european corporate governance institute

ecgi

Transparency and the Visibility of Misconduct: Evidence from ESG Disclosure Mandates

Finance Working Paper N° 1127/2026
March 2026

Erdinc Akyildirim
University of Nottingham
Giray Gozgor
University of Bradford
Thang Ho
University of Bradford
Alexander F. Wagner
University of Zurich, Swiss Finance Institute, CEPR and ECGI

© Erdinc Akyildirim, Giray Gozgor, Thang Ho and Alexander F. Wagner 2026. All rights reserved. Short sections of text, not to exceed two paragraphs, may be quoted without explicit permission provided that full credit, including © notice, is given to the source.

This paper can be downloaded without charge from:
https://doi.org/10.67929/ecgi-fin-1127-2026

european corporate governance institute

ECGI Working Paper Series in Finance

Transparency and the Visibility of Misconduct: Evidence from ESG Disclosure Mandates

Working Paper N° 1127/2026

March 2026

Erdinc Akyildirim
Giray Gozgor
Thang Ho
Alexander F. Wagner

We acknowledge the University of Bradford School of Management Research Quality Enhancement (RQE) Funding (Activity Code: 007175).

© Erdinc Akyildirim, Giray Gozgor, Thang Ho and Alexander F. Wagner 2026. All rights reserved. Short sections of text, not to exceed two paragraphs, may be quoted without explicit permission provided that full credit, including © notice, is given to the source.

Abstract

Mandatory disclosure is commonly intended to deter corporate misconduct by increasing transparency. We examine an alternative channel: disclosure may primarily change the likelihood that misconduct becomes detectable. Exploiting staggered introductions of ESG disclosure mandates across 53 countries, we study how regulation affects the observed incidence of misleading ESG communications identified by external monitors. Following mandate adoption, the number of detected incidents increases significantly. The rise is concentrated in areas with stronger scrutiny, among larger and more visible firms, in countries with higher institutional quality, and where media and civil society oversight are more effective. Moreover, capital markets react more negatively to incidents after disclosure becomes mandatory, particularly when claims are more verifiable. Together, the evidence indicates that disclosure reforms enhance the observability and credibility of ESG information, enabling outsiders to uncover misrepresentation rather than preventing it. Our findings highlight that transparency regulation can raise reported misconduct even as it improves accountability.

Keywords: Mandatory ESG disclosure, Greenwashing, Detection, Corporate misconduct, Information environment, Regulatory enforcement, Stock price reactions, Difference-in-differences

Erdinc Akyildirim
Assistant Professor in Banking and Financial Technology
University of Nottingham
University Park
Nottingham NG8 1BB, UK
phone:
e-mail: erdinc.akyildirim@nottingham.ac.uk

Giray Gozgor
Associate Professor
University of Bradford
Bradford, BD9 4JL, UK
e-mail: g.gozgor@bradford.ac.uk

Thang Ho
Assistant Professor
University of Bradford
Bradford, BD9 4JL, UK
e-mail: m.t.ho@bradford.ac.uk

Alexander F. Wagner*
Professor of Finance
University of Zurich
Plattenstr. 14
CH-8032 Zürich, Switzerland
phone: +41 446 343 963
e-mail: alexander.wagner@bf.uzh.ch

*Corresponding Author

s:fi
RESEARCH

Swiss Finance Institute
Research Paper Series
N°26-21

Transparency and the Visibility of Misconduct: Evidence from ESG Disclosure Mandates



Erdinc Akyildirim
Nottingham University

Giray Gozgor
University of Bradford

Thang Ho
University of Bradford

Alexander F. Wagner
University of Zurich, Swiss Finance Institute, CEPR, and ECGI

Transparency and the Visibility of Misconduct: Evidence from ESG Disclosure Mandates

This Version: February 16, 2026

Erdinc Akyildirim
Business School, Nottingham University, Nottingham, United Kingdom
Email: erdinc.akyildirim@nottingham.ac.uk

Giray Gozgor
School of Management, University of Bradford, Bradford, United Kingdom
Email: g.gozgor@bradford.ac.uk

Thang Ho
School of Management, University of Bradford, United Kingdom
Email: m.t.ho@bradford.ac.uk

Alexander F. Wagner
(Corresponding Author)
Department of Finance, University of Zurich, Switzerland
CEPR, ECGI, and Swiss Finance Institute
Email: alexander.wagner@df.uzh.ch

Abstract

Mandatory disclosure is commonly intended to deter corporate misconduct by increasing transparency. We examine an alternative channel: disclosure may primarily change the likelihood that misconduct becomes detectable. Exploiting staggered introductions of ESG disclosure mandates across 53 countries, we study how regulation affects the observed incidence of misleading ESG communications identified by external monitors. Following mandate adoption, the number of detected incidents increases significantly. The rise is concentrated in areas with stronger scrutiny, among larger and more visible firms, in countries with higher institutional quality, and where media and civil society oversight are more effective. Moreover, capital markets react more negatively to incidents after disclosure becomes mandatory, particularly when claims are more verifiable. Together, the evidence indicates that disclosure reforms enhance the observability and credibility of ESG information, enabling outsiders to uncover misrepresentation rather than preventing it. Our findings highlight that transparency regulation can raise reported misconduct even as it improves accountability.

Keywords: Mandatory ESG disclosure; Greenwashing; Detection; Corporate misconduct; Information environment; Regulatory enforcement; Stock price reactions; Difference-in-differences

Funding Acknowledgement: We acknowledge the University of Bradford School of Management Research Quality Enhancement (RQE) Funding (Activity Code: 007175).

1. Introduction

Bringing corporate misconduct to light is crucial for ensuring market integrity, protecting investors, and promoting effective regulation. While the literature has made substantial progress in unpacking the drivers of detection of financial misconduct (such as earnings manipulation and financial misrepresentation), highlighting the roles of media, analysts, short sellers, governance institutions and regulation (Dyck et al., 2010, 2024; Karpoff et al., 2008; Karpoff & Lou, 2010), less is known about the arguably equally important detection dynamics surrounding non-financial misstatements, particularly those related to firms' ESG claims.

Investors and consumers are increasingly factoring ESG performance into their purchasing and investment decisions (see, e.g., Ilhan et al., 2023; Servaes & Tamayo, 2013). At the same time, concerns have grown about inflated or misleading sustainability narratives presented across various communication channels, such as websites, advertising, and press releases, that extend beyond formal reports. Against this backdrop, governments and regulators have begun introducing mandatory ESG disclosures to increase transparency and accountability.[1] A growing body of research has examined their effects on capital markets, corporate financing and investing behavior, and firm performance (e.g., Chen et al., 2018; Christensen et al., 2021; Gibbons, 2024; Krueger et al., 2024). However, despite this growing literature, a fundamental question remains unresolved: How do mandatory ESG disclosure requirements affect the incidence of misleading ESG-related conduct and its visibility to external stakeholders? This question is critical, as it determines whether transparency mandates genuinely strengthen the informational environment or merely shift the forms and channels through which firms obscure unfavorable ESG realities.

A natural ex-ante prediction is that mandatory ESG disclosure disciplines firms. By increasing transparency and legal and reputational exposure, disclosure requirements may deter firms from making misleading ESG claims, thereby reducing ESG misrepresentation. This view

[1] Following Christensen et al. (2021), we define ESG disclosure or ESG reporting as "the measurement, disclosure, and communication of information about corporate social responsibility (CSR), ESG, or sustainability topics, including a firm's CSR/ESG activities, risks, and policies."

aligns with the broader literature that emphasizes the role of disclosure in reducing information asymmetries and improving market discipline.

We employ a staggered difference-in-differences (DiD) research design to investigate the impact of ESG disclosure mandates on the detection of ESG-related misleading communications, using a comprehensive dataset comprising 99,661 firm-year observations for 7,939 unique firms across 53 countries. To capture detection, we use measures based on ESG-related misleading communication events identified by RepRisk, either as a count or a binary indicator, reflecting incidents publicly flagged by media and stakeholder sources. Our model also controls various firm- and country-level factors, as well as firm- and industry-by-year fixed effects to capture within-firm variation and time trends.

Our empirical results show that mandatory ESG disclosure regulations are associated with a statistically significant increase in the detection of ESG-related misleading communication. In terms of economic magnitude, firms are approximately 1.1% more likely to be flagged for misleading ESG claims following the introduction of disclosure mandates, a sizable increase given the baseline probability of 3.9%. This finding holds when we employ alternative estimation windows and samples or apply different estimation methods (such as stacked estimation following Baker et al. (2022) and Cengiz et al. (2019)), across both binary and count-based detection measures. Furthermore, a dynamic analysis reveals that the increase in observed misleading communication occurs shortly after the regulation takes effect, with no significant pre-existing trends, supporting the validity of the identification strategy. Overall, these findings run counter to the deterrence-based prediction that mandatory disclosure would reduce misleading ESG communication.

The increase in ESG misrepresentation following disclosure mandates admits multiple interpretations, as observed incidents result from two distinct but unobservable processes: the commission of misrepresentation and its subsequent detection (Khanna et al., 2015; Wang, 2013). Thus, one possible explanation is behavioral adaptation, in which firms respond to new disclosure

requirements by engaging in more misleading ESG communication, consistent with concerns about greenwashing. An alternative possibility is improved detection. By requiring standardized, comparable ESG disclosures, mandates reduce the cost of verifying firms' ESG claims and provide common reference points that facilitate scrutiny by investors, the media, and civil society, analogous to the detection mechanisms emphasized in the financial misconduct literature (Karpoff et al., 2008; Karpoff & Lou, 2010). This transparency-as-monitoring channel (Bushman et al., 2004; Dye, 1985; Grossman & Hart, 1980; Verecchia, 2001) implies that misleading ESG claims are more likely to be uncovered after disclosure becomes mandatory, even if underlying firm behavior does not worsen. We refer to this mechanism as the detection hypothesis. A third possibility is a change in measurement, whereby disclosure mandates mechanically affect how ESG-related incidents are recorded or classified. The remainder of the paper seeks to distinguish between these explanations.

To distinguish between these three competing explanations, we conduct a series of analyses: (i) leveraging institutional and firm-level variation in monitoring environments, (ii) exploiting on-domain and off-domain incidents, and (iii) studying stock price reactions to incidents. As for cross-sectional differences, the detection effect hypothesis predicts that mandates lead to greater observed misrepresentation when scrutiny is high, because stakeholders are better equipped to uncover inconsistencies using the newly mandated disclosures. By contrast, under the behavioral adaptation (greenwashing) hypothesis, firms strategically exploit weak external monitoring, enforcement, or societal pressure to misrepresent performance, implying that mandates should increase ESG misrepresentation more where external scrutiny is low (see, e.g., Kim & Lyon, 2015; Leuz et al., 2003; Marquis et al., 2016; Yu, 2008). The measurement bias hypothesis would not imply any cross-sectional differences.

First, we find that the increase in flagged ESG misrepresentation is concentrated among larger firms and those with analyst coverage. These firms are more frequently scrutinized by external stakeholders, which increases the likelihood that misleading ESG claims will be detected once standardized disclosures become available (Dyck et al., 2010; Lang & Lundholm, 1996).

Second, ESG disclosure mandates issued by government entities, rather than those introduced by stock exchanges, are associated with increased detection of misrepresentation. This finding supports the detection interpretation, as government-led regulations typically entail higher enforcement expectations and greater public legitimacy, thereby enhancing the credibility of disclosures and prompting closer stakeholder scrutiny (Christensen et al., 2021; Liang et al., 2022). Third, the increase in ESG misrepresentation is stronger in countries with higher institutional quality, measured by government effectiveness, regulatory quality, rule of law, and control of corruption. Stronger institutional quality and legal enforcement not only impose greater penalties for misconduct but also support the infrastructure necessary for interpreting and acting on disclosures, thereby amplifying detection rather than inducing behavioral change (Leuz et al., 2003). Fourth, we find that the increase is greater in countries with more active civil societies and stronger media freedom. These environments empower third-party actors, such as journalists and NGOs, to scrutinize and publicize inconsistencies, while also disincentivizing misrepresentation by increasing the reputational and regulatory risks of exposure, thereby pointing to detection rather than commission as the dominant channel (Kim & Lyon, 2015). Taken together, our findings that ESG-related misleading communication incidents increase more in countries with stronger transparency infrastructure and among firms with greater public exposure support the detection-based interpretation and cast doubt on alternative mechanisms, such as opportunistic greenwashing or changes in measurement.

Next, we separate mandates by pillar and examine whether effects are confined to the targeted area or spill over. We find that detected misleading communication increases both on-domain (within the mandated pillar) and off-domain (in other pillars), consistent with the intensified scrutiny surrounding mandate adoption. Our results also hold when we restrict the analysis to firms that were already issuing CSR reports before the mandate, thereby holding the disclosure decision constant and focusing on a group in which standardization should reduce the

scope for opportunistic greenwashing. The persistence of the effect in this sample is therefore consistent with heightened detection.

Finally, we study stock-price reactions to incident disclosures and find that abnormal returns around incident dates are negative on average and more negative after mandates, with the strengthening concentrated in incidents that are more verifiable (high severity, novelty, and reach), further linking the mandate to improved signal credibility and investor scrutiny.

Our study makes several contributions. First, we contribute to a growing literature on the effects of mandatory ESG disclosure. Prior work shows that such regulations influence firm outcomes and market behavior. For instance, Downar et al. (2021) and Fiechter et al. (2022) find that EU mandates prompt firms to strengthen CSR efforts and reduce carbon emissions. Krueger et al. (2024) document improvements in stock liquidity, and Gibbons (2024) reports effects on firms` investment and financing decisions. Other studies highlighted broader spillovers, such as shifts in bank lending (Wang, 2023) and supply chain practices (Pankratz & Schiller, 2024). We extend this literature by introducing detection as a distinct and policy-relevant channel through which disclosure mandates operate. Rather than focusing on disclosure content, firm behavior, or capital market effect, we examine whether ESG reporting improves stakeholders' ability to identify misleading communication. This perspective is especially relevant considering heightened concerns over greenwashing and enforcement gaps, shifting the discussion from transparency as the provision of information to its role in enabling effective external scrutiny.

Second, our study is related to the broader literature on corporate misconduct, which examines the commission of wrongdoing and the mechanisms by which it is detected (Dyck et al., 2010; Karpoff et al., 2017). Much of this work focuses on financial misreporting and securities fraud, highlighting the influence of investor rights and legal enforcement (Leuz et al., 2003), governance structures (Beasley, 1996), executive attributes (Khanna et al., 2015), media and analyst coverage (Miller, 2006; Yu, 2008), short-seller activity (Fang et al., 2016; Karpoff & Lou, 2010), whistleblower incentives (Dyck et al., 2010), auditor scrutiny (Dyck et al., 2024), and market

comparability through benchmarking (Boone et al., 2025) in determining commission and its detection. Dechow et al. (2011) estimate the likelihood of accounting misconduct through patterns in financial disclosure. However, most empirical proxies capture only the detected cases, making it difficult to distinguish between the underlying incidence and the likelihood of detection (Wang, 2013). We extend this literature to the non-financial domain by providing large-scale, cross-country evidence on ESG misrepresentation, leveraging institutional variation to shed light on how disclosure mandates interact with monitoring infrastructures to shape the visibility of ESG misleading practices.

The rest of this paper is organized as follows. Section 2 presents the institutional background. Section 3 develops hypotheses. Section 4 describes the data and the research design. Section 5 reports the baseline empirical results. Sections 6 and 7 discuss the mechanisms. Section 8 provides a battery of robustness checks. Section 9 concludes.

2. Institutional Background

The move toward mandatory ESG disclosure represents a major shift in corporate sustainability reporting. These regulations aim to enhance transparency and establish standardized reporting practices, thereby improving comparability across industries and jurisdictions (Fiechter et al., 2022; Gibbons, 2024). Policymakers argue that such disclosures enable stakeholders better to assess the environmental and social impacts of corporate activities. For example, the European Union's Non-Financial Reporting Directive (NFRD) 2014/95/EU aims to enhance corporate transparency on social and environmental matters, thereby facilitating informed investment decisions and supporting a transition toward a more sustainable economy.

ESG disclosure mandates typically require firms to report quantitative indicators (e.g., greenhouse gas emissions) and qualitative information (e.g., board diversity and workforce policies), either in standalone sustainability reports or integrated into annual reports. However, regulatory frameworks differ substantially across countries, reflecting variations in regulatory

philosophy, market maturity, and sustainability priorities (Lin et al., 2024). The EU adopts a strict, rules-based model to ensure consistency and comparability, while the United Kingdom follows a principles-based approach, emphasizing materiality and relevance over prescriptive standards. China has made rapid progress toward establishing a structured, globally aligned ESG reporting regime. Online Appendix Table OA1 summarizes these mandates by jurisdiction.

Implementation also varies by issuing authority. In many cases, mandates are introduced by government bodies, such as ministries or financial regulators, and carry legal enforcement mechanisms, exposing firms to stricter monitoring and penalties for non-compliance. These rules often form part of broader sustainability strategies and are implemented through formal legal channels. For instance, the EU's NFRD requires member states to incorporate the directive into national law. In other cases, mandates originate from stock exchanges, typically as listing requirements under initiatives such as the Sustainable Stock Exchanges (SSE) Initiative. While influential, exchange-based rules may lack the legal force of government-issued regulations and instead rely on market incentives to encourage compliance.

Compliance models further shape regulatory impact. Under a full-compliance model, all mandated firms are expected to comply with the reporting guidelines without exception, thereby promoting uniformity and comparability. Alternatively, the "comply-or-explain" approach, common in corporate governance frameworks in countries such as Germany, Denmark, and Finland, allows firms to deviate from prescribed requirements if they provide a reasoned explanation, offering flexibility where a one-size-fits-all solution may not work for every firm.

3. Hypotheses Development

3.1 Main Effects

3.1.1 Deterrence

Standard economic theory predicts that mandatory disclosure should deter misleading behavior by increasing the expected detection probability and the severity of sanctions (Becker, 1968; Leuz et

al., 2003). Under this view, disclosure mandates reduce the incidence of misleading ESG communication.

H1: *Mandatory ESG disclosure requirements reduce misleading ESG communications.*

We treat H1 as the benchmark regulatory prediction. A failure to support H1 implies that mandatory disclosure does not deter misleading communication on impact, necessitating an examination of alternative mechanisms.

3.1.2 Detection or Greenwashing

Even if mandatory ESG disclosure is intended to deter misleading ESG communication, an increase in observed misleading incidents may arise through two conceptually distinct channels. The first channel is improved detection: disclosure mandates may make existing misrepresentations more visible without increasing their underlying incidence. primarily enhance the detectability of misleading ESG claims. The second channel is behavioral adaptation: firms may respond to reporting requirements by engaging in greater misleading communication, consistent with concerns about greenwashing. Importantly, both channels yield the same first-order empirical prediction for observed incidents, but differ sharply in their underlying economic interpretation and cross-sectional implications.

Under the first channel, detection, observed incidents reflect both the commission of misrepresentation and its subsequent revelation. A large body of finance and accounting literature emphasizes that many forms of misconduct remain latent until uncovered by regulators, investors, or other external monitors (Karpoff et al., 2008; Karpoff & Lou, 2010). In this setting, an increase in detected incidents need not imply a deterioration in firm behavior; instead, it may reflect improved monitoring and a higher probability that existing misconduct is revealed.

Disclosure mandates can raise the probability of detection by altering the information environment. Foundational work in information economics highlights that standardized and verifiable disclosure reduces information asymmetries, improves contractibility, and facilitates

monitoring by external parties (Bushman et al., 2004; Dye, 1985; Grossman & Hart, 1980; Verrecchia, 2001). Consistent with these insights, mandatory ESG disclosure requirements impose standardized, comparable, and verifiable reporting obligations that can lower the cost of validating firms' ESG claims. Unlike voluntary disclosures, which are often selectively framed to highlight favorable metrics while omitting adverse information, compulsory reporting regimes impose uniform standards and verifiable benchmarks (Gigler & Hemmer, 1998; Sulkowski & Jebe, 2022), enabling a range of external stakeholders to detect discrepancies, omissions, or inconsistencies between a firm's external ESG messaging and its actual behavior.

In practice, these benchmarks can be exploited by a broad set of external actors. For example, civil society organizations and NGOs can use standardized disclosures to cross-check public claims against reported metrics or observable outcomes. ESG data providers and rating agencies (e.g., RepRisk, MSCI, and Sustainalytics) are better equipped to algorithmically benchmark firms across industries and jurisdictions when disclosure formats are harmonized. Institutional investors, increasingly attentive to sustainability risks, may use mandated ESG data to scrutinize firms' ESG narratives or engagement outcomes. The presence of these actors ensures that, once disclosures become more comparable and accessible, firms face a higher likelihood of contradictions being noticed and publicized, thereby increasing the reputational and regulatory costs of misrepresentation.

In addition, disclosure mandates may serve as salience shocks. Peng & Xiong (2006) argue that limited attention leads individuals to process information categorically and to respond more strongly when issues become salient. ESG disclosure mandates can increase the salience of sustainability issues, drawing investor and public attention to ESG performance and enabling faster or more widespread detection of inconsistencies. Under this detection mechanism, the observed incidence of misleading ESG communication may rise even if firms' underlying behavior does not deteriorate.

As for the second channel, mandatory ESG disclosure may at the same time induce behavioral adaptation. Firms may attempt to meet ESG reporting requirements by exaggerating or manipulating ESG claims (i.e., ESG washing) to maintain a positive public image, attract sustainability-oriented investors, and avoid the financial or operational costs of genuine ESG improvements, potentially leading to an increase in reported incidents of misleading communication. So far, there is little empirical evidence on whether mandatory ESG reporting increases greenwashing behavior. Grewal et al. (2024) find that mandatory carbon reporting in the UK leads to a decline in greenwashing due to greater scrutiny, higher expected reputational risks, and greater regulatory risks. Goldman & Zhang (2024) demonstrate that, on average, firms effectively communicate their commitment to diversity, equity, and inclusion (DEI) in their 10-K filings, specifically in the human capital disclosures. Given the prevalence and extent of greenwashing (e.g., Baker et al., 2024), it is a real concern that firms may increase it when they are forced to disclose ESG-related matters.

These two mechanisms yield the same prediction for observed incidents but differ fundamentally in interpretation. Improved detection reflects regulatory success in making misleading conduct more visible, whereas behavioral adaptation reflects an unintended consequence in which disclosure mandates increase misrepresentation. Accordingly, we formulate the following hypothesis:

H2: *Mandatory ESG disclosure requirements increase the observed incidence of misleading ESG communications.*

Distinguishing between detection and behavioral adaptation requires moving beyond the average effect and examining how the mandate's impact varies across firms, regulatory designs, and institutional environments. Because misleading ESG communication is only observed when it is detected, the recorded incidence reflects the interaction of two latent processes: the propensity to misrepresent and the probability of detection (Khanna et al., 2015; Wang, 2013). Factors that

enhance monitoring capacity and scrutiny should increase the number of incidents detected by the detection mechanism but reduce incentives to misrepresent in response to behavioral adaptation.

3.2 Cross-Sectional Implications: Detection versus Greenwashing

The above logic motivates a set of cross-sectional tests that exploit variation in firm visibility, regulatory design, institutional quality, and informal oversight capacity. In what follows, we state hypotheses with the expected sign if the detection mechanism is at play; if the greenwashing mechanism is at play, the opposite sign is expected.

3.2.1 Firm Visibility and Market Scrutiny

Larger corporations and firms with greater analyst coverage attract disproportionate attention from investors, regulators, the media, and watchdog organizations, increasing the likelihood that inconsistencies in ESG communication are detected (Dyck et al., 2010; Leuz et al., 2003; Lang & Lundholm, 1996; Yu, 2008). Evidence from financial misconduct shows that such visibility and scrutiny channels heighten the rate of detected irregularities without necessarily implying higher underlying misconduct (Dyck et al., 2024). This monitoring mechanism appears equally applicable to ESG disclosures, particularly as ESG factors become progressively embedded within conventional investment analysis. If disclosure mandates primarily enhance detection, the increase in observed misleading ESG communication should be stronger for more visible firms.

H3*: The effect of mandatory ESG disclosure on misleading ESG communications is more positive for larger firms and firms with higher analyst coverage.*

Under behavioral adaptation (greenwashing), misrepresentation should instead be concentrated among firms facing weaker scrutiny.

3.2.2 Regulatory Design and Institutional Environment

The authority and enforcement credibility of the implementing institution shape the detection capacity of ESG mandates. Government-issued rules, backed by statutory authority, investigative

powers, and legal sanctions, tend to prompt more rigorous monitoring and consistent enforcement. Evidence from financial misconduct shows that stronger legal frameworks and investor protections increase detection rates and deter commission by enabling stakeholders to act effectively on warning signs (Dyck et al., 2010; Leuz et al., 2003). In contrast, stock exchange-based mandates rely mainly on reputational enforcement and typically lack statutory penalties, thereby weakening both deterrence and detection.

Detection likelihood also depends on the compliance model. Binding requirements with standardized formats enhance cross-firm comparability and facilitate benchmarking, while comply-or-explain regimes allow discretion that can obscure inconsistencies unless explanations are closely scrutinized (Christensen et al., 2022).

H4*: The effect of mandatory ESG disclosure on misleading ESG communications is more positive when mandates are government-issued and when reporting requirements are binding rather than comply-or-explain.*

Furthermore, the efficacy of mandatory ESG disclosure in identifying misleading communications may depend on a nation's institutional quality. While disclosure mandates theoretically enhanced transparency, their practical effectiveness hinges on whether the institutional framework adequately supports the interpretation, enforcement, and utilization of disclosed information. In jurisdictions with strong regulatory quality and investor protection, characterized by effective governance, rigorous regulatory standards, a robust legal framework, and minimal corruption, both public and private sector actors demonstrate a greater capacity and willingness to scrutinize corporate disclosures (Leuz et al., 2003). Such institutional environments ensure not merely the establishment of disclosure rules but their consistent enforcement, including meaningful consequences for inaccurate or misleading reporting. This credible institutional framework enhances the monitoring effectiveness of regulators and civil society alike, thereby significantly increasing the probability of detecting misrepresentations (Bushman et al., 2004; Jackson & Deeg, 2008; Porta et al., 1998, 2008). Conversely, in jurisdictions with weaker governance structures and limited regulatory capacity, mandatory disclosure requirements may

yield diminished practical impact. Stakeholders often lack the requisite tools, formal authority, or institutional trust to use disclosed information effectively, thereby reducing the detectability of misconduct. It follows that the monitoring benefits of disclosure regimes manifest most strongly in more robust institutional environments.

H5*: The effect of mandatory ESG disclosure on misleading ESG communications is more positive in jurisdictions with stronger institutional quality.*

Finally, informal monitoring by media and civil society also plays a central role in uncovering corporate misconduct. Strong press freedom and active civil societies empower journalists, NGOs, and advocacy groups to scrutinize ESG disclosures and publicize inconsistencies, amplifying reputational consequences (Dyck et al., 2010; Fox, 2007; Fung, 2007; Marquis et al., 2016). These conditions should strengthen detection effects but deter behavioral adaptation.

H6*: The effect of mandatory ESG disclosure on misleading ESG communications is more positive in jurisdictions with stronger press freedom and civil society participation.*

3.2.3 Measurement Bias

A third explanation for any change in recorded misleading ESG communication is that it reflects changes in how such incidents are reported, rather than a genuine shift in firm behavior or detection. For instance, ESG data providers (e.g., RepRisk) may adjust their coding algorithms, expand coverage, or receive more input from NGOs and the media following the implementation of a disclosure mandate. Such changes would mechanically inflate incident counts across the board, producing an apparent increase that is unrelated to the firm's or institution's characteristics. Such a mechanism would, however, not predict systematic variation across firm visibility, mandate design, institutional quality, or informal oversight. Observing consistent cross-sectional patterns along these dimensions, therefore, weighs against measurement bias as the primary explanation.

4. Data and Research Design

4.1 Data and Variables

4.1.1 Data

Our data comes from several sources. We source data on misleading communications from the *RepRisk* database, which has been available since 2007. We follow Krueger et al. (2024) to determine the effective years of mandatory ESG disclosure at the country level from 2007 to 2021. Financial data for publicly traded firms is sourced from Refinitiv Worldscope, while analyst coverage information is sourced from I/B/E/S. We collect data for formal institutional factors and country-level macroeconomic variables from the World Bank. Data on democracy ratings is sourced from the Varieties of Democracy (V-Dem) project. Our sample period covers the years from 2007 to 2021.

4.1.2 Mandatory ESG Disclosure Regulation

To construct our sample, we begin by collecting country-level data on mandatory ESG disclosure regulations from Krueger et al. (2024), which primarily draws on the Carrots and Sticks project, the Global Reporting Initiative (GRI), and the Sustainable Stock Exchanges (SSE) database.[2] Panel A of Table 1 outlines the effective years of ESG disclosure mandates in 27 countries (referred to as "treatment countries") and the respective enforcement approaches employed in each.[3] To address concerns about selection bias, we include a group of countries that did not adopt any mandatory ESG disclosure requirements during the sample period, serving as a control group.

[2] The Carrots and Sticks project monitors diverse elements of non-financial reporting regulations globally, including policies, frameworks, and standards. Krueger et al. (2024) supplement data on ESG reporting regulations by incorporating insights from the SSE and the GRI, and further validated their accuracy through additional sources, including media reports, government records, and stock exchange data.

[3] Out of the 27 countries that required some form of mandatory ESG information reporting in our sample, 18 countries implemented disclosure mandates for all three ESG topics all at once. In comparison, the remaining nine countries mandated E, S, and G disclosures individually. Following Krueger et al. (2024), for countries that phased in ESG disclosure gradually, we consider the effective years for mandatory ESG disclosure to be those in which disclosure for all three topics was mandated, specifically the year when the third topic became obligatory. This approach acknowledges the need for comprehensive integration of E, S, and G disclosure to harness the effects of disclosure mandates fully.

Firm-level financial data for both treatment and control countries are obtained from Refinitiv Worldscope for publicly listed companies. Control variables lag by one year. All variable definitions are provided in Appendix A.

[Insert Table 1 about here]

We apply screening criteria to refine our sample. First, we exclude firms that operate in the financial (SIC codes 6000–6999) and utility (SIC codes 4900–4999) industries. Second, we retain only firm-year observations with non-missing values for the misleading dummy or count variable and the control variables. Third, we include only treated firms that have at least one observation both before and after the year their country's disclosure mandate was implemented.[4] Fourth, we exclude firms with total assets below $1 million or with fewer than three firm-year observations during the sample period. Finally, we restrict the sample to countries with at least 30 firm-year observations. After applying these filters, our baseline sample comprises 99,661 firm-year observations for 7,939 unique firms across 53 countries, spanning the period from 2007 to 2021.

Table 1 presents the distribution of firms and firm-year observations by country. The baseline sample includes 45,941 firm-year observations from 27 countries that implemented mandatory ESG disclosure regulations, and 53,720 observations from 26 control countries without such mandates. The number of observations varies by country. Among the treatment countries, China contributes the largest share, with 12,469 firm-year observations. In the control group, the United States dominates, accounting for 18,505 observations, or approximately 19% of the control group's firm-years.[5]

Table 2 provides descriptive statistics and pairwise correlations for all variables used in the baseline analysis. The mean value of $MISLEAD_DUMMY$ is 0.039, indicating that 3.9% of firm-

[4] This requirement ensures within-firm identification in the staggered DiD setting and avoids reliance on one-sided observations. Our results are robust to relaxing this requirement and are available upon request.
[5] For robustness checks, we demonstrate that our statistical inference remains unaffected when we exclude U.S. firms from our sample or employ a sample of only treatment countries in our regression analysis.

year observations involve at least one detected misleading communication event. We also observe a positive correlation between misleading communication and firm size.

[Insert Table 2 about here]

4.1.3 Measuring Misleading Communications

The dataset on misleading communications is sourced from the RepRisk database, a widely recognized tool for research on issues such as CSR, ESG, and transparency. The RepRisk database utilizes a structured hierarchical classification system that organizes incidents into four main domains: Environmental, Social, Governance, and Cross-cutting. Under these four domains, RepRisk employs a structured framework comprising 28 core ESG issues that underpin its research methodology. These issues are comprehensive and mutually exclusive, as the basis for categorizing and linking risk incidents within the dataset. This framework ensures that each risk incident is systematically associated with at least one of the 28 ESG issues (Li & Wu, 2020).

Among RepRisk's core ESG issues, misleading communication is categorized under the Governance pillar. This issue concerns instances in which a company distorts or manipulates the truth to portray itself favorably, while its actual behavior contradicts that image. It also encompasses situations in which consumers are misled about a company's products or services. Examples include greenwashing, false advertising, astroturfing, and off-label marketing. As noted by Burke (2022), Fu (2023), Li & Wu (2020), and Long et al. (2024), the definition of misleading communication adopted by RepRisk aligns with the interpretations found in the academic literature (Lyon & Montgomery, 2015). Moreover, RepRisk's characterization of greenwashing as a specific form of misleading communication with an environmental dimension closely aligns with the United Nations' definition.

To illustrate the nature of misleading communication events, we also present several examples from the RepRisk Risk Incidents database, where the RepRisk score has been identified as resulting from miscommunication. For instance, on September 18, 2020, *Forbes* reported on a

Changing Markets Foundation assessment that named Danone, Unilever, Nestlé, and other large firms among the worst contributors to global plastic waste. The report indicated that Coca-Cola ranked first for plastic waste generation at roughly 2.9 million metric tons per year, followed by PepsiCo at roughly 2.3 million metric tons. It further argued that, rather than reducing plastic production, companies' public messaging tends to emphasize recycling and shift responsibility to governments and consumers, even as expansion into markets with limited waste infrastructure aggravates pollution pressures.[6]

In another case, on April 2, 2019, *Forbes* reported on findings attributed to InfluenceMap that major oil and gas companies, including ExxonMobil, Shell, Chevron, BP, Eni, and Total, spent over USD 1bn after the Paris Agreement on lobbying and branding efforts described as contributing to misleading climate-related communication. The reporting emphasized an alleged gap between these firms' public environmental actions viewed as undermining climate policy, including support for industry groups and lobbying strategies aimed at weakening regulation.[7]

Coincidentally on the same day, *BBC News* reported that an NGO ranking of Europe's largest emitters listed Ryanair among the top ten polluters for 2018, despite the company's public claims that it was "Europe's greenest and cleanest airline." The report framed this as an example of a potential discrepancy between sustainability-oriented corporate messaging and measured emissions outcomes.[8] These cases reflect the gap between corporate communication and actual practices, which RepRisk has defined as corporate miscommunication behavior.

Because RepRisk incidents are identified from public sources, our measures capture detected misleading communications; observed incidents therefore reflect both underlying behaviour and the likelihood of external scrutiny and reporting.

---

[6] Visit https://www.forbes.com/sites/niallmccarthy/2020/09/18/the-worlds-worst-companies-for-plastic-waste-pollution-infographic/#2147d4a6f101

[7] See https://www.forbes.com/sites/mikescott/2019/04/02/mixed-messages-from-oil-and-gas-sector-as-1bn-lobbying-effort-undermines-climate-fight/#38633efa19be

[8] See https://www.bbc.com/news/business-47783992

4.2 Research Design

To examine the average treatment effects of mandatory ESG disclosures on firms' detection of misleading communication, we employ a difference-in-differences (DiD) approach and exploit the implementation of ESG disclosure regulations. We begin with the classic staggered design and then employ various robustness checks (such as stacked estimation) below.

Specifically, our baseline DiD regression model is as follows:

$$MISLEAD_{i,c,t+1} = \beta_0 + \beta_1 \times POST_{c,t} + \beta_2 \times FIRMCTRL_{i,c,t} + \beta_3 \times COUNTRYCTRL_{c,t} + FIRM_i + INDUSTRY_i \times YEAR_t + \varepsilon_{i,c,t} \quad (1)$$

where i indexes firm, c indexes country where the firm is headquartered, and t indexes the year. $MISLEAD_{i,c,t+1}$ represents firm i's misleading communication behavior in the year $t+1$. We employ two measures of misleading communication behaviour: (1) $MISLEAD_DUMMY$, which is an indicator variable that equals one if the firm has any ESG-related misleading communication event during the year and zero otherwise, and (2) $MISLEAD_COUNT$, which measures the number of ESG-related misleading communication events the firm experiences during a year.

Although $MISLEAD_COUNT$ is a non-negative count variable with a substantial mass at zero, we estimate Eq. (1) using OLS with firm fixed effects to preserve the within-firm DiD identification strategy. In nonlinear fixed-effects Poisson models, firms with no misleading events over the sample period are dropped from estimation. Because approximately 80% of firms in our sample never experience a misleading incident, such specifications would restrict identification to a selected subsample of "ever-incident" firms. OLS with firm fixed effects retains the full panel of firms and consistently estimates the conditional mean effect under standard assumptions. In robustness tests, we report Poisson specifications as a robustness check.

The key variable, $POST_{c,t}$ is an indicator variable that equals 1 from the year mandatory ESG disclosure becomes effective onward and 0 otherwise. The variable is zero for all firms and years in countries that did not adopt ESG disclosure regulations throughout our sample period.

We control for the following firm-level variables: SIZE (i.e., the natural logarithm of the firm's total assets in the USD), MTB (i.e., market-to-book ratio, measured as the market value of the firm's equity over the book value of the firm's equity), LEVERAGE (i.e., the ratio of total liabilities over total assets), TANGIBILITY (i.e., the ratio of property, plant and equipment over total assets), INTANGIBILITY (i.e., the ratio of intangible assets over total assets), R&D (i.e., the ratio of research and development expenditures over total assets), and ROA (i.e., the ratio of net income over total assets).

We also control for country-level variables capturing economic growth from the WDI database: LNGDP (i.e., the natural logarithm of Gross Domestic Product per capita in current USD), GDPGR (i.e., the annual GDP growth rate), and INFLATION (i.e., the annual consumer price inflation rate). We winsorize all continuous variables at the 1st and 99th percentiles to reduce the influence of outliers.

Furthermore, we include firm-fixed effects to control for time-invariant differences across firms. This identifies the within-firm change in misleading communication between treatment and control firms. In addition, 2-digit SIC industry-by-year fixed effects are included to control for potential confounding market-wide shocks or industry-specific time trends in ESG issues.

In the main specifications, we follow recent work by Gibbons (2024) and Krueger et al. (2024) and use robust, clustered standard errors at the firm level. The robustness checks below show that the more conservative country-year-level clustering leads to somewhat wider confidence intervals but similar inference.

The coefficient on $POST$, β_1, captures the average change in ESG-related misleading communication incidents around the mandatory ESG disclosure years, comparing treatment firms

to control firms. If mandatory ESG disclosures increase (decrease) firms' misleading communication events, we would expect the coefficient β_1 to be positive (negative).

5. Baseline Empirical Results

This section estimates the average effect of mandatory ESG disclosure on misleading corporate communications and examines the dynamics around mandate adoption.

Table 3 reports the estimation results of Eq. (1). In Specification (1), we first present the results using $MISLEAD_DUMMY$ as the dependent variable. We find that the detected ESG-misleading communication increases for firms following the adoption of mandatory ESG disclosure rules. In terms of economic magnitude, the coefficient of 0.011 (t-statistic = 3.475) implies that firms are 1.1% more likely to have misleading communication detected in the years following the mandatory implementation of ESG disclosures, a sizable increase given the baseline probability of 3.9%.

[Insert Table 3 about here]

In Specification (2), which includes industry-by-year fixed effects, we continue to observe a positive and significant coefficient on $POST$. In Specifications (3) and (4), we use $MISLEAD_COUNT$ as the dependent variable. For example, in Specification (4), the coefficient of 0.058 (t-statistic=2.584) on $POST$ indicates that mandatory ESG disclosure is associated with an increase of 0.058 additional misleading communication events per firm-year, on average.[9]

We also observe plausible estimates for other firm-level and country-level characteristics. For example, larger firms are more likely to exhibit misleading communication events. Countries with lower GDP per capita (i.e., less developed countries) are associated with more misleading corporate ESG communication.

[9] Relative to the pre-mandate mean of 0.0795 in the estimation sample, this corresponds to an increase of approximately 73% (=0.058/0.0795).

As reported in Section 8, these findings survive numerous robustness checks (e.g., a stacked design a la Baker et al. (2022) and Cengiz et al. (2019), different clustering choices, sample restrictions, a matched-sample approach, among others). A key check concerns the dynamic development of the detection of misleading corporate communications. By tracking changes in detected ESG-related misleading events in the years surrounding the implementation of ESG reporting mandates, we assess (1) whether any confounding factors may have caused divergence in detection trends between treated and control firms prior to regulation, and (2) the timing and persistence of the detection effect following the introduction of mandatory disclosure.

To do so, we augment our baseline regression by including a series of relative year indicators as key explanatory variables. The regression is specified as follows:

$$MISLEAD_DUMMY_{i,c,t+1} = \beta_0 + \beta_1 \times POST(\tau)_{c,t} + \beta_2 \times FIRMCTRL_{i,c,t} + \beta_3 \times COUNTRYCTRL_{c,t} + +FIRM_i + INDUSTRY_i \times YEAR_t + \varepsilon_{i,c,t} \quad (2)$$

where $POST(\tau)_{c,t}$ is an indicator variable that equals one in the $|\tau|$-th year before (if $\tau < 0$) or after (if $\tau > 0$) a country introduces its ESG reporting mandate and zero otherwise. Years that are five or more years before ($\tau \leq -5$) or after ($\tau \geq 5$) the mandate introduction are grouped. Year $\tau = -1$ is excluded to estimate effects relative to this benchmark year.

Figure 1 presents the dynamic results from Eq. (2) by plotting the estimated coefficients on a series of relative year dummies, along with their 95% confidence intervals. Figure 1 shows that the increase in detected ESG misleading communication among treatment firms, relative to control firms, begins only after the introduction of mandatory ESG disclosure. The coefficients for pre-treatment years ($\tau \leq -5$ to $\tau = -1$) are statistically indistinguishable from zero, indicating that there were no significant pre-existing differences in detection trends, which supports the validity of the parallel trend assumption. Following the mandate, the estimated coefficients from $\tau = 0$ to $\tau = 4$ are positive and statistically significant, indicating a rising pattern in the detection of ESG-related misleading communication over the first four years after enforcement. In years τ

≥ 5, the effect remains positive but is no longer statistically significant, possibly due to attenuation or time-dependent adjustment effects.

[Insert Figure 1 about here]

Overall, these results suggest that the observed increase in corporate ESG-misleading communication is most likely driven by the introduction of mandatory ESG disclosures, rather than by unobserved factors.

In sum, these baseline findings suggest that ESG disclosure regulations are associated with a higher rate of detected ESG-related misleading communication among firms. This implies rejection of the standard deterrence hypothesis H1: mandatory ESG disclosure does not reduce observed misleading communication. Instead, hypothesis H2 receives support. Therefore, we proceed to examine whether this increase reflects behavioral adaptation, improved detection, or measurement artefacts.

6. Mechanism Analysis

Our results indicate that mandatory ESG disclosure regulations significantly increase the detection of ESG-related misleading communication. We next investigate the mechanisms underlying this effect. Specifically, we seek to disentangle whether the observed increase reflects (i) enhanced detection capacity, whereby greater transparency and stakeholder monitoring uncover more misrepresentation, (ii) behavioral adaptation in the form of increased greenwashing, or (iii) spurious changes due to measurement bias, such as shifts in data provider coding or media attention. While it is hard to definitively exclude either channel, we use a large battery of tests.

6.1 Firm Visibility and Market Scrutiny

To examine how firm-level visibility influences the effects of mandatory ESG disclosure, we test whether the observed rise in misleading communication is concentrated among firms with greater visibility, where detection likelihood is higher, or among those with lower visibility, where incentives and possibilities for greenwashing may be stronger.

To investigate this hypothesis (H3), we first divide firms into large and small groups. BIG ($SMALL$) is an indicator variable equal to one if the firm's size is above (below) the median firm size within its country-year. We then augment our baseline regression with interaction terms between $POST$ and these firm size indicators. We report the results in Table 4.

[Insert Table 4 about here]

As shown in Specifications (1) and (2) of Table 4, using either $MISLEAD_DUMMY$ or $MISLEAD_COUNT$ as the dependent variable, the coefficients on $POST \times BIG$ are positive and statistically significant at the 1% level. This indicates that the increase in the detection of misleading ESG communication following mandatory ESG disclosure is primarily concentrated among larger firms. In contrast, the coefficients on $POST \times SMALL$ are negative and insignificant, indicating that smaller firms do not exhibit a post-mandate increase in misleading communication incidents. The difference in effects between big and small firms is statistically significant (p-value = 0.000), confirming that firm size is a meaningful moderator of the mandatory disclosure effect. Similarly, Specifications (3) and (4) indicate that the increase in detected misleading ESG communication following disclosure mandates is concentrated among firms with analyst coverage.

Overall, the evidence is more consistent with a detection-based mechanism than with behavioral adaptation. The post-mandate increase in misleading communication is concentrated among larger, more scrutinized firms, not among less visible firms, where incentives to misrepresent would be stronger if the rise reflected greater misconduct. This pattern suggests that mandatory disclosure primarily enhances external stakeholders' ability to detect misleading ESG communication.

6.2 Regulatory Design and Institutional Environment

Table 5 presents the results for hypothesis H4. First, we examine whether the source of the mandate, i.e., government institutions versus stock exchanges, shapes the effectiveness of the

regulation. We define GOV as an indicator equal to one if a government authority issued the ESG mandate, and $EXCH$ as an indicator equal to one if a stock exchange introduced the mandate. Then, we interact with both variables with $POST$ and, add interaction terms to Equation (1). Specifications (1) and (2) of Table 5 show that the interaction term $POST \times GOV$ is positive and statistically significant across both dependent variables ($MISLEAD_DUMMY$ and $MISLEAD_COUNT$). This suggests that the detection of misleading ESG communication increases significantly only when a government institution issues the mandate. In contrast, the coefficients on $POST \times EXCH$ are positive but statistically insignificant, indicating that stock exchange–driven mandates do not meaningfully affect detection outcomes. The difference in coefficients between the two groups is statistically significant (p-values = 0.076 and 0.028), providing support for Hypothesis 4.

[Insert Table 5 about here]

Second, we examine whether the enforcement approach, specifically, full compliance versus comply-or-explain, affects the relationship between mandatory ESG disclosure and the detection of misleading communication. We define $COMPLY$ as an indicator equal to one if the mandate requires full compliance, and $COMPLY\text{-}OR\text{-}EXPLAIN$ as an indicator equal to one if firms may deviate from the requirements provided they explain the deviationWe interact with both variables with $POST$ and add them to our baseline regression. Specifications (3) and (4) of Table 5 show that both enforcement models are associated with an increase in detection, as the interaction terms $POST \times COMPLY$ and $POST \times COMPLY\text{-}OR\text{-}EXPLAIN$ are positive. The coefficients for $POST \times COMPLY$ are statistically significant across both measures of misleading communication, while the coefficients for $POST \times COMPLY\text{-}OR\text{-}EXPLAIN$ are smaller in magnitude and statistically weaker. However, the differences in coefficients between the two enforcement approaches are not statistically significant (p-values = 0.833 and 0.767). These results suggest that detection increases under both types of enforcement regimes, although the effect

appears somewhat stronger under full compliance. One possible explanation is that, even under comply-or-explain frameworks, disclosure mandates still raise stakeholder awareness and scrutiny, which may be sufficient to enhance detection. In such cases, the act of explaining non-compliance could itself draw attention and trigger oversight from analysts, media, or investors.

Together, these results indicate that detection effects are strongest for government-issued mandates, consistent with a detection-based mechanism driven by a stronger enforcement capacity. The weaker, statistically insignificant effects of stock exchange rules provide little support for behavioral adaptation. Differences between compliance models are less clear-cut, suggesting that even comply-or-explain regimes can enhance detection when they attract external scrutiny.

Next, to test for the role of the institutional environment, we follow prior work such as Krueger et al. (2024) and Leuz et al. (2003), and use four World Bank governance indicators (i.e., government effectiveness, regulatory quality, rule of law, and control of corruption) as proxies for institutional quality. Each indicator is normalized such that higher values represent stronger institutions.

[Insert Table 6 about here]

As reported in Specifications (1) through (8) of Table 6, we find consistent evidence that the increase in detected ESG-related misleading communication is significantly greater in countries with higher institutional quality. Across all specifications, the interactions between $POST$ The institutional quality indicators are positive and statistically significant (with t-statistics ranging from 3.624 to 4.510), suggesting that a stronger institutional framework enhances the effectiveness of disclosure mandates in uncovering misleading communication.

We view this as consistent with a detection-based mechanism: rather than prompting firms to become more misleading, stronger institutional environments enhance external monitors' capacity to uncover existing misrepresentation. These findings support Hypothesis H5 and underscore the crucial role of institutional infrastructure in facilitating effective oversight under mandatory ESG disclosure regimes.

Finally, to examine Hypothesis H6's prediction that societal oversight capacity moderates the effect of ESG disclosure mandates on detection, we incorporate two institutional variables from the Varieties of Democracy (V-Dem) dataset: the Core Civil Society Index and the Freedom of Expression Index. The Core Civil Society Index measures the strength, openness, and autonomy of civil society organizations within a country. At the same time, the Freedom of Expression Index assesses the degree to which individuals, media, and organizations can freely express their views without censorship or repression. Both indices range from 0 to 1, with higher values indicating stronger societal oversight environments.

As reported in Specifications (1) through (4) of Table 7, the interaction terms between $POST$ and both the Core Civil Society Index and Freedom of Expression Index are positive and statistically significant at the 1% level. These findings suggest that the rise in detected ESG-related misleading communication following mandatory disclosure is indeed more substantial in countries with higher levels of civil society engagement and more robust freedom of expression.

[Insert Table 7 about here]

This result is consistent with Hypothesis H6 and suggests that informal oversight mechanisms, such as press freedom and civil society engagement, enhance the effectiveness of ESG disclosure mandates by facilitating broader public scrutiny and accountability, thereby increasing the likelihood of detecting misleading ESG communications once disclosures are made available.

Taken together, our cross-sectional analyses provide converging evidence in favor of a detection-based interpretation of the mandate effect. Across firm-, mandate-, and country-level dimensions, the increase in identified misleading ESG communication is concentrated in contexts with stronger external monitoring capacity (i.e., larger and more visible firms), mandates issued by government regulators, countries with higher institutional quality, and jurisdictions with robust informal oversight. Such patterns are less consistent with a behavioral-adaptation mechanism, which would predict larger increases in settings with weaker scrutiny. Instead, the results suggest

that mandatory ESG disclosure primarily enhances the likelihood that ESG misrepresentation is uncovered, rather than prompting firms to engage in more misleading behavior.

7. Further Implications and Validation Tests

7.1 On-domain and Off-domain Misleading ESG Communication

A critical step in interpreting our findings is to determine whether the increase in misleading ESG communication is confined to the disclosure domain directly subject to the mandate or whether it extends to other domains as well. An increase limited to the mandated domain would be more consistent with strategic firm responses, such as domain-specific greenwashing in areas where disclosure requirements are binding. In contrast, an increase that extends to non-mandated domains would point to a broader intensification of scrutiny, in line with our detection-based interpretation. In this case, introducing standardized disclosure in one pillar would not only enable stakeholders to detect inconsistencies in that specific area but also facilitate a more comprehensive understanding of the overall picture. It would also trigger wider investigative attention, leading to the identification of misleading communication across other ESG dimensions.

To test this, we adapt our empirical design to exploit the fact that in several countries, disclosure mandates were introduced sequentially rather than all at once (i.e., countries that implemented ESG report mandates simultaneously are excluded from this analysis). While our main specifications indicate that the treatment indicator equals one when all three E, S, and G pillars are subject to mandatory disclosure, this analysis constructs domain-specific treatment variables instead. For each country-year, we code $POST_E$, $POST_S$, and $POST_G$ to equal one after the respective disclosure requirement takes effect (see Online Appendix Figure OA1). We then divide misleading communication into three categories: environmental, social, and governance. For each domain–year observation, on-domain outcomes for the regulated pillar comprise the number of misleading incidents and a dummy equal to one if any incident occurs.

Off-domain outcomes are defined analogously using the two remaining pillars: the sum of their incident counts and a dummy variable equal to 1 if either pillar records an incident. For instance, in the years following the introduction of an environmental disclosure requirement, misleading environmental communication is treated as on-domain, whereas misleading social and governance communication is aggregated as off-domain.

To implement this approach, we restructure the data into a stacked domain-firm-year panel, so that each firm appears three times per year, once for each ESG pillar. We then estimate separate regressions for on-domain and off-domain misleading communication, restricting the analysis to countries with sequential adoption and retaining non-adopting countries as controls. The specifications include firm-by-domain fixed effects and domain-by-industry-by-year fixed effects, which absorb time-invariant firm-domain heterogeneity and domain-industry-year-level common shocks. This ensures that the estimated effects are tied to the timing of mandates in treated countries, rather than to global trends.

The results, presented in Table 8, show that disclosure mandates significantly increase both on-domain and off-domain incidents of misleading communication. The rise in on-domain misleading confirms our baseline finding that mandated disclosure facilitates the detection of misleading claims in the targeted area. The rise in off-domain misleading indicates that mandates trigger broader scrutiny and monitoring, extending to ESG claims outside the directly regulated domain. This pattern would be expected if disclosure requirements lower verification costs and mobilize watchdogs, media, and civil society actors to expand their oversight efforts beyond the immediate scope of the mandate.

[Insert Table 8 about here]

7.2 Pre-Mandate Reporters

We next restrict our analysis to the sample of firms that issued sustainability reports before their country's mandate was adopted. Focusing on this subset holds constant the decision to disclose

and isolates the effect of mandatory reporting on the incidence of misleading communication among firms already engaged in ESG disclosure. Voluntary reporters are also those most prone to concerns of strategic inflation and selective disclosure. Critically, this is the group where we would expect greenwashing to decline once reporting is standardized, since mandatory requirements make disclosures more comparable and easier to audit. Therefore, if the mandate primarily curbs commissions, the effect should be weaker in this group. Instead, if the mandate enhances detection, the effect should persist, as standardized reports lower verification costs and facilitate scrutiny.

We construct this test by retaining only firms that issued at least one CSR report in the years preceding the adoption of the mandate in their country, as identified using Asset4 data. We then re-estimate our baseline specifications on this restricted sample, maintaining the same set of controls and fixed effects as in the main analysis. Table 9 shows that the results remain robust: both the number of misleading incidents and the probability of any misleading incidents increase significantly following the adoption of the mandate.

[Insert Table 9 about here]

These findings reinforce our detection-based interpretation. Even among firms that are already voluntarily disclosing, where opportunities for new misrepresentation should be reduced by standardized reporting, the incidence of detected misleading communication rises. This pattern is consistent with mandatory disclosure primarily operating by improving verifiability and mobilizing external scrutiny, thereby increasing the likelihood that misleading claims are uncovered.

7.3 Stock Market Reaction to Misleading ESG Communication Events

Mandatory disclosure strengthens the information environment by standardizing metrics and lowering verification costs. If detection becomes more likely and signal credibility improves, the expected reputational and regulatory costs of being caught rise, and investors should price incident

disclosures more aggressively. We therefore expect abnormal returns around misleading-incident dates to be more negative after mandate adoption, with the effect concentrated on more verifiable incidents.

We conduct an event study around RepRisk's misleading incident dates and compute abnormal returns, assuming a beta of 1. CAR[0] and CAR[−1,+1] represent the firm's stock return minus the corresponding country market return on the event day and over the three-day window, respectively. We compare mean CARs pre- versus post-mandate and split the cross-section by verifiability, classifying an incident as more verifiable if its severity, novelty, and reach are all equal to or greater than 2 (less verifiable otherwise).[10] The related results are reported in Table 10.

[Insert Table 10 about here]

We find that average abnormal returns around incident dates are negative and statistically significant; crucially, the reaction is more negative post-mandate. In the full sample, the average CAR[−1,+1] is −0.242% pre-mandate (t = −4.477) and −0.401% post-mandate (t = −5.142), a post–pre difference of −0.159% (t = −1.691). The strengthening is concentrated in more verifiable incidents. For this subset, the average CAR[−1,+1] moves from −0.310% pre-mandate (t = −3.218) to −0.790% post-mandate (t = −4.484), a difference of −0.480% (t = −2.413). By contrast, less verifiable incidents exhibit a smaller change: −0.234% pre-mandate (t = −4.023) to −0.353% post-mandate (t = −4.776), a difference of −0.119% (t = −1.278). Taken together, we interpret these patterns as consistent with mandates increasing the credibility and auditability of ESG flags, leading investors to punish well-documented misrepresentation more sharply in the post-mandate regime.

8. Robustness Tests

[10] RepRisk evaluates ESG incidents based on their severity and novelty, assigning scores on a scale from 1 (low) to 3 (high). *Severity* measures the intensity or seriousness of an incident, *novelty* assesses whether the issue is new or unprecedented for the company or project, and *reach* measures the news coverage of an incident. For severity, novelty, and reach, incidents classified as two or higher indicate a significant and new ESG issue, which is more verifiable.

8.1 Alternative Samples and Estimation Methods

This section reexamines the effects of mandatory ESG disclosures on the detection of ESG-related misleading communication by employing alternative samples and estimation approaches. First, to mitigate the influence of confounding events, we follow the approach of Fauver et al. (2017) and restrict the sample of firms in treatment countries to a [-10; +10] year window around the implementation of mandatory ESG disclosure or use a narrower [-5; +5] year window. Specifications (1) and (2) of Table 11 show that, again, we observe an increase in the detection of ESG-related misleading communication following the introduction of mandatory disclosure requirements.

[Insert Table 11 about here]

Second, recognizing that US firms constitute approximately 19% of firm-year observations, we conduct a robustness check by excluding them from the sample. The results presented in Specification (3) confirm that the observed effect remains unchanged even after removing the US firms.

Third, to ensure that the results are not influenced by variations in ESG-related misleading communication detection in non-treatment countries, we limit the sample to treatment countries, excluding those that have never implemented ESG reporting mandates. As shown in Specification (4), the coefficient on $POST$ remains positive and statistically significant at the 1% level.

Fourth, we employ alternative estimation techniques to account for potential biases arising from differences in firm characteristics. We employ a matched-sample approach, using a logit model that incorporates firm- and country-specific characteristics, as well as year-specific firm- and industry-specific fixed effects, to estimate the propensity of firms to be assigned to the treatment group. We set a 0.01% caliper for propensity score matching to ensure close similarity between treated and control firms. Each treated firm is matched with three closely aligned control firms, and the baseline regression is re-estimated using this matched sample. The results in Specification (5) indicate that the coefficients on $POST$ remain positive and significant, reinforcing

the conclusion that firm-level differences do not drive the increase in detected ESG-related misleading communication behavior.

In addition, since ESG disclosure mandates are enacted at the country level, we assess the robustness of our inference to a more conservative clustering of standard errors that allows for common shocks at the policy implementation level. As reported in Table OA2 of the Online Appendix, clustering at the country-year level yields results qualitatively similar to those from our baseline firm-clustered specifications. While the average post-mandate effect becomes less precisely estimated under this conservative clustering approach, the interaction patterns remain robust and continue to indicate that the effects of mandatory ESG disclosure are concentrated in higher-scrutiny environments, such as more visible firms, stronger institutions, freer media, and more active civil society. Overall, these results reinforce a detection-based interpretation, consistent with the view that disclosure mandates primarily increase the visibility of misleading ESG conduct where monitoring capacity is strongest.

Finally, because $MISLEAD_COUNT$ is a non-negative count variable, we estimate Poisson models as a robustness check. When firm fixed effects are included, Poisson estimation drops all firms with no misleading incidents over the sample period. Since approximately 80% of firms never experience a misleading event, such specifications restrict identification to a selected subsample of "ever-incident" firms and are therefore not informative for our baseline DiD design. We therefore estimate Poisson models without firm fixed effects but including industry-by-year fixed effects. As seen in the final column of Table 11, the coefficient on POST is 0.423 ($p < 0.01$), implying that mandatory disclosure is associated with an increase in the expected number of misleading incidents of $\exp(0.423) - 1 \approx 53\%$. While the Poisson model captures proportional changes in expected counts and our baseline OLS specification identifies within-firm level changes, the direction and economic significance of the effect are consistent across approaches.

8.2 Stacked DiD Regressions

A potential concern with the staggered Difference-in-Differences (DiD) design is that treatment effects may vary over time, leading to biased estimates of the Average Treatment Effect on the Treated (ATT) when using a two-way fixed effects (TWFE) DiD regression. This bias arises from inappropriate comparisons of treatment effects between earlier- and later-treated units (Baker et al., 2022). To alleviate this concern, we follow Baker et al.'s (2022) recommendation and re-estimate our baseline model using a cohort-level stacked DiD approach (Cengiz et al., 2019) as an alternative method.

Specifically, for each treated country, we construct a balanced panel with five years of pre-treatment data (i.e., years -5, -4, -3, -2, and -1) and six years of post-treatment data (i.e., years 0, +1, +2, +3, +4, and +5, where year 0 is the adoption year). We merge the corresponding years for the clean (i.e., never-treated) control group and stack the data into one dataset.[11] We then re-estimate our baseline regression of ESG-misleading communication on the post-treatment indicator using this stacked sample. We include fixed effects for Firm×Cohort and Industry×Year×Cohort. The estimates in Table 12 show that treatment effects from the stacked regressions are positive and statistically significant at the 5% level for both $MISLEAD_DUMMY$ and $MISLEAD_COUNT$, and are comparable in magnitude to those from the staggered design. This evidence suggests that potential biases stemming from staggered timing of the treatment effects and treatment-effect heterogeneity do not alter our overall conclusion.

[Insert Table 12 about here]

Furthermore, Table OA3 of the Online Appendix reports additional stacked DiD estimates under alternative clustering assumptions. Panel A clusters standard errors at the firm level, accounting for serial correlation in firm-level outcomes across cohorts. Panel B clusters

[11] Given that RepRisk data begin in 2007 and that robust stacked DiD estimation requires sufficient pre- and post-treatment observations to form valid cohort comparisons, we exclude countries that adopt ESG disclosure regulations prior to 2012 (i.e., Belgium, China, Pakistan, Philippines, and South Africa). Observations from 26 never-treated countries serve as clean controls and appear multiple times across cohorts. Our findings remain robust when using stacked [-3 years, +3 years] cohorts; results are available upon request.

standard errors at the country-cohort level, allowing for correlated shocks among firms within a cohort exposed to the same mandate and providing more conservative inference. Under country-cohort clustering, standard errors increase in some specifications, leading to weaker statistical significance for the average post-mandate effect. Importantly, across both clustering approaches, we consistently find that the mandate effect is concentrated in environments with stronger monitoring capacity and external scrutiny. These results indicate that our main conclusions are robust to alternative inference procedures and are not driven by staggered treatment timing or inappropriate comparisons across cohorts.

9. Conclusion

This paper investigates whether mandatory ESG disclosure regulations impact the detection of misleading ESG communications. Using a global panel of firms subject to staggered ESG disclosure mandates across 53 countries from 2007 to 2021 and a difference-in-differences design, we find a statistically significant increase in the detection of misleading ESG communication incidents following the introduction of mandatory disclosure. The result is robust to alternative estimation windows, samples, and methods, across both binary and count-based detection measures. A dynamic analysis reveals that the increase emerges shortly after the mandate takes effect, with no evidence of pre-existing trends.

Cross-sectional analyses provide insight into the mechanism driving this effect. The post-mandate increase in detected misrepresentation is concentrated among firms with greater market visibility, in countries with stronger formal institutions and more active civil society oversight, and under mandates issued by government regulators. These patterns align with a detection-based explanation: disclosure requirements enhance external monitors' capacity to identify inconsistencies. In contrast, we find little evidence of larger effects in weak enforcement or low scrutiny settings, which is inconsistent with a greenwashing-driven behavioural adaptation mechanism that would predict larger effects in low oversight settings.

Our findings have several implications. First, they suggest that ESG disclosure mandates can improve accountability by enhancing detectability. This aligns with the broader finance literature, which shows that when actions are not directly observable, optimal incentive contracts rely on signals that are at least partially informative about unobserved behavior (Holmström, 1979). In the ESG context, disclosure mandates enhance the observability of firm behavior by generating standardized signals that external monitors (investors, NGOs, data providers) can use to infer potential misrepresentation, thereby reducing the moral hazard associated with unverifiable ESG claims. Diamond (1989) models how the threat of losing reputation disciplines behavior. By increasing the likelihood that misrepresentation will be detected and publicly flagged, disclosure mandates raise the reputational cost of ESG misconduct, thereby deterring misbehavior. Second, the results highlight that institutional and societal monitoring capacity are critical to realizing the benefits of disclosure. Policies that enhance the likelihood of detection, through stronger governance, freer media, or increased stakeholder engagement, are likely to be effective tools in curbing misleading ESG communication.

References

Baker, A. C., Larcker, D. F., & Wang, C. C. (2022). How much should we trust staggered difference-in-differences estimates? *Journal of Financial Economics*, 144(2), 370–395. https://doi.org/10.1016/j.jfineco.2022.01.004

Baker, A. C., Larcker, D. F., McClure, C. G., Saraph, D., & Watts, E. M. (2024). Diversity washing. *Journal of Accounting Research*, 62(5), 1661–1709. https://doi.org/10.1111/1475-679X.12542

Beasley, M. S. (1996). An empirical analysis of the relation between the board of directors' composition and financial statement fraud. *The Accounting Review*, 71(4), 443–465. https://www.jstor.org/stable/248566

Becker, G. S. (1968). Crime and punishment: An economic approach. *Journal of Political Economy*, 76(2), 169–217. https://doi.org/10.1086/259394

Boone, A., Grieser, W., Li, R., & Venkat, P. (2025). Product similarity, benchmarking, and corporate fraud. *Journal of Financial and Quantitative Analysis*, 60(7), 3195–3227. https://doi.org/10.1017/S0022109024000826

Burke, J. J. (2022). Do boards take environmental, social, and governance issues seriously? Evidence from media coverage and CEO dismissals. *Journal of Business Ethics*, 176(4), 647–671. https://doi.org/10.1007/s10551-020-04715-x

Bushman, R. M., Piotroski, J. D., & Smith, A. J. (2004). What determines corporate transparency? *Journal of Accounting Research*, 42(2), 207–252. https://doi.org/10.1111/j.1475-679X.2004.00136.x

Cengiz, D., Dube, A., Lindner, A., & Zipperer, B. (2019). The effect of minimum wages on low-wage jobs. *The Quarterly Journal of Economics*, 134(3), 1405–1454. https://doi.org/10.1093/qje/qjz014

Chen, Y. C., Hung, M., & Wang, Y. (2018). The effect of mandatory CSR disclosure on firm profitability and social externalities: Evidence from China. *Journal of Accounting and Economics*, 65(1), 169–190. https://doi.org/10.1016/j.jacceco.2017.11.009

Christensen, D. M., Serafeim, G., & Sikochi, A. (2022). Why is corporate virtue in the eye of the beholder? The case of ESG ratings. *The Accounting Review*, 97(1), 147–175. https://doi.org/10.2308/TAR-2019-0506

Christensen, H. B., Hail, L., & Leuz, C. (2021). Mandatory CSR and sustainability reporting: Economic analysis and literature review. *Review of Accounting Studies*, 26(3), 1176–1248. https://doi.org/10.1007/s11142-021-09609-5

Dechow, P. M., Ge, W., Larson, C. R., & Sloan, R. G. (2011). Predicting material accounting misstatements. *Contemporary Accounting Research*, 28(1), 17–82. https://doi.org/10.1111/j.1911-3846.2010.01041.x

Diamond, D. W. (1989). Reputation acquisition in debt markets. *Journal of Political Economy*, 97(4), 828–862. https://doi.org/10.1086/261630

Downar, B., Ernstberger, J., Reichelstein, S., Schwenen, S., & Zaklan, A. (2021). The impact of carbon disclosure mandates on emissions and financial operating performance. *Review of Accounting Studies*, 26(3), 1137–1175. https://doi.org/10.1007/s11142-021-09611-x

Dyck, A., Morse, A., & Zingales, L. (2010). Who blows the whistle on corporate fraud? *Journal of Finance*, 65(6), 2213–2253. https://doi.org/10.1111/j.1540-6261.2010.01614.x

Dyck, A., Morse, A., & Zingales, L. (2024). How pervasive is corporate fraud? *Review of Accounting Studies,* 29(1), 736–769. https://doi.org/10.1007/s11142-022-09738-5

Dye, R. A. (1985). Disclosure of nonproprietary information. *Journal of Accounting Research*, 23(1), 123–145. https://doi.org/10.2307/2490910

Fang, V. W., Huang, A. H., & Karpoff, J. M. (2016). Short selling and earnings management: A controlled experiment. *Journal of Finance,* 71(3), 1251–1294. https://doi.org/10.1111/jofi.12369

Fauver, L., Hung, M., Li, X., & Taboada, A. G. (2017). Board reforms and firm value: Worldwide evidence. *Journal of Financial Economics*, 125(1), 120–142. https://doi.org/10.1016/j.jfineco.2017.04.010

Fiechter, P., Hitz, J. M., & Lehmann, N. (2022). Real effects of a widespread CSR reporting mandate: Evidence from the European Union's CSR Directive. *Journal of Accounting Research*, 60(4), 1499–1549. https://doi.org/10.1111/1475-679X.12424

Fox, J. (2007). The uncertain relationship between transparency and accountability. *Development in Practice*, 17(4–5), 663–671. https://doi.org/10.1080/09614520701469955

Fu, L. (2023). Why bad news can be good news: The signaling feedback effect of negative media coverage of corporate irresponsibility. *Organization & Environment*, 36(1), 98–125. https://doi.org/10.1177/10860266221108704

Fung, A. (2007). Democratic theory and political science: A pragmatic method of constructive engagement. *American Political Science Review*, 101(3), 443–458. https://doi.org/10.1017/S000305540707030X

Gibbons, B. (2024). The financially material effects of mandatory nonfinancial disclosure. *Journal of Accounting Research*, 62(5), 1711–1754. https://doi.org/10.1111/1475-679X.12499

Gigler, F., & Hemmer, T. (1998). On the frequency, quality, and informational role of mandatory financial reports. *Journal of Accounting Research*, 36(S), 117–147. https://doi.org/10.2307/2491310

Goldman, N. C., & Zhang, Y. (2024). Social washing or credible communication? An analysis of corporate disclosures of diversity, equity, and inclusion in 10-K filings. *Available at SSRN*, No. 4244954. http://dx.doi.org/10.2139/ssrn.4244954

Grewal, J., Richardson, G., & Wang, J. (2024). Effects of mandatory carbon reporting on greenwashing. *Available at SSRN*, No. 4166184. http://dx.doi.org/10.2139/ssrn.4166184

Grossman, S. J., & Hart, O. D. (1980). Disclosure laws and takeover bids. *Journal of Finance,* 35(2), 323–334. https://doi.org/10.2307/2327390

Holmström, B. (1979). Moral hazard and observability. *Bell Journal of Economics,* 10(1), 74–91. https://doi.org/10.2307/3003320

Ilhan, E., Krueger, P., Sautner, Z., & Starks, L. T. (2023). Climate risk disclosure and institutional investors. *Review of Financial Studies*, 36(7), 2617–2650. https://doi.org/10.1093/rfs/hhad002

Jackson, G., & Deeg, R. (2008). Comparing capitalisms: Understanding institutional diversity and its implications for international business. *Journal of International Business Studies*, 39(4), 540–561. https://doi.org/10.1057/palgrave.jibs.8400375

Karpoff, J. M., & Lou, X. (2010). Short sellers and financial misconduct. *Journal of Finance*, 65(5), 1879–1913. https://doi.org/10.1111/j.1540-6261.2010.01597.x

Karpoff, J. M., Koester, A., Lee, D. S., & Martin, G. S. (2017). Proxies and databases in financial misconduct research. *The Accounting Review,* 92(6), 129–163. https://doi.org/10.2308/accr-51766

Karpoff, J. M., Lee, D. S., & Martin, G. S. (2008). The cost to firms of cooking the books. *Journal of Financial and Quantitative Analysis*, 43(3), 581–611. https://doi.org/10.1017/S0022109000004221

Khanna, V., Kim, E. H., & Lu, Y. (2015). CEO connectedness and corporate fraud. *Journal of Finance*, 70(3), 1203–1252. https://doi.org/10.1111/jofi.12243

Kim, E. H., & Lyon, T. P. (2015). Greenwash vs. brownwash: Exaggeration and undue modesty in corporate sustainability disclosure. *Organization Science*, 26(3), 705–723. https://doi.org/10.1287/orsc.2014.0949

Krueger, P., Sautner, Z., Tang, D. Y., & Zhong, R. (2024). The effects of mandatory ESG disclosure around the world. *Journal of Accounting Research*, 62(5), 1795–1847. https://doi.org/10.1111/1475-679X.12548

Lang, M. H., & Lundholm, R. J. (1996). Corporate disclosure policy and analyst behavior. *The Accounting Review*, 71(4), 467–492. https://www.jstor.org/stable/248567

Leuz, C., Nanda, D., & Wysocki, P. D. (2003). Earnings management and investor protection: an international comparison. *Journal of Financial Economics*, 69(3), 505–527. https://doi.org/10.1016/S0304-405X(03)00121-1

Li, J., & Wu, D. (2020). Do corporate social responsibility engagements lead to real environmental, social, and governance impact? *Management Science*, 66(6), 2564–2588. https://doi.org/10.1287/mnsc.2019.3324

Liang, H., Sun, L., & Teo, M. (2022). Responsible hedge funds. *Review of Finance*, 26(6), 1585–1633. https://doi.org/10.1093/rof/rfac028

Lin, Y., Shen, R., Wang, J., & Julia Yu, Y. (2024). Global evolution of environmental and social disclosure in annual reports. *Journal of Accounting Research*, 62(5), 1941–1988. https://doi.org/10.1111/1475-679X.12575

Long, L., Wang, C., & Zhang, M. (2024). Does social media pressure induce corporate hypocrisy? Evidence of ESG greenwashing from China. *Journal of Business Ethics*, 197(2), 311–338. https://doi.org/10.1007/s10551-024-05747-3

Lyon, T. P., & Montgomery, A. W. (2015). The means and ends of greenwash. *Organization & Environment*, 28(2), 223–249. https://doi.org/10.1177/1086026615575332

Marquis, C., Toffel, M. W., & Zhou, Y. (2016). Scrutiny, norms, and selective disclosure: A global study of greenwashing. *Organization Science*, 27(2), 483–504. https://doi.org/10.1287/orsc.2015.1039

Miller, G. S. (2006). The press acts as a watchdog for accounting fraud. *Journal of Accounting Research*, 44(5), 1001–1033. https://doi.org/10.1111/j.1475-679X.2006.00224.x

Pankratz, N. M. C., & Schiller, C. M. (2024). Climate change and adaptation in global supply-chain networks. *Review of Financial Studies*, 37(6), 1729–1777. https://doi.org/10.1093/rfs/hhad093

Peng, L., & Xiong, W. (2006). Investor attention, overconfidence, and category learning. *Journal of Financial Economics,* 80(3), 563–602. https://doi.org/10.1016/j.jfineco.2005.05.003

Porta, L. R., Lopez-de-Silanes, F., & Shleifer, A. (2008). The economic consequences of legal origins. *Journal of Economic Literature*, 46(2), 285–332. https://doi.org/10.1257/jel.46.2.285

Porta, L. R., Lopez-de-Silanes, F., Shleifer, A., & Vishny, R. W. (1998). Law and finance. *Journal of Political Economy*, 106(6), 1113–1155. https://doi.org/10.1086/250042

Servaes, H., & Tamayo, A. (2013). The impact of corporate social responsibility on firm value: The role of customer awareness. *Management Science*, 59(5), 1045–1061. https://doi.org/10.1287/mnsc.1120.1630

Sulkowski, A., & Jebe, R. (2022). Evolving ESG reporting governance, regime theory, and proactive law: Predictions and strategies. *American Business Law Journal*, 59(3), 449–503. https://doi.org/10.1111/ablj.12210

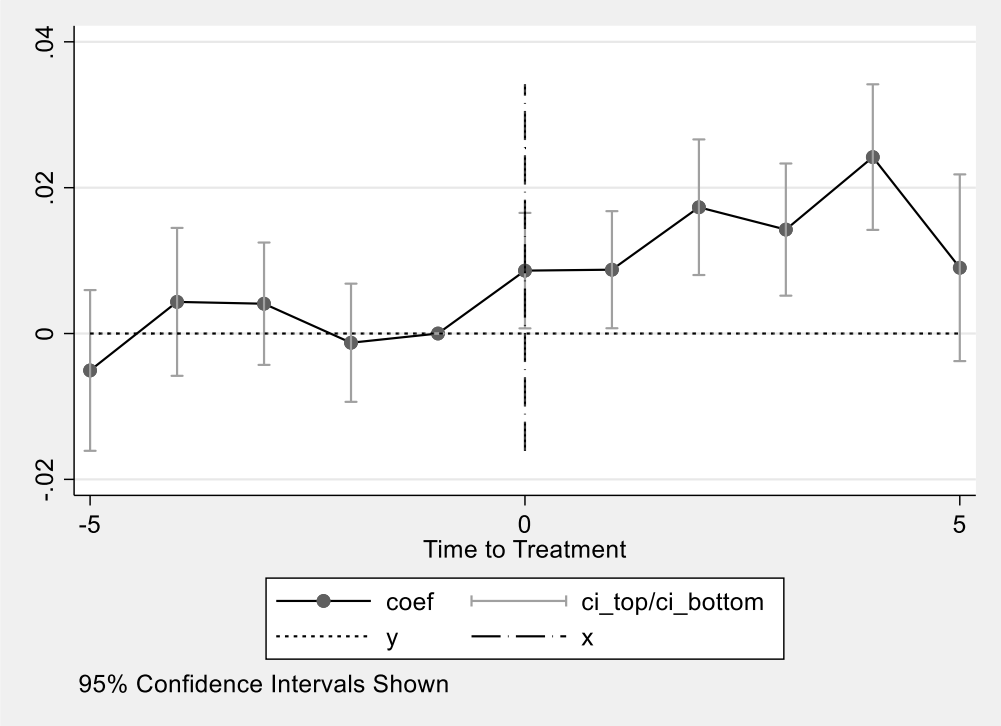
Verrecchia, R. E. (2001). Essays on disclosure. *Journal of Accounting and Economics*, 32(1–3), 97–180. https://doi.org/10.1016/S0165-4101(01)00025-8

Wang, L. L. (2023). Transmission effects of ESG disclosure regulations through bank lending networks. *Journal of Accounting Research*, 61(3), 935–978. https://doi.org/10.1111/1475-679X.12478

Wang, T. Y. (2013). Corporate securities fraud: Insights from a new empirical framework. *The Journal of Law, Economics, and Organization*, 29(3), 535–568. https://doi.org/10.1093/jleo/ewr009

Yu, F. F. (2008). Analyst coverage and earnings management. *Journal of Financial Economics*, 88(2), 245–271. https://doi.org/10.1016/j.jfineco.2007.05.008

Figure 1
Dynamic Effects of Mandatory ESG Disclosure on the Detected Misleading Communication Events



Notes: This figure illustrates the dynamic effect of mandatory ESG disclosures on the detection of corporate misleading communication events. We plot the coefficients and the associated 95% confidence intervals of the relative time dummies around the disclosure mandate based on Eq. (2): $MISLEAD_DUMMY_{i,c,t+1} = \beta_0 + \beta_1 \times POST(\tau)_{c,t} + \beta_2 \times FIRMCTRL_{i,c,t} + \beta_3 \times COUNTRYCTRL_{c,t} + +FIRM_i + INDUSTRY_i \times YEAR_t + \varepsilon_{i,c,t}$. The dependent variable is $MISLEAD_DUMMY$, which is an indicator variable that equals one if the firm has any ESG-related misleading communication event during the year and zero otherwise. $POST(\tau)_{c,t}$ is an indicator variable that equals one in the $|\tau|$-th year before (if $\tau < 0$) or after (if $\tau > 0$) a country introduces its ESG reporting mandates and zero otherwise. Years that are five or more years before ($\tau \leq -5$) or after ($\tau \geq 5$) the mandate introduction are grouped. We include firm and industry-time fixed effects in the estimation. Standard errors are robust to heteroskedasticity and clustered at the firm level. Year $\tau = -1$ is the omitted benchmark.

Table 1
Sample Distribution

Panel A. Treatment Countries

Country	# Firms	#Firm-Years	MISLEAD DUMMY	MISLEAD COUNT	Mandatory ESG discl. Year	Issued by	Approach
Austria	22	306	0.046	0.062	2016	Gov	Comply
Belgium	44	592	0.068	0.106	2009	Gov	Comply
China	897	12469	0.012	0.014	2008	Exch	Comply
Cyprus	14	165	0.012	0.012	2016	Gov	Comply-or-explain
Denmark	42	541	0.031	0.039	2016	Gov	Comply-or-explain
Finland	53	692	0.062	0.079	2016	Gov	Comply-or-explain
Germany	141	1953	0.147	0.451	2016	Gov	Comply-or-explain
Hong Kong SAR	276	3667	0.018	0.021	2015	Exch	Comply-or-explain
Hungary	5	65	0.015	0.015	2016	Gov	Comply-or-explain
India	632	8090	0.018	0.022	2015	Gov	Comply
Indonesia	118	1463	0.072	0.100	2012	Gov	Comply
Ireland	41	543	0.105	0.190	2016	Gov	Comply-or-explain
Italy	71	905	0.053	0.213	2016	Gov	Comply-or-explain
Netherlands	50	706	0.109	0.381	2016	Gov	Comply-or-explain
Norway	44	636	0.080	0.157	2013	Gov	Comply
Pakistan	54	741	0.001	0.001	2009	Gov	Comply
Peru	46	573	0.028	0.028	2015	Gov	Comply
Philippines	74	984	0.025	0.032	2011	Gov	Comply
Poland	73	855	0.013	0.013	2016	Gov	Comply
Romania	11	142	0.007	0.007	2016	Gov	Comply-or-explain
Singapore	116	1464	0.041	0.140	2016	Exch	Comply-or-explain
Slovenia	6	81	0.000	0.000	2017	Gov	Comply-or-explain
South Africa	79	1092	0.045	0.054	2010	Exch	Comply-or-explain
Spain	60	790	0.089	0.166	2012	Gov	Comply-or-explain
Sweden	104	1270	0.031	0.090	2016	Gov	Comply-or-explain
Türkiye	74	978	0.008	0.008	2014	Gov	Comply
United Kingdom	300	4178	0.111	0.446	2013	Gov	Comply
Total/Average	3,447	45,941	0.046	0.106			

Panel B. Control Countries

Country	# Firms	#Firm-Years	MISLEAD DUMMY	MISLEAD COUNT	Mandatory ESG discl. Year	Issued by	Approach
Bahrain	4	52	0.000	0.000	n/a	n/a	n/a
Brazil	126	1575	0.065	0.170	n/a	n/a	n/a
Colombia	23	269	0.037	0.059	n/a	n/a	n/a
Czech Republic	4	53	0.000	0.000	n/a	n/a	n/a
Egypt	54	681	0.003	0.003	n/a	n/a	n/a
Israel	101	1211	0.042	0.054	n/a	n/a	n/a
Japan	990	13372	0.023	0.030	n/a	n/a	n/a
Jordan	10	133	0.008	0.008	n/a	n/a	n/a
Kazakhstan	14	116	0.009	0.009	n/a	n/a	n/a
Kenya	12	142	0.014	0.014	n/a	n/a	n/a
Korea Republic	863	10342	0.017	0.030	n/a	n/a	n/a
Mexico	73	917	0.059	0.068	n/a	n/a	n/a
Morocco	17	219	0.046	0.046	n/a	n/a	n/a
New Zealand	35	425	0.026	0.031	n/a	n/a	n/a
Nigeria	32	319	0.038	0.047	n/a	n/a	n/a
Oman	7	92	0.000	0.000	n/a	n/a	n/a
Qatar	8	100	0.010	0.010	n/a	n/a	n/a
Russia	94	1149	0.052	0.081	n/a	n/a	n/a
Saudi Arabia	40	506	0.012	0.016	n/a	n/a	n/a
Switzerland	87	1099	0.082	0.620	n/a	n/a	n/a
Thailand	109	1302	0.029	0.031	n/a	n/a	n/a
Tunisia	7	76	0.000	0.000	n/a	n/a	n/a
Ukraine	22	246	0.012	0.020	n/a	n/a	n/a
United Arab Emirates	23	239	0.008	0.008	n/a	n/a	n/a
United States	1671	18505	0.057	0.129	n/a	n/a	n/a
Vietnam	66	580	0.017	0.021	n/a	n/a	n/a
Total/Average	4492.	53720.	0.026	0.058			

Notes: This table presents the number of firms, the number of firm-year observations, country-level averages of the misleading dummy and the count, mandatory ESG disclosure years, the mandated approach (e.g., full compliance or comply-or-explain), and whether a government institution or a stock exchange issued the disclosure. Panel A reports for treatment countries (i.e., countries that introduced mandatory ESG disclosure). Panel B reports for non-treatment countries (i.e., countries that did not introduce mandatory ESG disclosure). Data for the effective years of mandatory ESG disclosures and implementation approaches are from Krueger et al. (2024). Our sample comprises 7,939 unique firms across 53 countries from 2007 to 2021.

Table 2
Descriptive Statistics

Panel A. Summary Statistics

Variable	N	Mean	SD	P25	P50	P75
MISLEAD_DUMMY	99,661	0.039	0.193	0	0	0
MISLEAD_COUNT	99,661	0.092	0.876	0	0	0
POST	99,661	0.281	0.450	0	0	1
SIZE	99,661	13.538	1.959	12.224	13.567	14.857
MTB	99,661	2.563	4.104	0.830	1.570	3.000
LEVERAGE	99,661	0.259	0.216	0.085	0.232	0.380
TANGIBILITY	99,661	0.307	0.222	0.123	0.270	0.455
INTANGIBILITY	99,661	0.107	0.166	0.004	0.029	0.135
R&D	99,661	0.014	0.038	0.000	0.000	0.010
ROA	99,661	0.009	0.163	0.003	0.032	0.069
LNGDP	99,661	9.869	1.218	8.999	10.463	10.791
GGDP	99,661	3.053	3.708	1.484	2.687	5.561
INFLATION	99,661	2.742	2.995	0.981	2.075	3.730

Notes: This table presents summary statistics and correlations for the variables used in our analyses. Panel A reports the number of observations, mean, standard deviation, 25th (*Q1*), 50th (*Median*), and 75th (*Q3*) percentile values of all firm-level and country-level variables used in the paper.

Panel B. Correlation Matrix

	MISLEAD_DUMMY	*MISLEAD_COUNT*	*POST*	*SIZE*	*MTB*	*LEVERAGE*	*TANGIBILITY*	*INTANGIBILITY*	*R&D*	*ROA*	*LNGDP*	*GGDP*	*INFLATION*
MISLEAD_DUMMY	1.00												
MISLEAD_COUNT	0.54	1.00											
POST	0.03	0.02	1.00										
SIZE	0.26	0.18	0.02	1.00									
MTB	0.02	0.01	0.06	-0.03	1.00								
LEVERAGE	0.03	0.02	0.04	0.11	-0.08	1.00							
TANGIBILITY	0.02	0.02	0.00	0.06	-0.10	0.23	1.00						
INTANGIBILITY	0.08	0.05	-0.03	0.20	0.08	0.06	-0.32	1.00					
R&D	0.00	0.00	-0.12	-0.06	0.12	-0.11	-0.22	0.07	1.00				
ROA	0.03	0.02	0.02	0.30	0.06	-0.26	0.03	0.00	-0.28	1.00			
LNGDP	0.07	0.06	-0.35	0.20	-0.02	-0.08	-0.15	0.27	0.23	-0.09	1.00		
GGDP	-0.06	-0.05	0.30	-0.11	0.10	0.04	0.03	-0.12	-0.10	0.07	-0.48	1.00	
INFLATION	-0.04	-0.03	0.04	-0.15	0.01	0.07	0.10	-0.11	-0.13	0.05	-0.61	0.28	1.00

Notes: Panel B reports the pairwise correlation of variables in our baseline regression. Appendix A provides detailed definitions of the variables.

Table 3
Mandatory ESG Disclosures and Detected Misleading ESG Communication

VARIABLES	(1) *MISLEAD_DUMMY*	(2) *MISLEAD_DUMMY*	(3) *MISLEAD_COUNT*	(4) *MISLEAD_COUNT*
POST	0.011***	0.010***	0.059***	0.058***
	(3.475)	(3.302)	(2.624)	(2.584)
SIZE	0.005***	0.005***	-0.003	-0.001
	(3.831)	(3.914)	(-0.577)	(-0.190)
MTB	-0.000	-0.000	0.001	0.001
	(-1.172)	(-1.001)	(0.758)	(0.778)
LEVERAGE	0.014***	0.013***	0.072***	0.079***
	(2.970)	(2.931)	(3.695)	(3.615)
TANGIBILITY	0.012**	0.010*	0.035	0.030
	(1.991)	(1.732)	(1.522)	(1.279)
INTANGIBILITY	0.005	0.007	0.019	0.017
	(0.704)	(0.958)	(0.666)	(0.573)
R&D	-0.046	-0.037	-0.125**	-0.069
	(-1.604)	(-1.251)	(-2.048)	(-1.141)
ROA	-0.005	-0.005	-0.003	-0.009
	(-1.206)	(-1.161)	(-0.247)	(-0.761)
LNGDP	-0.037***	-0.038***	-0.167***	-0.183***
	(-7.976)	(-8.182)	(-5.121)	(-5.219)
GGDP	0.000	0.000	0.001	0.001
	(0.390)	(0.550)	(0.571)	(0.945)
INFLATION	-0.000	-0.000	-0.001	-0.000
	(-0.729)	(-0.790)	(-0.820)	(-0.416)
Constant	0.324***	0.337***	1.723***	1.856***
	(7.265)	(7.495)	(5.295)	(5.322)
Observations	99,661	99,661	99,661	99,661
R-squared	0.388	0.392	0.633	0.635
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	No	Yes	No
Industry x Year FE	No	Yes	No	Yes

Notes: This table reports the regression results for the effect of mandatory ESG disclosures on detected misleading ESG communications using the staggered DiD approach. The dependent variable is either *MISLEAD_DUMMY* or *MISLEAD_COUNT* in year $t+1$. *POST* is an indicator variable that equals one after a country has introduced mandatory ESG disclosure and zero otherwise. The control variables include *SIZE*, *LEVERAGE*, *TANGIBILITY*, *INTANGIBILITY*, *R&D*, *ROA*, *LNGDP*, *GDPGR*, and *INFLATION*. Appendix A provides detailed definitions of the variables. Standard errors are robust to heteroskedasticity and clustered at the firm level. The associated t-statistics are in parentheses. *** p<0.01, ** p<0.05, and * p<0.10.

Table 4
The Role of Firm Visibility

VARIABLES	(1) *MISLEAD_DUMMY*	(2) *MISLEAD_COUNT*	(3) *MISLEAD_DUMMY*	(4) *MISLEAD_COUNT*
$POST \times BIG$	0.027***	0.137***		
	(5.966)	(3.805)		
$POST \times SMALL$	-0.007***	-0.024**		
	(-2.924)	(-1.980)		
$POST \times HIGH\ COVERAGE$			0.024***	0.116***
			(5.433)	(3.339)
$POST \times LOW\ COVERAGE$			-0.002	0.006
			(-0.665)	(0.427)
F-test for difference between coefficients (p-value)	0.000	0.000	0.000	0.000
Control	Yes	Yes	Yes	Yes
Observations	99,661	99,661	99,661	99,661
R-squared	0.393	0.636	0.392	0.635
Firm FE	Yes	Yes	Yes	Yes
Industry x Year FE	Yes	Yes	Yes	Yes

Notes: This table presents the DiD regression results on the effect of mandatory ESG disclosures on the detection of misleading ESG communication, controlling for firm size and analyst coverage. The dependent variable is either $MISLEAD_DUMMY$ or $MISLEAD_COUNT$ in year $t+1$. BIG ($SMALL$) is an indicator variable equal to one if the firm's size is above (below) the median firm size within its country-year. $HIGH$ (LOW) $COVERAGE$ is an indicator variable equal to one if the firm has at least one analyst following in a given year. $POST$ is an indicator variable that equals one after a country has introduced mandatory ESG disclosure and zero otherwise. All control variables (i.e., $SIZE$, $LEVERAGE$, $TANGIBILITY$, *INTANGIBILITY*, *R&D*, *ROA*, $LNGDP$, $GDPGR$, and $INFLATION$) are included but suppressed for the sake of brevity. Appendix A provides detailed definitions of the variables. Standard errors are robust to heteroskedasticity and clustered at the firm level. The associated t-statistics are in parentheses. *** p<0.01, ** p<0.05, and * p<0.10.

Table 5
The Role of Implementation Mechanisms

VARIABLES	(1) *MISLEAD_DUMMY*	(2) *MISLEAD_COUNT*	(3) *MISLEAD_DUMMY*	(4) *MISLEAD_COUNT*
$POST \times GOV$	0.012***	0.071**		
	(3.363)	(2.552)		
$POST \times EXCH$	0.003	0.017		
	(0.842)	(1.577)		
$POST \times COMPLY$			0.011**	0.065**
			(2.185)	(2.268)
$POST \times COMPLY\text{-}OR\text{-}EXPLAIN$			0.010***	0.053
			(2.636)	(1.626)
F-test for difference between coefficients (p-value)	0.076	0.028	0.833	0.767
Control	Yes	Yes	Yes	Yes
Observations	99,661	99,661	99,661	99,661
R-squared	0.392	0.635	0.392	0.635
Firm FE	Yes	Yes	Yes	Yes
Industry x Year FE	Yes	Yes	Yes	Yes

Notes: This table reports the DiD regression results for the effect of mandatory ESG disclosures on misleading ESG communication across different issuing entities and implementation mechanisms. The dependent variable is either $MISLEAD_DUMMY$ or $MISLEAD_COUNT$ in year $t+1$. *GOV (EXCH)* is an indicator variable equal to 1 if a country's disclosure mandate is implemented by a government institution (e.g., a ministry, parliament, or securities regulator) and 0 otherwise. *COMPLY (COMPLY-OR-EXPLAIN)* is an indicator variable that equals one if the disclosure mandate in a country is on a full-compliance basis (a comply-or-explain basis), or zero otherwise. $POST$ is an indicator variable that equals one after a country has introduced mandatory ESG disclosure and zero otherwise. All control variables (i.e., $SIZE$, $LEVERAGE$, $TANGIBILITY$, *INTANGIBILITY*, *R&D*, *ROA*, $LNGDP$, $GDPGR$, and $INFLATION$) are included but suppressed for the sake of brevity. Appendix A provides detailed definitions of the variables. Standard errors are robust to heteroskedasticity and clustered at the firm level. The associated t-statistics are in parentheses. *** p<0.01, ** p<0.05, and * p<0.10.

Table 6
The Role of Institutional Quality

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	$CHARACTERISTIC =$							
	GOV EFF		*REG QUAL*		*RULE LAW*		*CTRL CORRUPT*	
VARIABLES	*MISLEAD_DUMMY*	*MISLEAD_COUNT*	*MISLEAD_DUMMY*	*MISLEAD_COUNT*	*MISLEAD_DUMMY*	*MISLEAD_COUNT*	*MISLEAD_DUMMY*	*MISLEAD_COUNT*
$POST$	-0.002	-0.007	-0.000	-0.008	0.000	-0.010	0.002	0.005
	(-0.749)	(-0.395)	(-0.160)	(-0.547)	(0.026)	(-0.641)	(0.631)	(0.352)
$CHARACTERISTIC$	-0.018***	-0.118***	-0.007	-0.054*	0.001	-0.129***	-0.006	-0.026
	(-3.223)	(-3.962)	(-1.223)	(-1.824)	(0.135)	(-3.314)	(-0.865)	(-0.698)
$POST \times CHARACTERISTIC$	0.013***	0.068***	0.012***	0.073***	0.013***	0.076***	0.011***	0.068***
	(4.283)	(3.758)	(4.458)	(4.176)	(4.510)	(3.743)	(4.376)	(3.624)
Control	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	99,511	99,511	99,511	99,511	99,511	99,511	99,511	99,511
R-squared	0.392	0.635	0.392	0.635	0.392	0.635	0.392	0.635
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry x Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: This table reports the DiD regression results for the effect of mandatory ESG disclosures on detected misleading ESG communication, conditional on different formal institutional factors that capture the quality of legal enforcement. The dependent variable is either $MISLEAD_DUMMY$ or $MISLEAD_COUNT$ in year $t+1$. $CHARACTERISTIC$ denotes alternative measures of institutional quality, including Government effectiveness ($GOV\ EFF$), Regulation quality ($REG\ QUAL$), Rule of law ($RULE\ LAW$) and Control of corruption ($CTRL\ CORRUPT$). $POST$ is an indicator variable that equals one after a country has introduced mandatory ESG disclosure and zero otherwise. All control variables (i.e., $SIZE$, $LEVERAGE$, $TANGIBILITY$, *INTANGIBILITY*, *R&D*, *ROA*, $LNGDP$, $GDPGR$, and $INFLATION$) are included but suppressed for the sake of brevity. Appendix A provides detailed definitions of the variables. Observations differ due to missing institutional-quality data. Standard errors are robust to heteroskedasticity and clustered at the firm level. The associated t-statistics are in parentheses. *** p<0.01, ** p<0.05, and * p<0.10.

Table 7
The Role of Informal Oversight Capacity

VARIABLES	(1) *MISLEAD_DUMMY*	(2) *MISLEAD_COUNT*	(3) *MISLEAD_DUMMY*	(4) *MISLEAD_COUNT*
POST	-0.017***	-0.121***	-0.025***	-0.104***
	(-2.655)	(-3.877)	(-4.053)	(-3.560)
FREE_EXP	0.046***	0.167***		
	(4.847)	(3.279)		
POST × FREE_EXP	0.040***	0.259***		
	(4.030)	(3.788)		
CIVL SOCIETY			0.027**	0.195***
			(2.284)	(4.126)
POST × CIVIL SOCIETY			0.053***	0.250***
			(5.221)	(3.725)
Control	Yes	Yes	Yes	Yes
Observations	99,661	99,661	99,661	99,661
R-squared	0.392	0.636	0.392	0.635
Firm FE	Yes	Yes	Yes	Yes
Industry x Year FE	Yes	Yes	Yes	Yes

Notes: This table presents the DiD regression results for the effect of mandatory ESG disclosures on detected misleading ESG communication, conditional on informal oversight capacity. The dependent variable is either *MISLEAD_DUMMY* or *MISLEAD_COUNT* in year $t+1$. Informal oversight capacity factors include Freedom of Expression (*FREE_EXP*) and Civil Society Index (*CIVIL SOCIETY*). *POST* is an indicator variable that equals one after a country has introduced mandatory ESG disclosure and zero otherwise. All control variables (i.e., *SIZE*, *LEVERAGE*, *TANGIBILITY*, *INTANGIBILITY*, *R&D*, *ROA*, *LNGDP*, *GDPGR*, and *INFLATION*) are included but suppressed for the sake of brevity. Appendix A provides detailed definitions of the variables. Standard errors are robust to heteroskedasticity and clustered at the firm level. The associated t-statistics are in parentheses. *** p<0.01, ** p<0.05, and * p<0.10.

Table 8
On-domain and Off-domain Misleading ESG Communication

VARIABLES	(1) ON DOMAIN *MISLEAD_DUMMY*	(2) ON DOMAIN *MISLEAD_COUNT*	(3) OFF DOMAIN *MISLEAD_DUMMY*	(4) OFF DOMAIN *MISLEAD_COUNT*
POST_DOMAIN	0.007***	0.053***	0.005*	0.106***
	(2.767)	(3.320)	(1.911)	(2.628)
SIZE	0.006***	-0.007	0.009***	-0.012
	(5.220)	(-1.344)	(6.170)	(-1.232)
MTB	-0.001***	0.000	-0.001***	0.001
	(-3.938)	(0.305)	(-2.638)	(0.747)
LEVERAGE	0.012***	0.092***	0.018***	0.199***
	(2.945)	(4.546)	(3.901)	(4.844)
TANGIBILITY	0.004	0.044**	0.005	0.079*
	(0.773)	(1.976)	(0.858)	(1.829)
INTANGIBILITY	0.004	0.027	0.006	0.043
	(0.606)	(1.110)	(0.830)	(0.878)
R&D	-0.050**	-0.168***	-0.063**	-0.348***
	(-2.157)	(-2.791)	(-2.252)	(-2.909)
ROA	-0.015***	-0.009	-0.014***	-0.013
	(-3.971)	(-0.887)	(-3.267)	(-0.674)
LNGDP	-0.036***	-0.175***	-0.031***	-0.342***
	(-6.925)	(-5.822)	(-5.537)	(-5.825)
GGDP	-0.001***	-0.002*	-0.001*	-0.004*
	(-2.895)	(-1.777)	(-1.738)	(-1.745)
INFLATION	-0.001***	-0.005***	-0.001***	-0.011***
	(-4.679)	(-5.005)	(-4.174)	(-4.986)
Constant	0.311***	1.918***	0.241***	3.747***
	(6.007)	(6.105)	(4.201)	(6.069)
Observations	154,734	154,734	154,734	154,734
R-squared	0.396	0.632	0.404	0.638
Domain x Firm FE	Yes	Yes	Yes	Yes
Domain x Industry x Year FE	Yes	Yes	Yes	Yes

Notes: This table reports the results of placebo tests examining the effect of mandatory ESG disclosure on misleading communication within the mandated domain (Specification 1) and outside the mandated domain (Specification 2). The data are restructured into a stacked domain-firm-year panel, where each firm appears three times per year, once for each ESG pillar. *POST_DOMAIN* equals one if a mandate is in place for the corresponding domain in a given country-year (see Appendix C). Specification (1) uses the on-domain *MISLEAD_DUMMY*; Specification (2) uses the on-domain *MISLEAD_COUNT*. Specification (3) uses the off-domain *MISLEAD_DUMMY* (any incident in the other pillars); Specification (4) uses the off-domain *MISLEAD_COUNT* (sum across the other pillars). All-at-once adopting countries are excluded, and non-adopting countries are retained as controls. Regressions include firm-by-domain and domain-by-industry-by-year fixed effects, as well as firm- and country-level controls. Standard errors are robust to heteroskedasticity and clustered at the firm-by-domain level. The associated t-statistics are in parentheses. *** p<0.01, ** p<0.05, and * p<0.10.

Table 9
Sample of Pre-Mandate Reporters

VARIABLES	(1) *MISLEAD_DUMMY*	(2) *MISLEAD_COUNT*
POST	0.031**	0.203*
	(2.502)	(1.895)
SIZE	0.010	-0.074*
	(1.504)	(-1.691)
MTB	-0.000	0.003
	(-0.703)	(0.971)
LEVERAGE	0.045*	0.496***
	(1.829)	(3.072)
TANGIBILITY	0.075**	0.250
	(2.149)	(1.563)
INTANGIBILITY	-0.066**	-0.220
	(-2.155)	(-1.459)
R&D	-0.251	-0.562
	(-1.626)	(-1.211)
ROA	-0.024	-0.039
	(-0.835)	(-0.326)
LNGDP	-0.031	-0.187
	(-1.195)	(-1.147)
GGDP	-0.004**	-0.006
	(-2.554)	(-1.074)
INFLATION	-0.002	-0.008
	(-1.157)	(-1.283)
Constant	0.264	3.202**
	(1.018)	(2.020)
Observations	21,051	21,051
R-squared	0.424	0.646
Firm FE	Yes	Yes
Industry x Year FE	Yes	Yes

Notes: This table presents results on the effect of mandatory ESG disclosure on detected misleading ESG communication, restricted to pre-mandate reporters. Pre-mandate reporters are defined as firms that have issued at least one CSR report prior to the adoption of the mandate in their country. The dependent variable is either *MISLEAD_DUMMY* or *MISLEAD_COUNT* in year $t+1$. All regressions include firm and industry-by-year fixed effects, as well as firm- and country-level controls. Appendix A provides detailed definitions of the variables. Standard errors are robust to heteroskedasticity and clustered at the firm level. The associated t-statistics are in parentheses. *** p<0.01, ** p<0.05, and * p<0.10.

Table 10
Stock Market Reactions to Misleading Incidents

CAR [0]

	Whole event sample (%)	Less verifiable (%)	More verifiable (%)
Pre-mandate	-0.129*** (-9.852)	-0.117*** (-8.703)	-0.237*** (-6.466)
Post-mandate	-0.169*** (-8.323)	-0.138*** (-9.019)	-0.417*** (-4.103)
Differences	-0.040* (-1.682)	-0.021 (-1.048)	-0.180* (-1.663)

CAR [-1; +1]

	Whole event sample (%)	Less verifiable (%)	More verifiable (%)
Pre-mandate	-0.242*** (-4.477)	-0.234*** (-4.023)	-0.310*** (-3.218)
Post-mandate	-0.401*** (-5.142)	-0.353*** (-4.776)	-0.790*** (-4.484)
Differences	-0.159* (-1.691)	-0.119 (-1.278)	-0.480** (-2.413)

Notes: This table reports the average market-adjusted cumulative abnormal returns around RepRisk misleading incident dates. CAR[0] and CAR[−1,+1] are computed as the firm's stock return minus the corresponding country market return (i.e., beta = 1 for all stocks) on the event day and over the [−1,+1] window, respectively. We report the pre-mandate and post-mandate means, and the post–pre difference. Incidents are split by verifiability: "More verifiable" requires severity ≥ 2, novelty ≥ 2, and reach ≥ 2; "Less verifiable" otherwise. Returns are expressed in per cent. Standard errors are clustered at the firm level. The associated t-statistics are in parentheses. *** p<0.01, ** p<0.05, and * p<0.10.

Table 11
Robustness Checks

	(1) [+/- 10 years]		(2) [+/- 5 years]		(3) Exclude USA		(4) Treatment only		(5) Propensity Score Matching		(6) Poisson Regression
VARIABLE	*MISLEAD_DUMMY*	*MISLEAD_COUNT*	*MISLEAD_DUMMY*	*MISLEAD_COUNT*	*MISLEAD_DUMMY*	*MISLEAD_COUNT*	*MISLEAD_DUMMY*	*MISLEAD_COUNT*	*MISLEAD_DUMMY*	*MISLEAD_COUNT*	*MISLEAD_COUNT*
POST	0.010***	0.057**	0.009***	0.051**	0.015***	0.072***	0.010***	0.035***	0.011***	0.050***	0.423***
	(3.213)	(2.528)	(2.967)	(2.360)	(4.666)	(3.182)	(2.864)	(3.072)	(3.327)	(2.656)	(2.702)
Observations	97,847	97,847	85,631	85,631	81,156	81,156	45,941	45,941	63,988	63,988	98,471
R-squared	0.394	0.636	0.406	0.659	0.394	0.638	0.424	0.645	0.434	0.636	0.524
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
Industry x Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: This table reports the robustness checks of the effect of mandatory ESG disclosures on corporate misleading communication. Specifications (1) to (4) present regression results based on different data samples. Specification (1) restricts the sample of treated firms to a [–10, +10] years window. Specification (2) restricts the sample of treated firms to a [-5, +5] years window. Specification (3) uses a sample excluding U.S. firms. Specification (4) uses a sample of treatment countries. Specification (5) presents regression results based on a matched sample. All control variables (i.e., *SIZE*, *LEVERAGE*, *TANGIBILITY*, *INTANGIBILITY*, *R&D*, *ROA*, *LNGDP*, *GDPGR*, and *INFLATION*) are included but suppressed for the sake of brevity. Appendix A provides detailed definitions of the variables. Standard errors are robust to heteroskedasticity and are clustered at the firm level. The associated t-statistics are in parentheses. *** p<0.01, ** p<0.05, and * p<0.10.

Table 12
Stacked DiD Regressions

	Stacked Regressions	
	(1)	(2)
VARIABLE	*MISLEAD_DUMMY*	*MISLEAD_COUNT*
POST	0.009**	0.052**
	(2.424)	(2.165)
Control	Yes	Yes
Observations	886,091	886,091
R-squared	0.395	0.715
Firm x Cohort FE	Yes	Yes
Industry x Year x Cohort FE	Yes	Yes

Notes: This table reports the effect of mandatory ESG disclosures on ESG-related misleading communication incidents using the stacked regression approach. For each treated country, we construct a cohort consisting of firms from that country and clean control firms from countries that never adopt mandatory ESG disclosure. Observations are retained for a $[-5, +5]$ event window around the implementation year (year 0) and stacked across cohorts. The dependent variable is either $MISLEAD_DUMMY$ or $MISLEAD_COUNT$ in year $t+1$. The main independent variable is $POST$, an indicator variable that equals 1 after a country introduces mandatory ESG disclosure and 0 otherwise. All control variables are included but suppressed for the sake of brevity. Appendix A provides detailed definitions of the variables. All specifications include firm–cohort and industry–year–cohort fixed effects. Standard errors are robust to heteroskedasticity and clustered at the firm level. The associated t-statistics are in parentheses. *** p<0.01, ** p<0.05, and * p<0.10.

Appendix A
Detailed Definitions of the Variables

Variable	Definition	Sources
ESG-related misleading communication behavior		
MISLEAD_DUMMY	An indicator variable that equals one if the firm has any ESG-related misleading communication event during the year and zero otherwise	RepRisk
MISLEAD_COUNT	The number of ESG-related misleading communication events the firm experiences during a year	RepRisk
Mandatory ESG disclosure		
POST	An indicator variable that equals one starting from the first year when the mandatory ESG disclosure policy in a country becomes effective and remains equal to one after that; otherwise, the variable equals zero. If ESG disclosure is not introduced all at once, we require that mandatory E, S, and G disclosure be in place for the indicator to be counted as 1.	Krueger et al. (2024)
GOV	An indicator variable that equals one if the ESG disclosure mandate in a country is implemented by a government institution, and zero otherwise. A government institution can be a ministry, a parliament, a securities regulator, or a similar institution.	Krueger et al. (2024)
EXCH	An indicator variable that equals one if a stock exchange implements the ESG disclosure mandate in a country, and zero otherwise.	Krueger et al. (2024)
COMPLY	An indicator variable that equals one if the ESG disclosure mandate is on a full-compliance basis (i.e., without option to default and explain), and zero otherwise	Krueger et al. (2024)
COMPLY-OR-EXPLAIN	An indicator variable that equals one if the ESG disclosure mandate is on a comply-or-explain basis (not on a full-compliance basis), and zero otherwise.	Krueger et al. (2024)
Firm-level variables		
SIZE	Natural logarithm of the firm's total assets in U.S. dollars. Winsorized at the 1st and 99th percentiles.	Worldscope
MTB	The market-to-book ratio is measured as the market value of a firm's equity divided by its book value of equity and winsorized at the 1st and 99th percentiles.	Worldscope
LEVERAGE	Total liabilities over total assets. Winsorized at the 1st and 99th percentiles.	Worldscope
TANGIBILITY	Property, plant, and equipment as a percentage of total assets. Winsorized at the 1st and 99th percentiles.	Worldscope
INTANGIBILITY	Intangible assets over total assets. Winsorized at the 1st and 99th percentiles.	Worldscope
R&D	Research and development expenditures as a percentage of total assets. Missing values for R&D expenses are set to 0. Winsorized at the 1st and 99th percentiles.	Worldscope
ROA	Net income over total assets. Winsorized at the 1st and 99th percentiles.	Worldscope
Other firm-level variables		
BIG	An indicator variable equal to one if the firm's size is above the median firm size within its country-year.	Authors' calculations.
SMALL	An indicator variable equal to one if the firm's size is below the median firm size within its country-year.	Authors' calculations.

HIGH COVERAGE	An indicator variable equal to one if the firm has at least one analyst following in a given year.	Authors' calculations.
LOW COVERAGE	An indicator variable equal to one if the firm has no analyst following in a given year.	Authors' calculations.
Country-level variables		
LNGDP	Natural logarithm of Gross Domestic Product per capita in U.S. dollars	World Bank (WDI)
GGDP	Annual GDP growth rate	World Bank (WDI)
INFLATION	Annual inflation rate	World Bank (WDI)
GOV EFF	The Government Effectiveness Index captures investors' perceptions of the quality of public services, the quality of the civil service and its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to these policies. Higher values indicate higher government effectiveness in a country-year.	World Bank (WGI)
REG QUAL	The regulatory quality index measures investors' perceptions of the government's ability to formulate and implement effective policies and regulations that foster private-sector development. Higher values indicate better regulatory quality in a country-year.	World Bank (WGI)
RULE LAW	The Rule of Law Index captures the extent to which agents have confidence in and abide by the rules of society. Higher values indicate a stricter rule of law in a country-year.	World Bank (WGI)
CTRL CORRUPT	The Corruption Control Index captures the extent to which public power is exercised for private gain. Higher values indicate better control over corruption in a country-year.	World Bank (WGI)
FREE_EXP	The Freedom of Expression Index measures the extent to which individuals, media, and organizations can express opinions freely without censorship or restrictions. Higher values indicate greater freedom of expression.	V-Dem
CIVIL SOCIETY	The Core Civil Society Index captures the strength and autonomy of civil society organizations. Higher values indicate a more active and independent civil society.	V-Dem

Online Appendix for

Mandatory ESG Disclosure: Deterrence, Detection, or Deception?

Table OA1: Overview of Mandatory ESG Disclosure Regulations

Country	Year	Issuing institutions	Description
Austria	2016	Ministry of Justice	The transposition of the EU NFR Directive: Sustainability and Diversity Improvement Act 257/ME, which incorporates ESG disclosure principles into Management Reports, became effective.
Belgium	2009	Corporate Governance Committee	The 2009 Belgian Code on Corporate Governance, which incorporates ESG disclosure principles into annual reports, came into effect in 2009.
China	2008	Shanghai Stock Exchange (SSE)	The Guidelines on Listed Companies' Environmental Information Disclosure, which incorporate ESG disclosure principles into annual social responsibility reports, have become effective.
Denmark	2016	Danish Business Authority	Transposition of the EU NFR Directive: Executive Order No. 558, which incorporates ESG disclosure principles into annual reports, became effective.
Finland	2016	Ministry of Economic Affairs and Employment	Transposition of EU NFR Directive: HE 208/2016. The Government's proposal to Parliament for Amendments to the Accounting Act and certain related Acts, which incorporate ESG disclosure principles into annual reports, became effective.
Germany	2016	Ministry of Justice and Consumer Affairs	Transposition of the EU NFR Directive: The CSR Directive Implementation Act, which incorporates ESG disclosure principles into Annual Reports, became effective.
Hong Kong	2015	Hong Kong Stock Exchange	The HKEX Listing Rules, which incorporate ESG disclosure principles into the Directors' and ESG Reports, became effective.
Hungary	2016	Ministry of National Economy, accounting and supervision	The transposition of the EU NFR Directive, which includes amendments to the Accounting Act of 2000 that incorporate ESG disclosure principles into annual reports, has entered into force.
India	2015	Securities and Exchange Board of India (SEBI)	Circular No. CIR/CFD/CMD/10/2015 Format for Business Responsibility Reports, which incorporates ESG disclosure principles into the Sustainability Reports, became effective.
Indonesia	2012	Capital Market and Financial Institutions Supervisory Agency	Rule No.KEP-431/BL/2012, concerning the obligation to submit annual reports by issuers of public companies and to incorporate ESG disclosure principles into those reports, became effective.
Ireland	2016	Department of Jobs, Enterprise and Innovation	The transposition of the EU NFR Directive (1), which incorporates ESG disclosure principles into the Non-Financial Statement and Directors' Reports, has entered into force.
Italy	2016	Ministry of Economic Affairs	Transposition of the EU NFR Directive: Legislative Decree No. 254 of 30 December 2016, which incorporates ESG disclosure principles into Management Reports, entered into force.
Netherlands	2016	Ministry of Security and Justice	The transposition of the EU NFR Directive, which incorporates ESG disclosure principles into annual management reports, has entered into force.
Norway	2013	Norwegian Parliament	The act amending the Norwegian Accounting Act, incorporating ESG disclosure principles into the Annual and Sustainability Reports, became effective.
Pakistan	2009	Securities and Exchange Commission of Pakistan	The Company's (Corporate Social Responsibility) general order, which incorporates ESG disclosure principles into the Directors' Reports, became effective.

Peru	2015	Peruvian Capital Markets Superintendency	Resolución SMV No 033-2015-SMV/01 became effective. It incorporates ESG disclosure principles into its Sustainability Reports.
Philippines	2011	Committee on trade and commerce	The Corporate Social Responsibility Act of 2011, which incorporates ESG disclosure principles into annual reports, became effective.
Poland	2016	Government institutions	Transposition of the EU NFR Directive: Amendments to the Accounting Act, which incorporate ESG disclosure principles into annual reports, became effective.
Romania	2016	Ministry of Public Finance	The transposition of the EU NFR Directive, as Act No. 1938, an "order regarding changes and additions to existing accounting regulations" that incorporates ESG disclosure principles into the Directive Reports, became effective.
Singapore	2016	Singapore Stock Exchange	SGX0ST Listing Rules Practice Note 7.6, which incorporates ESG disclosure principles into the Sustainability Reports, became effective.
Slovenia	2017	Government institutions	Transposition of the EU NFR Directive: The Companies Act amendment, which incorporates ESG disclosure principles into annual reports, became effective.
South Africa	2010	Johannesburg Stock Exchange (JSE)	Johannesburg Stock Exchange Listing Requirement 2010, which incorporates ESG disclosure principles into the Integrated/Sustainability Reports, became effective.
Spain	2012	The National Securities Market (CNVM)	The Spanish Sustainable Economy Law (revised 2011) became effective, incorporating ESG disclosure principles into Annual and Sustainability Reports.
Sweden	2016	Ministry of Industries and Innovation	Transposition of the EU NFR Directive: Corporate sustainability reporting and diversity policy, incorporating ESG disclosure principles into annual reports and Sustainability Reports, became effective.
Türkiye	2014	Capital Markets Board of Turkey	The GHG Monitoring Regulation/Communique on corporate governance principles, incorporating ESG disclosure principles into the GHG Report/Annual Reports, became effective.
United Kingdom	2013	Secretary of State	The Companies Act 2006 Regulations 2013 became effective, incorporating ESG disclosure principles into the Strategic Report and Directors' Reports.

Notes: The table reports mandatory ESG reporting regulations in our sample countries from 2007 to 2021. The variables include the country name (country), the year the rules became effective (year), the institution that issued the regulations (issuing institution), and a brief description of the rules (description).

Table OA2: Standard errors clustered at the country-year level

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
								CHARACTERISTIC =					
			Excl. USA					*GOV EFF*	*REG QUAL*	*RULE LAW*	*CTRL CORRUPT*	*FREE_EXP*	*CIVIL SOCIETY*
VARIABLES	*MISLEAD_DUMMY*	*MISLEAD_COUNT*	*MISLEAD_COUNT*	*MISLEAD_COUNT*	*MISLEAD_COUNT*	*MISLEAD_COUNT*	*MISLEAD_COUNT*	*MISLEAD_COUNT*	*MISLEAD_COUNT*	*MISLEAD_COUNT*	*MISLEAD_COUNT*	*MISLEAD_COUNT*	*MISLEAD_COUNT*
POST	0.010*	0.058***	0.072***					-0.007	-0.008	-0.010	0.005	-0.121**	-0.104**
	(1.805)	(3.199)	(4.048)					(-0.415)	(-0.484)	(-0.549)	(0.357)	(-2.266)	(-2.068)
POST × BIG				0.137***									
				(4.601)									
POST × SMALL				-0.024*									
				(-1.786)									
POST × HIGH COVERAGE					0.116***								
					(4.697)								
POST × LOW COVERAGE					0.006								
					(0.456)								
POST × GOV						0.071***							
						(3.163)							
POST × EXCH						0.017							
						(0.799)							
POST × COMPLY							0.065***						
							(2.706)						
POST × COMPLY-OR-EXPLAIN							0.053**						
							(2.149)						
CHARACTERISTIC								-0.118***	-0.054	-0.129***	-0.026	0.167**	0.195**
								(-3.669)	(-1.624)	(-3.227)	(-0.732)	(2.060)	(2.314)
POST × CHARACTERISTIC								0.068***	0.073***	0.076***	0.068***	0.259***	0.250***
								(4.283)	(4.763)	(4.747)	(4.758)	(3.598)	(3.586)
Observations	99,661	99,661	81,156	99,661	99,661	99,661	99,661	99,511	99,511	99,511	99,511	99,661	99,661
R-squared	0.392	0.635	0.638	0.636	0.635	0.635	0.635	0.635	0.635	0.635	0.635	0.636	0.635
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry X Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
SE clustered by country-year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: This table examines the robustness of the estimated effect of mandatory ESG disclosure on corporate misleading communication to clustering standard errors at the country-year level. All control variables (i.e., *SIZE*, *LEVERAGE*, *TANGIBILITY*, *INTANGIBILITY*, *R&D*, *ROA*, *LNGDP*, *GDPGR*, and *INFLATION*) are included but suppressed for the sake of brevity. Appendix A provides detailed definitions of the variables. The associated t-statistics are in parentheses. *** p<0.01, ** p<0.05, and * p<0.10.

Table OA3: Stacked DiD Regressions

Panel A: Stacked DiD Regressions with standard errors clustered at the firm level

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
								CHARACTERISTIC =					
			Excl. USA					*GOV EFF*	*REG QUAL*	*RULE LAW*	*CTRL CORRUPT*	*FREE_EXP*	*CIVIL SOCIETY*
VARIABLES	*MISLEAD_DUMMY*	*MISLEAD_COUNT*	*MISLEAD_COUNT*	*MISLEAD_COUNT*	*MISLEAD_COUNT*	*MISLEAD_COUNT*	*MISLEAD_COUNT*	*MISLEAD_COUNT*	*MISLEAD_COUNT*	*MISLEAD_COUNT*	*MISLEAD_COUNT*	*MISLEAD_COUNT*	*MISLEAD_COUNT*
POST	0.009**	0.052**	0.074***					0.009	-0.011	-0.021	0.006	-0.210***	-0.245***
	(2.424)	(2.165)	(2.901)					(0.370)	(-0.649)	(-0.958)	(0.303)	(-4.188)	(-4.670)
POST × BIG				0.140***									
				(3.409)									
POST × SMALL				-0.037***									
				(-3.063)									
POST × HIGH COVERAGE					0.124***								
					(2.968)								
POST × LOW COVERAGE					-0.010								
					(-0.671)								
POST × GOV						0.066**							
						(2.302)							
POST × EXCH						-0.013							
						(-1.115)							
POST × COMPLY							0.055**						
							(2.007)						
POST × COMPLY-OR-EXPLAIN							0.049						
							(1.411)						
CHARACTERISTIC								-0.108***	-0.073***	-0.141***	-0.088**	-0.003	-0.085
								(-4.116)	(-3.171)	(-3.048)	(-2.427)	(-0.064)	(-1.488)
POST × CHARACTERISTIC								0.045***	0.060***	0.067***	0.055***	0.355***	0.406***
								(2.846)	(3.925)	(3.475)	(3.235)	(4.144)	(4.517)
Observations	886,091	886,091	588,501	886,091	886,091	886,091	886,091	885,989	885,989	885,989	885,989	886,091	886,091
R-squared	0.395	0.715	0.720	0.715	0.715	0.715	0.715	0.715	0.715	0.715	0.715	0.715	0.715
Firm x Cohort FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry x Year x Cohort FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
SE clustered by firm	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

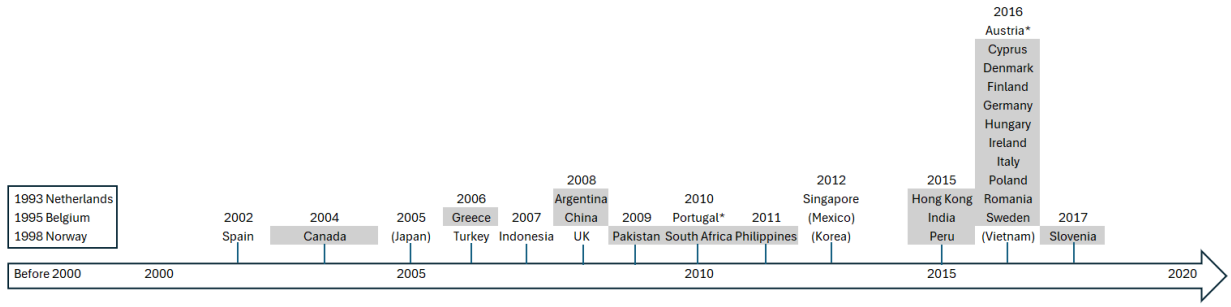
Panel B: Stacked DiD Regressions with standard errors clustered at the country-cohort level

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
								CHARACTERISTIC =					
			Excl. USA					*GOV EFF*	*REG QUAL*	*RULE LAW*	*CTRL CORRUPT*	*FREE_EXP*	*CIVIL SOCIETY*
VARIABLES	*MISLEAD_DUMMY*	*MISLEAD_COUNT*	*MISLEAD_COUNT*	*MISLEAD_COUNT*	*MISLEAD_COUNT*	*MISLEAD_COUNT*	*MISLEAD_COUNT*	*MISLEAD_COUNT*	*MISLEAD_COUNT*	*MISLEAD_COUNT*	*MISLEAD_COUNT*	*MISLEAD_COUNT*	*MISLEAD_COUNT*
POST	0.009	0.052	0.074**					0.009	-0.011	-0.021	0.006	-0.210***	-0.245***
	(1.129)	(1.294)	(1.972)					(0.306)	(-0.603)	(-0.913)	(0.262)	(-3.733)	(-3.889)
POST × BIG				0.140*									
				(1.806)									
POST × SMALL				-0.037***									
				(-3.884)									
POST × HIGH COVERAGE					0.124**								
					(2.318)								
POST × LOW COVERAGE					-0.010								
					(-0.534)								
POST × GOV						0.066							
						(1.373)							
POST × EXCH						-0.013							
						(-0.947)							
POST × COMPLY							0.055*						
							(1.927)						
POST × COMPLY-OR-EXPLAIN							0.049						
							(0.718)						
CHARACTERISTIC								-0.108***	-0.073***	-0.141***	-0.088***	-0.003	-0.085***
								(-10.055)	(-6.689)	(-14.042)	(-9.675)	(-0.162)	(-4.060)
POST × CHARACTERISTIC								0.045*	0.060**	0.067**	0.055**	0.355***	0.406***
								(1.713)	(2.097)	(2.288)	(2.213)	(3.638)	(3.783)
Observations	886,091	886,091	588,501	886,091	886,091	886,091	886,091	885,989	885,989	885,989	885,989	886,091	886,091
R-squared	0.395	0.715	0.720	0.715	0.715	0.715	0.715	0.715	0.715	0.715	0.715	0.715	0.715
Firm x Cohort FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry x Year x Cohort FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
SE clustered by country-cohort	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

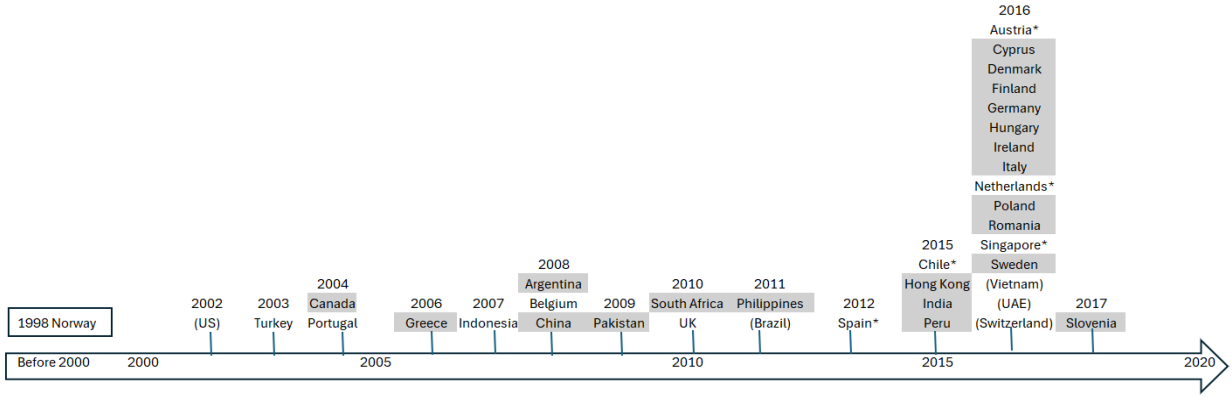
Notes: This table reports robustness tests of the effect of mandatory ESG disclosure on ESG-related misleading communication incidents using the stacked regression approach under alternative standard error clustering. For each treated country, we construct a cohort consisting of firms from that country and clean control firms from countries that never adopt mandatory ESG disclosure. Observations are retained for a [−5, +5] event window around the implementation year (year 0) and stacked across cohorts. All control variables are included but suppressed for the sake of brevity. Appendix A provides detailed definitions of the variables. All specifications include firm–cohort and industry–year–cohort fixed effects. Standard errors are robust to heteroskedasticity and are clustered at the firm level (Panel A) and at the country-cohort level (Panel B). The associated t-statistics are in parentheses. *** p<0.01, ** p<0.05, and * p<0.10.

Figure OA1. Timeline of the Introduction of Mandatory ESG Disclosure in Our Sample

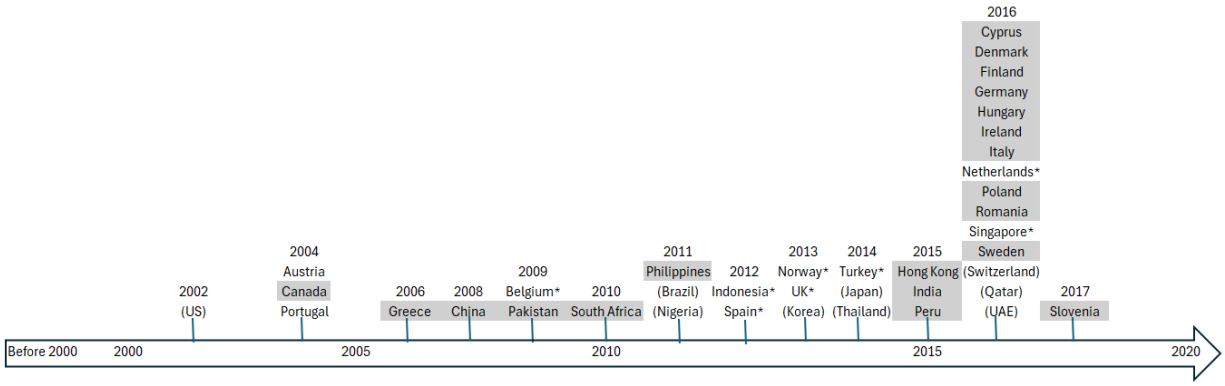
Panel A: Introduction of Mandatory E Disclosure



Panel B: Introduction of Mandatory S Disclosure



Panel C: Introduction of Mandatory G Disclosure



Notes: This figure shows the timelines for the introduction of mandatory environmental (panel A), social (panel B), and governance (panel C) disclosure for our sample of countries. Shaded countries are those that implemented mandatory E, S, and G disclosure simultaneously. The remaining countries gradually implemented mandatory disclosure, one by one. Countries in brackets did not implement mandatory ESG disclosure on all three topics during our sample period. Countries with an asterisk indicate that the third and final disclosure type (E, S, or G) has been introduced (Source: Krueger et al., 2024).

Swiss Finance Institute

Swiss Finance Institute (SFI) is the national center for fundamental research, doctoral training, knowledge exchange, and continuing education in the fields of banking and finance. SFI's mission is to grow knowledge capital for the Swiss financial marketplace. Created in 2006 as a public–private partnership, SFI is a common initiative of the Swiss finance industry, leading Swiss universities, and the Swiss Confederation.

swiss:finance:institute

c/o University of Geneva, Bd. Du Pont d'Arve 42, CH-1211 Geneva 4
T +41 22 379 84 71, rps@sfi.ch, www.sfi.ch

european corporate governance institute

about ECGI

The European Corporate Governance Institute has been established to improve *corporate governance through fostering independent scientific research and related activities.*

The ECGI will produce and disseminate high quality research while remaining close to the concerns and interests of corporate, financial and public policy makers. It will draw on the expertise of scholars from numerous countries and bring together a critical mass of expertise and interest to bear on this important subject.

The views expressed in this working paper are those of the authors, not those of the ECGI or its members.

www.ecgi.global

european corporate governance institute

ECGI Working Paper Series in Finance

Editorial Board

Editor	Nadya Malenko, Professor of Finance, Boston College
Consulting Editors	Renée Adams, Professor of Finance, University of Oxford Franklin Allen, Nippon Life Professor of Finance, Professor of Economics, The Wharton School of the University of Pennsylvania Julian Franks, Professor of Finance, London Business School Mireia Giné, Associate Professor, IESE Business School Marco Pagano, Professor of Economics, Facoltà di Economia Università di Napoli Federico II
Editorial Assistant	Asif Malik, Working Paper Series Manager

www.ecgi.global/content/working-papers

european corporate governance institute

Electronic Access to the Working Paper Series

The full set of ECGI working papers can be accessed through the Institute's Web-site (www.ecgi.global/content/working-papers) or SSRN:

Finance Paper Series	http://www.ssrn.com/link/ECGI-Fin.html
Law Paper Series	http://www.ssrn.com/link/ECGI-Law.html

www.ecgi.global/content/working-papers