al., 2018; Gull et al., 2023; Liu et al., 2023). Consistent with this view, empirical studies demonstrate that the presence of a CSR committee is negatively associated with corporate decoupling, an effect that grows stronger when the committee possesses substantive characteristics such as greater size, independence, and member tenure (Gull et al., 2023).

An opposing perspective posits that the CSR organization itself could facilitate more sophisticated greenwashing (Orazalin et al., 2024; Peters and Romi, 2014). A dedicated department might leverage its expertise not for accuracy but for the strategic construction of favorable narratives that protect the firm's legitimacy (R. Li et al., 2024). Despite the potential for a CSR organization to become an instrument for opportunistic information management,

empirical evidence from the Chinese context suggests otherwise. Studies indicate that CSR organizations in China function as a substantive governance mechanism that attenuates greenwashing by helping to balance stakeholder interests with corporate objectives (Ma and Ahmad, 2024).

While prior research establishes the effectiveness of CSR organizations in curbing the decoupling of actions from commitments, the specific channel through which these committees regulate the linguistic tone of disclosures remains underexplored. Our study addresses this gap by explicitly testing the role of this formal-structural governance mechanism in leveraging the positive report tone as a tool of greenwashing. A dedicated CSR organization, as a formal control, should curtail the incentive for underperforming firms to engage in rhetorical inflation and ensure that the disclosures of high performers accurately reflect their achievements. We therefore propose the following sub-hypothesis derived from our general hypothesis H2:

**H2a***: Formal-structural governance (e.g., the presence of a dedicated CSR committee) will weaken the negative relationship between a firm's ESG performance and the tone of its ESG report.*

#### 2.2.2 Informal-normative internal governance: CSR training

We next address the informal-normative pillar of internal governance, which influences employee behavior through uncodified mechanisms including organizational culture and shared values (Tucker, 2019). We operationalize this pillar through the implementation of CSR-related employee training. This choice is grounded in MCS literature, which widely recognizes employee education as a form of informal control (Ferretti et al., 2024; Laguir et al., 2019b). Specifically, training functions as both a personnel control, designed to foster individual

motivation, and a socio-ideological control, which influences employees to internalize values consistent with organizational objectives (Abernethy and Brownell, 1997; Alvesson and Kärreman, 2004). Compared to formal rules, informal controls are considered more flexible and less restrictive, as they shape behavior indirectly rather than through explicit, verifiable criteria (Norris and O'Dwyer, 2004).

Drawing upon Organizational Learning Theory, we argue that CSR training may mitigate decoupling through two interrelated mechanisms: normative alignment and capability enhancement (Guo et al., 2024). First, training operates as a socialization process that cultivates a shared appreciation for the logic of sustainability (Hunoldt et al., 2020). This in turn fosters the internalization of pro-social values, creating normative pressure for transparent ESR communication (Arjaliès and Mundy, 2013). Second, training enhances organizational capabilities by equipping personnel with the specialized competences required to measure, manage, and therefore report complex ESG information accurately (Kim and Lee, 2025). An elevated proficiency reduces the likelihood of vague disclosures that often stem from a lack of technical expertise. Thus, a workforce equipped with both normative commitment and technical proficiency is positioned to foster a collective drive for authentic reporting over rhetorical manipulation (Deng et al., 2025).

A countervailing argument suggests that enhanced internal capabilities, including a well-trained workforce, can be co-opted as sophisticated instruments of symbolic compliance. For instance, employee training programs often serve as a form of "window-dressing," in which outward displays of conformity are detached from actual operational practices (MacLean and Behnam, 2010). Empirical research demonstrates that when training is administered with a focus on mere rule adherence rather than internalized corporate principles, it has a minimal impact on

employee attitudes and behavior (Weaver and Treviño, 1999). This tendency is exacerbated within institutional contexts that prioritize formal disclosure over substantive action, as firms may leverage visible activities like training to signal legitimacy without enacting corresponding operational reforms (Marquis and Qian, 2014). Consequently, employee training can devolve into a performative metric – reported as proof of commitment while being entirely disconnected from measurable improvements in corporate action.

While acknowledging the potential for co-optation, our argument centers on the role of training as an informal-normative control. We contend that by functioning as a socialization process, it cultivates a shared commitment to transparency that serves as a powerful counterbalance to strategic incentives for decoupling. This internalized commitment is expected to compel a firm to reduce the discrepancy between its disclosure tone and substantive performance. We therefore propose the following sub-hypothesis:

**H2b**: *Informal-normative governance (e.g., the provision of CSR-related training) will weaken the negative relationship between a firm's ESG performance and the tone of its ESG report.*

# 3 Data and Methods

## 3.1 Sample and data

This study examines China's A-listed firms from 2007 to 2022. The sample period begins in 2007, as this is the first year for which ESG score data are available. Data are sourced from the Chinese Research Data Services Platform (CNRDS) and the Wind database.

The initial sample was refined using three standard criteria. First, following common

practice (Wanli Li et al., 2023; Luo et al., 2025), we excluded financial institutions due to their unique operational characteristics. Second, we removed firms with abnormal financial conditions. Third, we dropped observations with missing variables. All continuous variables were subsequently winsorized at the 1% and 99% levels. Applying these criteria yielded a final sample of 10,390 firm-year observations, though the precise sample size for any given regression may vary depending on the availability of data for the variables included in that specific model.

### 3.2 Model specification and variable definition

To test our hypotheses, we employ a series of fixed-effects regression models.

$$TONE_{i,t+1} = \beta_0 + \beta_1 ESG_{i,t} + \sum_{k=1}^{8} \gamma_k Control_{k,i,t} + \mu_j + \lambda_t + \epsilon_{i,t} \quad (1)$$

$$TONE_{i,t+1} = \beta_0 + \beta_1 ESG_{i,t} + \beta_2 CSRO_{i,t} + \beta_3 (ESG_{i,t} \times CSRO_{i,t}) + \sum_{k=1}^{8} \gamma_k Control_{k,i,t} + \mu_j + \lambda_t + \epsilon_{i,t} \quad (2)$$

$$TONE_{i,t+1} = \beta_0 + \beta_1 ESG_{i,t} + \beta_2 CSRE_{i,t} + \beta_3 (ESG_{i,t} \times CSRE_{i,t}) + \sum_{k=1}^{8} \gamma_k Control_{k,i,t} + \mu_j + \lambda_t + \epsilon_{i,t} \quad (3)$$

The baseline model, presented in Equation (1), examines the core greenwashing hypothesis: whether firms with weaker ESG performance (ESG) in year *t* strategically adopt a more positive tone in their ESG reports (TONE) in the subsequent year, *t*+1.

Building upon this baseline, Equations (2) and (3) test whether this tendency is attenuated by internal governance. Equation (2) investigates the moderating role of a dedicated CSR organization (ORGANIZATION) by introducing an interaction term between ESG

performance and the presence of such a body. In a similar vein, Equation (3) examines the moderating effect of CSR training (TRAINING).

For all models, $\mu_j$ and $\lambda_t$ represent industry and year fixed effects, respectively. We cluster the error term($\epsilon_{i,t}$) at the firm level to calculate robust standard errors that account for intra-firm correlation. Additionally, the model incorporates a vector of control variables, which will be discussed in further detail in the following Section 3.2.4.

### 3.2.1 Dependent variable

To measure the tone of a firm's annual ESG report, we obtain our primary dependent variable, *TONE,* from the CNRDS database. A Chinese-translated version of the Loughran and McDonald (2011) (LM) word lists is utilized, which are specifically designed for financial and economic texts. The TONE variable is defined as the net count of positive and negative terms divided by their sum, multiplied by 100 for interpretation. Accordingly, a higher value for TONE indicates a more optimistic report. To mitigate potential reverse causality, all model specifications use a one-year lead of the dependent variable ($TONE_{i,\ t+1}$) as was in previous research (e.g., Mao et al., 2024).

### 3.2.2 Independent variable

Our primary measure for corporate ESG performance is the CNRDS ESG score (ESG). We selected this score over alternative ratings (e.g., Huazheng, Hexun, Bloomberg, etc.) for its accessibility, extensive sample coverage (Kim and Lee, 2025) and widespread use in academic research (e.g., Byun et al., 2025; Q. Li et al., 2024; Zhang and Xiong, 2024). The CNRDS score is particularly well-suited for Chinese enterprises because its rating system adapts international standards, such as the Global Reporting Initiative and the Sustainability Accounting Standards

Board, to China's specific policy-driven environment and national priorities. Its methodology systematically evaluates firms using 58 detailed indicators across the three core pillars (E, S, and G). All points considered, the CNRDS ESG score provides a transparent and relatively objective assessment suitable for rigorous academic inquiry (Q. Li et al., 2024).

#### 3.2.3 Moderators

The present research incorporates two moderating variables to test for conditional effects. The first, CSR organization, is a dummy variable coded as 1 if a firm has established a formal CSR leadership body or a designated department, and 0 otherwise. The second moderator, CSR training, is also a dummy variable, taking a value of 1 if the company has conducted CSR training initiatives, and 0 otherwise.

#### 3.2.4 Control variables

To account for confounding factors identified in prior research (e.g., Deng et al., 2025; He et al., 2023; R. Li et al., 2024; Luo et al., 2025; Zhang, 2022), the empirical model includes a standard set of control variables. These controls capture fundamental firm-level attributes, including state ownership (SOE), company age (AGE), size (SIZE), financial leverage (LEV), and profitability (ROA). The model also incorporates key corporate governance characteristics, i.e., the duality of the chairman and CEO roles (DUAL), board size (BOARD), the proportion of independent directors (INDEP), and the ownership stake of the largest shareholder (TOP1). The definitions of the key variables are summarized in Table 1.

[Table 1 about here]

# 4 Empirical Result

## 4.1 Descriptive statistics and correlations

Table 2 presents the descriptive statistics for the key variables used in this study. The primary variable of interest, TONE, has a mean of 45.098 and a median of 45.869. The mean ESG score is 29.201, with a standard deviation of 11.551.

[Table 2 about here]

Regarding the dummy variables for CSR activities, 33.8% of firms report having a dedicated CSR leadership body (ORGANIZATION), and 45.4% conduct CSR-related employee training (TRAINING). Notably, the sample size for these two variables (N=9,263) is smaller than for the main sample (N=10,390), indicating some missing data for these specific variables.

For the control variables, 53.5% of the firms are state-owned enterprises (SOE), and 5.2% have CEO-chairman duality (DUAL). The average firm in the sample has a mean SIZE of 23.037, a mean LEV of 0.468, and a mean ROA of 0.045. In terms of governance characteristics, the average board size (BOARD) is 10.022 members, with 39% of directors being independent (INDEP). The largest shareholder (TOP1) holds an average of 36.5% of shares.

Table 3 reports the Pearson correlation matrix for the variables. We find that TONE is significantly and negatively correlated with ESG. TONE also exhibits a significant negative correlation with ORGANIZATION and TRAINING. These results provide preliminary evidence suggesting the negative association of ESG and TONE. Furthermore, ESG is positively and significantly correlated with both ORGANIZATION and TRAINING.

[Table 3 about here]

The correlation coefficients observed among the independent variables do not suggest that severe multicollinearity is a significant concern for the subsequent regression analyses.

## 4.2 Multivariate tests of hypothesis

### 4.2.1 Baseline regression results

Table 4 presents the baseline regression results from panel ordinary least squares (OLS) models, testing the relationship between ESG performance and future report tone ($TONE_{t+1}$). The models include industry and year fixed effects and utilize firm-level clustered robust standard errors.

[Table 4 about here]

Column (1) tests the main hypothesis (H1). The coefficient for ESG is negative and statistically significant ($\beta$ = -0.045, $p < 0.05$), providing support for H1. The negative coefficient indicates that firms with lower ESG performance tend to use a more positive tone in their ESG reports in the following year. In terms of economic effect, a one-standard-deviation increase in ESG (11.551) is associated with 0.520 points decrease in TONE (11.551 × -0.045), which represents approximately 4.6% of one standard deviation of TONE (0.520 / 11.210). The economic significance of this finding will be discussed in Section 5.

Column (2) introduces the moderating effect of formal-structural governance

(ORGANIZATION), as specified in H2a. The interaction term, ESG × ORGANIZATION, is positive and statistically significant at the marginal level ($\beta$ = 0.042, p < 0.1). The positive coefficient on the interaction term suggests that the presence of a dedicated CSR committee weakens the negative relationship between ESG performance and TONE, consistent with H2a. The main effect of ESG ($\beta$ = -0.060, p < 0.05), which in this model represents the conditional effect for firms without a dedicated CSR committee (ORGANIZATION = 0), remains negative and significant. However, for firms with a committee (ORGANIZATION = 1), the marginal effect is substantially attenuated to -0.018 (-0.060 + 0.042), illustrating the mitigating impact of the formal structure. Furthermore, ORGANIZATION itself has a significant negative association with TONE ($\beta$ = -4.310, p < 0.01).

Column (3) tests the moderating effect of informal-normative governance (TRAINING), as proposed in H2b. The coefficient for the interaction term, ESG × TRAINING, is -0.008 and is not statistically significant (p > 0.1). The absence of a significant coefficient indicates that, unlike formal governance structures, the provision of CSR-related training does not moderate the relationship between ESG performance and report tone. Therefore, H2b is not supported. In this specification, the main effect of TRAINING is significantly negative ($\beta$ = -3.595, p < 0.01), while the main effect of ESG becomes statistically insignificant (p > 0.1).

The coefficients for the control variables are generally not statistically significant, except for BOARD in Column (1) at the marginal level. This finding is consistent with observations in prior research (Gull et al., 2023; Sun et al., 2024). We now turn to a series of robustness checks to validate the results.

#### 4.2.2 Robustness checks

##### 4.2.2.1 Two-stage least squares regression

Although the baseline OLS models include industry and year fixed effects, the relationship between ESG and TONE may suffer from endogeneity concerns, such as reverse causality or unobserved omitted variables. To address this potential issue, we employ a two-stage least squares (2SLS) regression using an instrumental variable (IV).

Following prior literature (Gong et al., 2025; e.g., R. Li et al., 2024; Luo et al., 2025; Sun et al., 2024), we use the average ESG score of firms in the same industry, year, and region (PESG) as an instrumental variable. The rationale for this instrument is that a firm's ESG performance is likely correlated with its peers in the same industry and region due to similar external developmental conditions and regulatory pressures (relevance). However, the industry-year-region level average ESG score is unlikely to directly influence the specific reporting tone of an individual firm, other than through that firm's own ESG performance, according to prior literature (exclusion restriction) (Luo et al., 2025).

Table 5 presents the 2SLS estimation results. The diagnostic tests confirm the validity and strength of the chosen instrument. The Kleibergen-Paap rk LM statistic is 152.645 ($p < 0.01$), which strongly rejects the null hypothesis of underidentification. Furthermore, the Kleibergen-Paap Wald rk F statistic is 359.652, indicating that a weak instrument problem is not a concern.

[Table 5 about here]

Column (1) reports the first-stage regression, which tests the relevance of the instrument.

The coefficient of PESG is 0.926 and is statistically significant at the 1% level, confirming that the industry-year-region average ESG score is a strong predictor of the firm's ESG performance.

Column (2) presents the second-stage results. The coefficient of the instrumented ESG variable is -0.128 and is significant at the 5% level. This 2SLS estimate continues to support H1, demonstrating a persistent negative relationship between ESG performance and subsequent report tone. The finding suggests that after mitigating potential endogeneity, firms with lower ESG performance are still found to use a more positive tone in their reports.

#### 4.2.2.2 Firm and year fixed effects

To alleviate concerns about potential omitted variable bias, particularly from the unobserved, time-invariant firm-level characteristics, we re-estimate our main models using firm fixed effects in place of the industry fixed effects used in the baseline analysis. The results are presented in Table 6.

[Table 6 about here]

In Column (1), which re-tests H1, the coefficient for ESG remains negative and statistically significant ($\beta$= -0.038, $p < 0.01$). This finding is consistent with the baseline model, reinforcing the conclusion that firms with lower ESG performance tend to utilize a more positive TONE in their subsequent reports. In Column (2), which tests the moderating effect of H2a, the interaction term yields a positive and statistically significant coefficient ($\beta$ = 0.048, $p < 0.05$). This result also aligns with our main findings, indicating that the presence of formal-structural

governance mitigates the negative relationship between ESG performance and TONE.

Overall, the direction and statistical significance of the key coefficients in Table 6 are consistent with the main analysis presented in Table 4. These results suggest that our findings are robust to controlling for firm-level time-invariant omitted variables.

#### 4.2.2.3 Alternative timing and measurements of the dependent variable

We conduct further robustness checks by testing alternative timings and measurements of the dependent variables, with the results presented in Table 7.

[Table 7 about here]

First, to address potential concerns about the time lag, we examine the contemporaneous relationship using $TONE_t$ as the dependent variable. The main effects for ESG (in Columns 1 and 2) and for the moderator (in Column 2) remain negative and statistically significant, consistent with the baseline findings. Although the interaction term is not statistically significant ($p > 0.1$), its positive direction is consistent with the baseline finding for H2a.

Second, to mitigate the impact of measurement errors, we employ an alternative dependent variable ($ATONE_{t+1}$), calculated by dividing the net count of positive and negative terms by the total number of words in the ESG report. Columns (3) and (4) show results that are consistent with our main analysis.

Finally, we test an alternative proxy, the natural logarithm of report length (PAGEt+1). As shown in Columns (5) and (6), while better ESG performance is positively associated with

longer reports (a 1-SD increase in ESG predicts a 10.4% length increase for firms without a committee), this relationship is significantly weakened by the presence of formal governance (ORGANIZATION). The interaction term is negative and significant ($\beta$ = -0.007, $p < 0.01$), reducing the corresponding length increase to only 2.3% for firms with a committee.

In sum, the core findings regarding H1 hold across all specifications. While the direction of the moderating effect (H2a) is consistent with our baseline results, the interaction term is statistically significant only in the ATONE specification. Furthermore, the analysis of report length reveals that formal-structural governance moderates distinct reporting strategies in different ways.

#### 4.2.2.4 Alternative independent variable

To further ensure the robustness of our findings against potential measurement bias, we re-estimate our models using an alternative independent variable, the WIND ESG score (WIND), with results presented in Table 8.

Significant methodological divergence is documented among China's ESG rating providers (He et al., 2025; Luo et al., 2025). Consequently, robustness checks against alternative proxies become critical. While several proxies other than our primary CNRDS scores are widely used, we selected the WIND score for our robustness check as it offers distinct advantages for this study's specific analytical goals. Despite a relatively shorter period of data availability, the WIND score provides a continuous numerical score (0-10.00) that captures performance variation more granularly. Most importantly, its methodological reliance on external and alternative data, rather than solely on corporate self-disclosure, provides a rigorous test of the

relationship between performance and disclosure tone. Such a methodology mitigates the potential confound of correlating two distinct artifacts of a firm's self-presentation.

The regression results in Column (1) show that the coefficient for WIND is negative and statistically significant, consistent with our baseline analysis (H1). In Column (2), the interaction term WIND × ORGANIZATION yields a positive coefficient, which, while not statistically significant ($p > 0.1$), maintains a direction consistent with the moderating effect proposed in H2a.

[Table 8 about here]

## 5 Discussion

Our study engages a tension in corporate sustainability disclosure: the enduring debate over whether symbolic reporting serves as a costly signal of substantive action or as a decoupled veil for impression management. We provide empirical evidence by testing competing predictions within the unique institutional context of the Chinese capital market, where institutional incentives for strategic tone management may be particularly salient.

Our primary findings are threefold. We identify a statistically significant negative association between actual corporate ESG performance and the positive tone adopted in ESG reports. Furthermore, the identified decoupling tendency is significantly weakened by formal-structural internal governance, namely the presence of a dedicated CSR organization. In contrast, informal-normative governance, measured by CSR-related employee training, fails to demonstrate a significant mitigating effect against the identified decoupling.

Our findings carry substantial theoretical implications. The support for our first

hypothesis, indicating that firms with poorer ESG performance employ a more positive linguistic tone, provides robust empirical validation for the prevalence of impression management and legitimacy-seeking behaviors over signaling in the given context. We posit that the primary theoretical contribution of the core finding stems not from its economic magnitude, but from its clear statistical robustness. The consistency of the negative association across an array of robustness checks, including 2SLS models addressing endogeneity, firm fixed-effects models controlling for unobserved heterogeneity, and a wide array of alternative measures, is notable. The observed consistency, in itself, is a finding of theoretical consequence. The data suggests that firms, when facing the institutional threat of poor ESG performance, execute a detectable and consistent shift in strategic communication behavior. We contend that empirically isolating a consistent pattern of this nature within tone, an inherently elusive and qualitative construct, provides substantive evidence that the decoupling mechanism is not merely a theoretical abstraction but an empirically observable organizational strategy.

Furthermore, a key contribution of our study lies in moving beyond merely identifying decoupling to examine the boundary conditions that constrain such opportunism. Our comparative analysis of internal governance mechanisms, disaggregated into formal-structural and informal-normative governance, yields divergent results with compelling theoretical implications. The finding that formal governance (CSR organization) curbs decoupling demonstrates that formal mechanisms of accountability, resource allocation, and direct board monitoring, consistent with the Agency Theory perspective, can substantively constrain opportunism for greenwashing (Gull et al., 2023). The result lends support to the recoupling literature, highlighting the critical role of formal structures in re-aligning corporate ‘talk’ and ‘walk.’

In the meantime, the non-significant result for informal governance (CSR training) demands a more nuanced theoretical interpretation than a simple null finding. We argue the outcome is not only potential evidence of a window dressing in response to external pressure (Weaver and Treviño, 1999) but is also deeply entwined with the level of learning and organizational culture within the Chinese context. In a setting where CSR activities are often driven by institutional isomorphic pressures for state compliance, training programs are unlikely to achieve the internalization of and critical questioning of existing norms; rather, such programs likely remain at the single-loop learning level of formal compliance (Feeney et al., 2023). When reinforced by the top-down, authority-centric decision-making structures prevalent in many Chinese firms (Marquis and Qian, 2014), employees may lack both the normative motivation and the organizational channels to challenge opportunism, even if aware of it. Consequently, our binary proxy likely captures the quantitative fulfillment of training but fails to capture the behavioral internalization required to inhibit complex and opportunistic behaviors. The resulting gap between the formal proxy (training conducted) and the theoretical construct (substantive value internalization) is not a methodological failure, but rather a theoretical reality particularly pronounced in compliance-driven, top-down ESG adoption.

A third contribution emerges when combining the main effect analysis of our governance variables with robustness checks using report length (PAGE, Table 7). We have found that firms with formal-structural governance structures (ORGANIZATION) adopt a more neutral and less effusive tone overall, suggesting a higher level of internal scrutiny. The ‘control over excessive communication’ mechanism is strongly supported by the analysis of report length, where we find that formal-structural governance significantly weakens the tendency for firms to increase report length even when ESG performance is good. The finding indicates that a mature

and sophisticated internal control function is at play, managing both the quantity (length) and quality (tone) of disclosure. It signals a shift from mere compliance or opportunism to a more sophisticated disclosure management strategy aimed at avoiding both negative skepticism and the risks of over-promising.

Beyond these theoretical contributions, our findings offer several critical and actionable implications for investors, regulators, and corporate managers. Our study serves as a strong cautionary note to investors and stakeholders: ESG reports should not be taken at face value. A polished positive linguistic tone should not be conflated with superior performance and may, in fact, mask its absence. Investors must learn to cross-validate qualitative soft information with hard data and, crucially, the underlying governance structures. Our research provides tangible diagnostics to distinguish between red flags of decoupling and green flags of sincerity. For instance, a firm exhibiting low objective ESG scores but a highly positive report tone, particularly one lacking a formal CSR governance body, warrants significant skepticism. For corporate managers, we emphasize that achieving ESG authenticity and market trust requires substantive institutional arrangements, not merely symbolic gestures. The establishment of a formal CSR organization with real authority appears to be a pathway to avoiding greenwashing and securing long-term legitimacy.

## 6 Concluding Remarks

In the contemporary business landscape, where ESG has transitioned from a peripheral concern to an existential imperative, a commensurate concern has arisen: will corporate disclosure function as an engine for substantive change or merely a veil to mask inaction? This study, using

data from the Chinese market, provides empirical evidence of decoupling, where the positive tone of ESG reports is disassociated from actual performance. Simultaneously, it empirically identifies a critical recoupling mechanism: formal internal governance in the form of dedicated CSR organizations. On the other hand, we demonstrate that informal mechanisms, such as the implementation of CSR training, may be insufficient on their own to curb such opportunism.

Our central contribution is twofold. Theoretically, we provide an empirically grounded adjudication of the signaling-versus-impression-management debate in the ESG domain. We move beyond a simplistic 'decoupling exists' narrative to demonstrate how it is constrained, offering a more granular understanding of sustainability control systems by contrasting the substantive efficacy of formal-structural controls with the symbolic limitations of informal-normative controls, particularly within a compliance-driven institutional context. Practically, we equip stakeholders with a clear, actionable diagnostic: the presence of a formal CSR committee serves as a critical green flag for disclosure credibility, whereas its absence, especially when combined with a mismatch between effusive tone and poor objective performance, constitutes a significant red flag for strategic impression management.

The contributions of our study must be interpreted within several explicitly defined caveats, which, in turn, illuminate promising avenues for future research. Our sample is confined to the specific institutional environment of China, which, as argued, may present high incentives for decoupling. Future research should conduct comparative analyses in markets with different institutional pressures (e.g., stronger legal oversight, more active civil society monitoring) to test how corporate tone management is shaped. Furthermore, our measurement of informal-normative control is, by necessity, a coarse proxy. The binary training variable fails to capture the quality, intensity, or degree of value internalization of related programs. As we have argued,

the rejection of the hypothesis may not stem from the ineffectiveness of informal controls per se, but from our proxy's inability to differentiate between formal single-loop and substantive double-loop learning. Future research utilizing surveys or in-depth interviews to measure employees' actual value internalization could re-evaluate the efficacy of informal controls.

The broader implications of this research extend to the very integrity of the sustainability reporting paradigm. As capital markets increasingly rely on non-financial disclosures, the mechanisms that ensure their veracity become paramount. The central thesis emerging from our research is clear: In the age of sustainability, corporate authenticity rests not on the eloquence of 'what they say, but on the substance of 'what they do' and, crucially, on the institutional architecture they structure to ensure the 'doing' is done. We hope this study provides insight for stakeholders to see beyond the linguistic façade of disclosure and a practical roadmap for firms to transition from symbolic assurance to a journey of genuine, substantive, and verifiable change.

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**Table 1. Variable definitions**

| Variables | Definitions | Sources |
|---|---|---|
| TONE | The sentiment of ESG report measured as (Number of Positive Words−Number of Negative Words) / (Number of Positive Words+Number of Negative Words) * 100 | CNRDS |
| ESG | ESG performance of a firm released by CNRDS. | CNRDS |
| ORGANIZATION | 1 if the firm has a CSR leadership body or designated responsibility department; 0 otherwise. | CNRDS |
| TRAINING | 1 if the firm conducts employee training related to CSR. | CNRDS |
| SOE | 1 if the firm is a state-owned enterprise; 0 otherwise. | WIND |
| DUAL | 1 if the same person serves as the CEO and chairman of the board of directors; 0 otherwise. | CNRDS |
| AGE | Natural logarithm of the number of years from the year of establishment to the year of observation +1. | CNRDS |
| SIZE | Natural logarithm of total assets at the end of the year. | CNRDS |
| LEV | Total liabilities divided by total assets. | CNRDS |
| ROA | Net income divided by total assets. | CNRDS |
| BOARD | Number of directors. | CNRDS |
| INDEP | Ratio of independent directors to the total number of directors. | CNRDS |
| TOP1 | Shareholding ratio of the largest shareholder. | CNRDS |

**Table 2. Descriptive statistics**

| Variable | N | Mean | SD | Min | Median | Max |
|---|---|---|---|---|---|---|
| TONE | 10,390 | 45.098 | 11.210 | -100 | 45.869 | 100 |
| ESG | 10,390 | 29.201 | 11.551 | 4.127 | 26.812 | 58.509 |
| ORGANIZATION | 9,263 | 0.338 | 0.473 | 0 | 0 | 1 |
| TRAINING | 9,263 | 0.454 | 0.498 | 0 | 0 | 1 |
| SOE | 10,390 | 0.535 | 0.499 | 0 | 1 | 1 |
| DUAL | 10,390 | 0.052 | 0.222 | 0 | 0 | 1 |
| AGE | 10,390 | 2.904 | 0.367 | 0.693 | 2.944 | 3.555 |
| SIZE | 10,390 | 23.037 | 1.377 | 19.063 | 22.930 | 25.984 |
| LEV | 10,390 | 0.468 | 0.197 | 0.053 | 0.477 | 1.144 |
| ROA | 10,390 | 0.045 | 0.059 | -0.360 | 0.040 | 0.198 |
| BOARD | 10,390 | 10.022 | 2.724 | 5 | 9 | 18 |
| INDEP | 10,390 | 0.390 | 0.085 | 0.143 | 0.375 | 0.625 |
| TOP1 | 10,390 | 0.365 | 0.158 | 0.085 | 0.352 | 0.750 |

**Table 3. Pearson correlation matrix**

| Variables | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) TONE | 1.000 | | | | | | | | | | | | |
| (2) ESG | -0.116*** | 1.000 | | | | | | | | | | | |
| (3) ORGANIZATION | -0.189*** | 0.183*** | 1.000 | | | | | | | | | | |
| (4) TRAINING | -0.207*** | 0.260*** | 0.517*** | 1.000 | | | | | | | | | |
| (5) SOE | 0.015 | -0.121*** | -0.069*** | -0.099*** | 1.000 | | | | | | | | |
| (6) DUAL | -0.025*** | 0.041*** | 0.123*** | 0.128*** | -0.113*** | 1.000 | | | | | | | |
| (7) AGE | -0.044*** | 0.181*** | 0.223*** | 0.297*** | -0.016* | 0.097*** | 1.000 | | | | | | |
| (8) SIZE | -0.055*** | 0.035*** | 0.206*** | 0.153*** | 0.301*** | 0.105*** | 0.123*** | 1.000 | | | | | |
| (9) LEV | -0.002 | -0.057*** | 0.033*** | -0.021** | 0.254*** | 0.051*** | 0.080*** | 0.519*** | 1.000 | | | | |
| (10) ROA | 0.001 | 0.018* | -0.004 | -0.011 | -0.128*** | -0.052*** | -0.105*** | -0.058*** | -0.390*** | 1.000 | | | |
| (11) BOARD | 0.011 | 0.012 | 0.034*** | 0.014 | 0.232*** | 0.026*** | 0.051*** | 0.227*** | 0.120*** | -0.065*** | 1.000 | | |
| (12) INDEP | 0.031*** | -0.031*** | -0.049*** | -0.077*** | -0.083*** | 0.000 | -0.112*** | -0.016 | -0.004 | 0.061*** | -0.130*** | 1.000 | |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (13) TOP1 | -0.013 | -0.037*** | -0.042*** | -0.061*** | 0.336*** | -0.107*** | -0.213*** | 0.227*** | 0.083*** | 0.079*** | 0.024** | 0.024** | 1.000 |

*** p<0.01, ** p<0.05, * p<0.1

**Table 4. Baseline results**

| | (1)<br>$TONE_{t+1}$ | (2)<br>$TONE_{t+1}$ | (3)<br>$TONE_{t+1}$ |
|---|---|---|---|
| ESG | -0.045** | -0.060** | -0.035 |
| | (-2.454) | (-2.523) | (-1.309) |
| ORGANIZATION | | -4.310*** | |
| | | (-4.668) | |
| ESG × ORGANIZATION | | 0.042* | |
| | | (1.675) | |
| TRAINING | | | -3.596*** |
| | | | (-3.887) |
| ESG × TRAINING | | | -0.008 |
| | | | (-0.303) |
| SOE | 0.343 | 0.642 | 0.653 |
| | (0.623) | (1.057) | (1.072) |
| DUAL | -0.065 | -0.325 | -0.534 |
| | (-0.082) | (-0.415) | (-0.687) |
| AGE | 0.757 | 1.012 | 0.972 |
| | (1.037) | (1.308) | (1.267) |
| SIZE | -0.257 | -0.036 | -0.100 |
| | (-1.178) | (-0.155) | (-0.439) |
| LEV | -0.195 | -0.916 | -1.062 |
| | (-0.136) | (-0.585) | (-0.681) |
| ROA | 0.951 | 1.891 | 1.800 |
| | (0.308) | (0.590) | (0.568) |
| BOARD | 0.111* | 0.112 | 0.111 |
| | (1.669) | (1.635) | (1.643) |
| INDEP | 0.622 | -0.130 | -0.067 |
| | (0.320) | (-0.065) | (-0.033) |
| TOP1 | -0.550 | -0.513 | -0.417 |
| | (-0.336) | (-0.287) | (-0.232) |
| Constant | 48.830*** | 45.015*** | 46.662*** |
| | (9.458) | (8.108) | (8.465) |

| | | | |
|---|---|---|---|
| Observations | 10,390 | 9,263 | 9,263 |
| Adjusted $R^2$ | 0.080 | 0.126 | 0.128 |
| Industry | Yes | Yes | Yes |
| Year | Yes | Yes | Yes |

Notes: Robust standard errors clustered within each firm are used. The t-values of the regression coefficients appear in parentheses.

*** p<0.01, ** p<0.05, * p<0.1

**Table 5. 2SLS estimation**

| | (1)<br>First stage<br>ESG | (2)<br>Second stage<br>$TONE_{t+1}$ |
|---|---|---|
| PESG | 0.926*** | |
| | (18.965) | |
| ESG | | -0.128** |
| | | (-1.995) |
| SOE | -1.832*** | 0.204 |
| | (-3.326) | (0.364) |
| DUAL | -0.470 | -0.106 |
| | (-0.699) | (-0.133) |
| AGE | 1.711*** | 0.903 |
| | (2.721) | (1.229) |
| SIZE | 0.250 | -0.238 |
| | (1.273) | (-1.077) |
| LEV | -2.090 | -0.297 |
| | (-1.481) | (-0.205) |
| ROA | 0.671 | 1.083 |
| | (0.227) | (0.350) |
| BOARD | 0.120* | 0.124* |
| | (1.794) | (1.863) |
| INDEP | 1.517 | 0.739 |
| | (0.781) | (0.375) |
| TOP1 | 1.426 | -0.395 |
| | (0.950) | (-0.238) |
| Observations | 10,390 | 10,390 |
| Industry | Yes | Yes |
| Year | Yes | Yes |
| Kleibergen-Paap rk LM Stat | 152.645*** | |
| Kleibergen-Paap Wald rk F stat | 359.652 | |

Notes: Robust standard errors clustered within each firm are used. The t-values of the regression coefficients appear in parentheses.

*** p<0.01, ** p<0.05, * p<0.1

**Table 6. Firm and year fixed effects**

| | (1)<br>$TONE_{t+1}$ | (2)<br>$TONE_{t+1}$ |
|---|---|---|
| ESG | -0.038*** | -0.062*** |
| | (-2.608) | (-3.418) |
| ORGANIZATION | | -2.756*** |
| | | (-3.607) |
| ESG × ORGANIZATION | | 0.048** |
| | | (2.202) |
| SOE | 0.021 | 0.213 |
| | (0.024) | (0.215) |
| DUAL | 0.155 | -0.127 |
| | (0.223) | (-0.182) |
| AGE | -0.523 | -0.143 |
| | (-0.303) | (-0.078) |
| SIZE | -0.707 | -0.744 |
| | (-1.627) | (-1.438) |
| LEV | 0.687 | 1.192 |
| | (0.475) | (0.748) |
| ROA | 4.132* | 4.652* |
| | (1.660) | (1.728) |
| BOARD | 0.021 | 0.014 |
| | (0.431) | (0.266) |
| INDEP | -1.475 | -1.794 |
| | (-1.063) | (-1.232) |
| TOP1 | -1.356 | -0.632 |
| | (-0.595) | (-0.265) |
| Constant | 64.349*** | 64.991*** |
| | (5.786) | (4.904) |
| Observations | 10,390 | 9,263 |
| Adjusted $R^2$ | 0.529 | 0.534 |
| Firm | Yes | Yes |
| Year | Yes | Yes |

Notes: Robust standard errors clustered within each firm are used. The t-values of the regression coefficients appear in parentheses.

*** p<0.01, ** p<0.05, * p<0.1

**Table 7. Alternative timing and measurements of the dependent variable**

| | (1) $TONE_t$ | (2) $TONE_t$ | (3) ATONE $_{t+1}$ | (4) ATONE $_{t+1}$ | (5) PAGE $_{t+1}$ | (6) PAGE $_{t+1}$ |
|---|---|---|---|---|---|---|
| ESG | -0.036* | -0.040* | -0.008*** | -0.012*** | 0.006*** | 0.009*** |
| | (-1.774) | (-1.708) | (-3.200) | (-3.673) | (4.747) | (5.955) |
| ORGANIZATION | | -4.255*** | | -0.734*** | | 0.565*** |
| | | (-4.380) | | (-5.112) | | (8.612) |
| ESG × ORGANIZATION | | 0.018 | | 0.007* | | -0.007*** |
| | | (0.673) | | (1.717) | | (-3.988) |
| SOE | 0.479 | 0.389 | 0.202** | 0.202** | -0.062 | -0.059 |
| | (0.801) | (0.666) | (2.557) | (2.454) | (-1.568) | (-1.464) |
| DUAL | -0.145 | -0.120 | -0.048 | -0.063 | 0.101** | 0.113** |
| | (-0.168) | (-0.137) | (-0.440) | (-0.539) | (2.187) | (2.457) |
| AGE | 0.515 | 0.579 | 0.158 | 0.186* | -0.108* | -0.104* |
| | (0.633) | (0.727) | (1.511) | (1.688) | (-1.951) | (-1.831) |
| SIZE | -0.246 | -0.034 | -0.114*** | -0.110*** | 0.231*** | 0.225*** |
| | (-1.018) | (-0.140) | (-3.511) | (-3.201) | (15.488) | (15.364) |
| LEV | 1.186 | 1.166 | 0.316 | 0.392* | -0.269*** | -0.302*** |
| | (0.740) | (0.739) | (1.460) | (1.705) | (-2.613) | (-2.869) |
| ROA | 5.567* | 6.138* | -0.153 | 0.024 | 0.473** | 0.446** |
| | (1.685) | (1.863) | (-0.364) | (0.053) | (2.412) | (2.267) |
| BOARD | 0.097 | 0.097 | 0.001 | 0.001 | 0.007 | 0.006 |
| | (1.362) | (1.384) | (0.067) | (0.057) | (1.478) | (1.336) |
| INDEP | 0.515 | 0.333 | -0.013 | 0.002 | -0.072 | -0.074 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | (0.257) | (0.170) | (-0.047) | (0.006) | (-0.572) | (-0.571) |
| TOP1 | -1.895 | -2.062 | -0.097 | -0.165 | 0.130 | 0.165 |
| | (-1.051) | (-1.165) | (-0.424) | (-0.684) | (1.133) | (1.408) |
| Constant | 49.467*** | 45.963*** | 7.450*** | 7.542*** | -2.063*** | -2.158*** |
| | (8.675) | (8.119) | (9.899) | (9.430) | (-5.616) | (-5.913) |
| Observations | 8,531 | 8,507 | 10,390 | 9,263 | 10,343 | 9,219 |
| Adjusted $R^2$ | 0.062 | 0.079 | 0.137 | 0.154 | 0.331 | 0.365 |
| Industry | Yes | Yes | Yes | Yes | Yes | Yes |
| Year | Yes | Yes | Yes | Yes | Yes | Yes |

Notes: Robust standard errors clustered within each firm are used. The t-values of the regression coefficients appear in parentheses.

*** p<0.01, ** p<0.05, * p<0.1

**Table 8. Alternative independent variable**

| | (1)<br>$TONE_{t+1}$ | (2)<br>$TONE_{t+1}$ |
|---|---|---|
| WIND | -1.859*** | -2.118*** |
| | (-6.823) | (-5.474) |
| ORGANIZATION | | -2.119 |
| | | (-0.768) |
| WIND × ORGANIZATION | | 0.056 |
| | | (0.130) |
| SOE | 1.202** | 1.170* |
| | (2.086) | (1.932) |
| DUAL | -0.025 | -0.253 |
| | (-0.032) | (-0.305) |
| AGE | 1.917** | 2.106** |
| | (2.098) | (2.160) |
| SIZE | -0.397 | -0.402 |
| | (-1.633) | (-1.555) |
| LEV | 0.524 | 1.226 |
| | (0.300) | (0.668) |
| ROA | -2.161 | -0.915 |
| | (-0.584) | (-0.235) |
| BOARD | 0.112 | 0.122 |
| | (1.397) | (1.443) |
| INDEP | 3.223 | 3.495 |
| | (1.457) | (1.538) |
| TOP1 | 0.656 | -0.228 |
| | (0.373) | (-0.123) |
| Constant | 55.303*** | 57.532*** |
| | (9.437) | (8.484) |
| Observations | 5,117 | 4,572 |
| Adjusted $R^2$ | 0.104 | 0.116 |
| Industry Fixed Effects | Yes | Yes |
| Year Fixed Effects | Yes | Yes |

Notes: Robust standard errors clustered within each firm are used. The t-values of the regression coefficients appear in parentheses.

*** p<0.01, ** p<0.05, * p<0.1