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When Does ESG Disclosure Pay? The Role of Institutional Meta-Signals in Shaping Financial Outcomes

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Purpose: This study examines when environmental, social, and governance (ESG) disclosure improves the financial performance of multinational enterprises (MNEs). Prior research shows that the ESG–financial performance relationship is mixed and context-dependent, yet less is known about how home-country institutions shape stakeholders’ interpretations of ESG disclosure. This study addresses that gap by examining how institutional conditions influence the credibility and financial value of firm-level ESG disclosure.

Design/methodology/approach: Drawing on signalling theory and institutional theory, this study introduces the concept of institutional meta-signals, defined as macro-level regulative, cognitive, and normative conditions that shape stakeholder interpretation of ESG disclosure. Using panel data on 826 MNEs across 28 countries from 2013 to 2019, the study tests whether auditing and accounting standards, press freedom, and social capital moderate the relationship between ESG disclosure and financial performance. System GMM and 2SLS estimation techniques are employed.

Findings: ESG disclosure is, on average, negatively associated with financial performance. However, this relationship becomes more favourable in countries with stronger institutional meta-signals. Stronger auditing and accounting standards, greater press freedom, and higher social capital enhance the credibility of ESG disclosure and improve its financial value. The results indicate that the performance effects of ESG disclosure depend on the credibility infrastructure of the home-country institutional environment.

Research limitations/implications: This study extends ESG and international business research by showing that the financial outcomes of ESG disclosure depend on home-country institutions. It

contributes to signalling theory by conceptualising institutional meta-signals as second-order cues that shape stakeholders' interpretations. The study is limited by its focus on large MNEs and country-level institutional indicators. Future research could examine other institutional dimensions, alternative firm settings, and more fine-grained mechanisms linking ESG credibility to financial outcomes.

Practical implications: Managers should not assume that ESG disclosure will automatically improve firm performance. Its value depends on whether stakeholders perceive the disclosure as credible within the firm's institutional context. For firms headquartered in weaker institutional environments, ESG disclosure may require stronger assurance, governance, and reporting practices. The findings also suggest that policymakers can enhance the value of ESG disclosure by strengthening institutional conditions that support the credibility of reporting.

Originality/value: This study develops the concept of institutional meta-signals to explain how home-country institutions shape the financial value of ESG disclosure. It reconceptualises institutions as interpretive infrastructures that influence stakeholder responses to firm communication. By integrating signalling theory with institutional theory, the study offers a new explanation for cross-national variation in the ESG–financial performance relationship and advances research on ESG disclosure, nonmarket strategy, and MNE performance.

Keywords: ESG disclosure; corporate financial performance; institutional meta-signals; auditing and accounting standards; press freedom; social capital

1. INTRODUCTION

ESG disclosure has become an increasingly important component of multinational enterprises' (MNEs') nonmarket strategies, as firms seek to signal environmental responsibility, ethical governance, and social commitment to globally dispersed stakeholders (Doh et al., 2021; Du et al., 2010). Despite the growing prominence of ESG disclosure, evidence on its impact on corporate financial performance (CFP) remains inconclusive. Brooks and Oikonomou's (2018) meta-review of 45 years of research finds that the ESG–CFP relationship is generally positive but economically modest and highly heterogeneous across contexts. More recent evidence reviewed by Narula et al. (2025) paints an even more mixed and context-dependent picture, with positive, negative, and null ESG-performance effects emerging even within similar empirical settings. Taken together, these reviews suggest that ESG disclosure does not have a consistent financial impact; its financial value depends on contextual conditions.

Existing research identifies several contextual conditions shaping the financial outcomes of ESG disclosure, including firm-level characteristics, industry dynamics, and macroeconomic or cultural conditions (Wang et al., 2016; Shin et al., 2023; Ho et al., 2024; Wu et al., 2024). However, prior studies rarely theorise how home-country institutions shape the financial consequences of ESG disclosure. Most research treats institutions as antecedents influencing firms' adoption of ESG practices (Ioannou & Serafeim, 2012; Marano & Kostova, 2016). Far less attention has been given to institutions as contextual moderators shaping how ESG disclosures are interpreted and valued by external stakeholders.

This omission represents not merely a gap in the literature but a potential source of conceptual and empirical distortion. Ignoring home-country institutions assumes that ESG disclosures carry a stable meaning across countries. In reality, their credibility depends on institutional features such as media freedom, auditing quality, and societal trust, which shape how stakeholders interpret corporate communication. Theoretically, neglecting these interpretive mechanisms limits the explanatory power of signalling and institutional theories by treating ESG disclosure as a sender-driven act rather than a signal whose value is co-constructed through audience interpretation. Practically, this omission obscures why similar ESG disclosures generate favourable investor responses in some countries but scepticism or devaluation in others, thereby leading managers and policymakers to misjudge when ESG transparency will be rewarded. Without accounting for institutional interpretive infrastructures, prior research risks drawing misleading conclusions about the universality, direction, and magnitude of the ESG–CFP relationship.

To address this gap, this study introduces the concept of institutional meta-signals. We define them as institutional-level cues embedded in a country's regulative, cognitive, and normative structures that shape stakeholders' baseline expectations about the credibility of firm-level communication.

Specifically, we focus on three institutional meta-signals—auditing and accounting standards, press freedom, and social capital—that together shape the credibility infrastructure through which stakeholders evaluate ESG disclosure.

Accordingly, this study examines when ESG disclosure enhances CFP and how home-country institutional meta-signals shape this relationship. Building on signalling theory and institutional theory, we propose that the effectiveness of ESG disclosure depends on the credibility cues embedded in the firm's home-country institutions. Using panel data on 826 MNEs across 28 countries from 2013–2019, we test the moderating effects of auditing standards, press freedom, and social capital on the ESG–CFP relationship. We estimate the empirical models using system GMM as the primary estimator and instrumental-variable two-stage least squares (2SLS) as a robustness check.

The paper makes three contributions. *First*, this study introduces institutional meta-signals as a novel construct that captures the credibility infrastructure underlying cross-national differences in ESG effectiveness. *Second*, it extends signalling theory by demonstrating that signal outcomes depend not only on sender characteristics but also on the institutional context in which disclosures are evaluated. *Third*, it reframes institutions in international business as interpretive infrastructures that shape the credibility and financial consequences of nonmarket strategies. For managers and policymakers, these findings underscore that the financial outcomes of ESG disclosure depend as much on institutional trust and transparency as on disclosure content.

The remainder of this paper proceeds as follows. Section 2 develops the theoretical framework and hypotheses. Section 3 describes the data and methods. Section 4 reports empirical results, and Section 5 discusses implications for theory and practice. Section 6 concludes the paper.

2. THEORETICAL FRAMEWORK AND HYPOTHESES

2.1 ESG Disclosure as a Strategic Signal

From a signalling perspective, ESG disclosure functions as a voluntary mechanism through which firms communicate environmental responsibility, ethical governance, and social commitment to external stakeholders (Spence, 1973; Connelly et al., 2011; Doh et al., 2021; Du et al., 2010). Firms use such disclosure strategically to convey attributes that are difficult for outsiders to observe directly, such as responsible management, long-term orientation, and commitment to responsible corporate conduct.

When firms disclose ESG information, external stakeholders may interpret such disclosures as evidence of stronger governance, improved risk management, and long-term strategic orientation, and may reward the firm accordingly (Brooks & Oikonomou, 2018; Wang et al., 2016). Hence, by reducing information asymmetry and signalling responsible management practices to external stakeholders, ESG disclosure can enhance CFP (Dhaliwal et al., 2011; Tsang et al., 2023).

However, empirical evidence on the effect of ESG disclosure on CFP is mixed. Recent meta-analyses and cross-country studies confirm that the ESG–CFP relationship is highly contingent and varies significantly across institutional environments (Brooks & Oikonomou, 2018; Friede et al., 2015; Gillan et al., 2021; Narula et al., 2025). These mixed findings suggest that the effectiveness of ESG disclosure depends on contextual factors that shape how stakeholders interpret sustainability signals.

One reason for this heterogeneity is that signal effectiveness depends not only on the content of disclosure but also on how receivers interpret its credibility under contextual informational

constraints (Connelly et al., 2011). This signalling task is especially complex for MNEs because disclosures are evaluated across diverse institutional environments in which stakeholders apply different standards of transparency and legitimacy (Ioannou & Serafeim, 2015; Kim et al., 2024). As a result, the same ESG disclosure may carry different informational value depending on the context in which it is interpreted. Institutional theory (Scott, 1995) helps explain this variation because national environments shape expectations regarding transparency, accountability, and trust. In contexts characterised by credible information flows and stronger societal scrutiny, stakeholders are more likely to treat ESG disclosure as substantively informative. In weaker environments, similar disclosure may be regarded more sceptically. The financial value of ESG disclosure, therefore, depends not only on what firms disclose but also on the institutional conditions under which stakeholders interpret those disclosures.

2.2 Institutional Meta-Signals: Definition and Theoretical Logic

To theorise how institutional context shapes the financial consequences of ESG disclosure, we further develop the concept of institutional meta-signals. Institutional theory emphasises that organisational actions are interpreted through socially embedded systems of rules, norms, and shared understandings (Scott, 1995). We argue that certain institutional features function as institutional-level cues that shape stakeholders' baseline expectations about the credibility of firm-level communication. These meta-signals form part of the informational environment within which stakeholders evaluate firm-level ESG disclosure.

Unlike broader institutional characteristics that directly influence firm behaviour, institutional meta-signals operate specifically as interpretive cues. They do not originate in corporate behaviour itself;

rather, they shape how stakeholders assess whether firm-level disclosures are trustworthy, verifiable, and aligned with accepted standards of conduct.

Building on Scott's (1995) three-pillar framework, we identify three institutional meta-signals that correspond to distinct dimensions of stakeholder sensemaking. Auditing and accounting standards constitute a regulative meta-signal because they shape the formal verifiability of disclosures. Press freedom constitutes a cognitive meta-signal because it shapes how information is scrutinised, disseminated, and interpreted in the public sphere. Social capital constitutes a normative meta-signal because it shapes the level of trust and moral expectation through which corporate behaviour is evaluated. Although these institutional features may be positively correlated because they co-vary with broader institutional development, they represent analytically distinct dimensions of a country's credibility infrastructure.

2.3 Institutional Moderation of the ESG–CFP Relationship

We argue that the financial impact of ESG disclosure is contingent on the institutional environment in which stakeholders interpret the signal. The three institutional meta-signals moderate this relationship through different mechanisms: auditing and accounting standards shape verifiability, press freedom shapes interpretive scrutiny, and social capital shapes normative authenticity. Together, these mechanisms explain why similar ESG disclosures can generate different financial outcomes across institutional contexts.

Auditing and Accounting Standards (Regulative Meta-Signal)

Regulative institutions establish formal rules and enforcement mechanisms that support credible information exchange (Scott, 1995). High-quality auditing and accounting standards improve the

reliability, comparability, and verifiability of corporate disclosures (La Porta et al., 1998; Bushman et al., 2004) and constrain opportunistic reporting (Healy & Palepu, 2001). Prior ESG research finds that firms operating in countries with robust disclosure regimes experience stronger valuation effects from voluntary reporting (Margaret et al., 2024). Audited, standardised environments also mitigate greenwashing concerns and encourage investor trust (Schiemann & Tietmeyer, 2022). In such environments, investors are more likely to infer that ESG disclosures reflect underlying organisational commitment and reporting discipline rather than impression management or symbolic compliance. This logic parallels research on sustainability assurance, which shows that verification mechanisms enhance the credibility and financial relevance of ESG disclosures (Simnett et al., 2009; Kolk & Perego, 2010; Schiemann & Tietmeyer, 2022).

By increasing the verifiability of firm-reported information, strong auditing and accounting standards enhance stakeholders' confidence that ESG disclosures reflect genuine performance rather than symbolic compliance, thereby strengthening the credibility and financial impact of ESG communication. Consequently, stronger auditing and accounting systems are expected to enhance the financial outcomes of ESG disclosure. Thus:

H1: The relationship between ESG disclosure and corporate financial performance becomes more positive for firms headquartered in countries with high-quality auditing and accounting standards.

Press Freedom (Cognitive Meta-Signal)

Cognitive institutions govern how information is produced, disseminated, and interpreted within society (Scott, 1995). We conceptualise press freedom as a cognitive meta-signal because it affects the interpretive environment through which stakeholders evaluate corporate claims. A free and

independent press increases transparency, facilitates public scrutiny, and provides access to alternative information sources that help stakeholders distinguish substantive ESG engagement from symbolic compliance (Besley & Prat, 2006; Djankov et al., 2003; Dyck et al., 2008). Empirical studies show that firms in countries with higher media freedom face stronger stakeholder monitoring and receive more accurate market valuations of CSR engagement (Chang et al., 2019; Dyck et al., 2008).

Unlike auditing and accounting standards, which operate through formal verification, press freedom shapes stakeholder interpretation by enabling independent scrutiny and public evaluation of corporate claims. By expanding the availability of independent information, high media freedom improves stakeholders' ability to assess the credibility and salience of ESG disclosure (Sun et al., 2021). Accordingly, credible ESG disclosure should receive more favourable financial responses in countries with higher levels of press freedom. Therefore:

H2: The relationship between ESG disclosure and corporate financial performance becomes more positive for firms headquartered in countries with higher levels of press freedom.

Social Capital (Normative Meta-Signal)

Normative institutions reflect shared values, trust, and civic engagement that underpin socially appropriate organisational behaviour (Putnam, 1995; Adler & Kwon, 2002). We conceptualise social capital as a normative meta-signal because it shapes the trust-based and moral framework through which stakeholders interpret corporate behaviour. In high-social-capital societies, stronger norms of reciprocity, honesty, and civic responsibility make stakeholders more likely to interpret ESG disclosure as normatively consistent with societal expectations rather than as opportunistic communication (Matten & Moon, 2008; Jha & Cox, 2015).

Prior research suggests that social trust enhances investor confidence, reduces perceived opportunism, lowers transaction costs, and amplifies the reputational returns to responsible corporate conduct (Fukuyama, 1995; Wu et al., 2024). In this way, social capital differs from the previous two meta-signals by operating primarily through normative authenticity rather than formal verification or informational scrutiny. Consequently, ESG disclosure should generate more positive financial outcomes in countries with higher levels of social capital. Hence:

H3: The relationship between ESG disclosure and corporate financial performance becomes more positive for firms headquartered in countries with higher levels of social capital.

Collectively, these hypotheses propose that home-country institutional meta-signals moderate the ESG–CFP relationship through distinct mechanisms of verifiability, interpretive scrutiny, and normative authenticity. By conceptualising national institutions as credibility-bearing cues rather than merely background constraints, this framework explains why similar ESG disclosures generate heterogeneous financial outcomes across countries. Figure 1 illustrates the conceptual model.

(Figure 1 here)

3. RESEARCH METHOD

3.1 Sample and Research Context

This study examines how home-country institutions moderate the effectiveness of ESG disclosure for MNEs. MNEs provide an appropriate empirical setting because their disclosures are evaluated by globally dispersed stakeholders who interpret corporate signals through the institutional credibility of the firm’s home-country environment. Consistent with this theoretical framing, all institutional variables are measured at the headquarters-country level.

Firms were selected from Fortune's World's Most Admired Companies list, which identifies globally visible corporations across diverse sectors. This list provides an appropriate sampling frame because it captures large, internationally active MNEs with established disclosure practices and broad stakeholder exposure. These characteristics make the sample particularly suitable for examining how institutional environments shape the credibility and financial consequences of ESG disclosure.

A list of Fortune's World's Most Admired Companies from 2013 to 2019 was compiled from the Fortune website. The initial dataset contains 833 multinational firm identifiers, yielding 5,831 firm-year observations across seven years. Bloomberg tickers for these firms were used to extract firm-level financial and ESG data from the Bloomberg data warehouse. Observations were removed if key financial or ESG variables were unavailable. Remaining variables were inspected for consistency and extreme outliers prior to winsorisation. After excluding observations with substantial missing data, the final sample comprises 5,514 firm-year observations from 826 publicly listed MNEs across 28 countries (see Appendix Table A1 for country distribution).

ESG disclosure scores are drawn from Bloomberg at the consolidated parent-company level, ensuring measurement consistency across MNEs. Accordingly, ESG measures capture the disclosure practices of the global reporting entity rather than subsidiary-level reporting.

We retain the 2013–2019 period for both theoretical and methodological reasons. Theoretically, this window captures a formative phase of global ESG institutionalisation, including the EU Non-Financial Reporting Directive (2014), the Paris Agreement (2015), and the UN Sustainable Development Goals (2015), when ESG reporting began shifting from largely voluntary practice toward more structured disclosure regimes. This period therefore aligns closely with our theoretical focus on how institutional credibility conditions shape stakeholder interpretation of ESG signals. Methodologically, ending the sample in 2019 avoids structural breaks associated with the COVID-

19 pandemic and the rapid expansion of mandatory ESG disclosure regulations after 2020, including EU taxonomy reforms and broader regulatory shifts. These developments significantly altered both disclosure incentives and stakeholder expectations, potentially introducing regime shifts that could bias moderation estimates. Restricting the analysis to 2013–2019 therefore helps preserve internal validity. We acknowledge this as a limitation and highlight post-2020 data as an important avenue for future research as longer time-series data become available.

Firm-level financial data and ESG disclosure scores are obtained from Bloomberg, while country-level institutional indicators are drawn from the World Economic Forum’s *Global Competitiveness Reports*. All financial variables are reported in USD and winsorised at the 1st and 99th percentiles to mitigate the influence of outliers.

3.2 Variables and Measures

Dependent Variables.

Corporate financial performance is measured using three widely adopted indicators in ESG–CFP research: Return on Assets (ROA), Return on Equity (ROE), and Tobin’s Q. ROA and ROE capture internal operational and financial efficiency, while Tobin’s Q reflects market-based valuation. Using multiple CFP measures allows us to capture distinct dimensions of firm performance and assess whether the observed relationships are consistent across accounting-based and market-based outcomes (Brooks & Oikonomou, 2018; Narula et al., 2025).

Independent Variable.

We use Bloomberg’s ESG Disclosure Score as a proxy for this strategy, following prior research (Chung et al., 2024; Giannarakis & Sariannidis, 2014; Pham & Tran, 2020; Schiemann & Tietmeyer,

2022). Bloomberg's composite ESG disclosure score¹ reflects the extent and quality of a firm's ESG disclosures based on the proportion of indicators reported, weighted by relevance and comprehensiveness. It ranges from 0 to 100, with higher scores indicating greater transparency and disclosure frequency. While this measure does not capture qualitative aspects of communication (e.g., tone or framing), it serves as a validated, widely used indicator of strategic ESG disclosure commitment. Importantly, Bloomberg's ESG disclosure score captures the extent of firms' sustainability reporting rather than underlying ESG outcomes, which aligns with the theoretical focus of this study on how stakeholders interpret corporate disclosure signals.

Moderating Variables.

Strength of Auditing and Accounting Standards (AA): Measured using a 1–7 scale from the Global Competitiveness Reports, reflecting the strength of auditing and reporting standards of a country, with 1 = extremely weak; 7 = extremely strong (World Economic Forum, 2018: 635). Therefore, it captures the regulative pillar by signalling enforcement quality and verifiability (Bushman et al., 2004).

Press Freedom (Pressfree): Measured using a 0–100 scale from the Global Competitiveness Reports, with higher values indicating more press freedom (World Economic Forum, 2018). The index measures media independence, the quality of the infrastructure that supports the production of news, information and acts of violence against journalists (World Economic Forum, 2018: 634). This cognitive meta-signal hence shapes information scrutiny and societal sensemaking (Besley & Prat, 2006; Dyck et al., 2008).

¹ Although Bloomberg labels this metric 'ESG Disclosure Score', it captures the extent, not the impact, of ESG reporting. It excludes performance benchmarks and focuses on disclosure transparency and breadth (Bloomberg, 2024)

Social Capital (Socialcapital): Measured on a 0–100 scale using the Global Competitiveness Reports, which assesses social cohesion, civic engagement, community networks, and institutional trust. (World Economic Forum, 2018: 634). It hence represents the normative pillar that fosters prosocial norms and legitimacy (Putnam, 1995; Adler & Kwon, 2002).

These institutional variables operationalise the regulative, cognitive, and normative pillars of institutional theory (Scott, 1995), which shape how stakeholders interpret ESG signals.

Interaction Terms. To test moderation, we include multiplicative interaction terms between ESG and each institutional variable: $ESG \times AA$; $ESG \times Pressfree$; $ESG \times Socialcapital$.

Control Variables.

We include theoretically grounded control variables that capture alternative determinants of corporate financial performance. First, *CEO characteristics (duality, ownership, age, tenure)* are included because the upper echelons theory argues that executives' power, incentives, and experience shape strategic decision-making and performance outcomes (Hambrick & Mason, 1984). Second, *board composition (size, independence, diversity)* is controlled for because boards influence monitoring intensity and strategic oversight, which agency theory links directly to firm performance (Jensen & Meckling, 1976; Adams & Ferreira, 2009). Third, *ownership structure, proxied by financial leverage*, reflects capital structure choices that affect resource allocation, risk, and profitability, consistent with agency and corporate finance theory (Jensen, 1993). Fourth, *firm size (log of assets and log of employees)* is included because larger firms benefit from economies of scale, greater resource endowments, and stronger legitimacy, all of which are associated with performance (Barney, 1991; Marano et al., 2017). Finally, industry, country, and year fixed effects

account for unobserved heterogeneity in competitive conditions, institutional environments, and temporal shocks that may independently affect performance.

Including these controls reduces omitted-variable bias by accounting for governance characteristics, firm resources, and structural factors that may independently influence financial performance.

3.3 Empirical Model

To test our hypotheses, we estimate a lagged dependent-variable panel model of the form:

$$CFP_{i,t} = \alpha + \beta_1 ESG_{i,t-1} + \beta_2 Inst_{c,t-1} + \beta_3 (ESG_{i,t-1} \times Inst_{c,t-1}) + \beta_4 X_{i,t-1} + \mu_i + \rho_i + \epsilon_{it}$$

All explanatory variables are lagged by one period to mitigate simultaneity concerns and to reflect the temporal sequence implied by the theoretical framework. ESG disclosure and institutional signals are expected to influence stakeholder evaluations and firm performance with some delay rather than contemporaneously. Lagging the explanatory variables therefore reduces potential reverse causality and helps ensure that observed financial outcomes follow disclosure behaviour.

Where i denotes firm, t denotes year, and c denotes home country. $CFP_{i,t}$ is ROA, ROE, or Tobin's Q; $ESG_{i,t-1}$ is the firm's ESG score. $Inst_{c,t-1}$ represents a home country's accounting and auditing standard (AA), press freedom (Pressfree), or social capital (Socialcapital). The interaction term β_3 captures whether home-country institutional meta-signals condition the financial consequences of ESG disclosure, as predicted in H1–H3. $X_{i,t-1}$ includes all controls; μ_i and ρ_i are firm fixed effects and are year dummies.

3.4 Estimation Strategy

Estimating the relationship between ESG disclosure and firm financial performance raises several identification challenges. First, ESG disclosure may be endogenous because financially successful firms may possess greater resources and incentives to invest in sustainability reporting. Second, unobserved firm characteristics, such as managerial quality, corporate culture, or strategic orientation, may simultaneously influence disclosure behaviour and financial performance. Third, corporate financial performance typically exhibits persistence over time, creating dynamic panel bias in conventional estimators.

To address these challenges, the empirical strategy combines a dynamic panel estimator with an instrumental-variable robustness test. The primary identification strategy relies on a two-step system GMM (Blundell & Bond, 1998; Roodman, 2009), which is well-suited to panel datasets with many firms and relatively short time periods. System GMM mitigates endogeneity by using internal instruments derived from lagged levels and differences of the endogenous variables while controlling for unobserved firm-specific heterogeneity. To avoid instrument proliferation, the number of instruments is restricted relative to the number of cross-sectional units, and model validity is assessed using Hansen tests of overidentifying restrictions and Arellano–Bond tests for serial correlation. In this framework, ESG disclosure and firm performance are treated as endogenous variables, reflecting the possibility that financially successful firms may have greater incentives and resources to invest in sustainability reporting, while disclosure itself may influence stakeholder perceptions and financial outcomes.

As an additional robustness check, we estimate instrumental-variable 2SLS models using the country–industry average ESG disclosure score (excluding the focal firm) as an external instrument for firm-level ESG disclosure. This instrument captures prevailing disclosure norms within firms’ institutional and industry environments. First-stage diagnostics reported in Table 3 (section 4.3)

indicate that the instrument is strongly correlated with firm-level ESG disclosure. However, because country–industry disclosure norms may also reflect broader contextual factors, such as investor expectations, industry sentiment, or regulatory attention, we do not treat the 2SLS estimates as our primary identification strategy. Instead, we use them as a supplementary robustness check alongside the baseline system GMM results. Taken together, these complementary approaches allow us to assess whether the moderating role of institutional environments remains robust across alternative identification strategies.

3.5 Moderation Analysis and Marginal Effects

Following Gardner et al. (2017) and Brambor et al. (2006), we treat moderation as an interaction whose sign and magnitude vary with the moderator. After estimating the interaction terms, we compute average marginal effects of ESG disclosure on CFP across the observed range of each institutional meta-signal. Figures 2–4 plot these conditional effects with 95 percent confidence intervals, allowing visual assessment of the institutional contexts in which the ESG–CFP relationship is statistically distinguishable from zero, following McCabe et al. (2018). In each plot, non-focal moderators are held at their sample means, and confidence intervals are 95% delta-method estimates from the 2SLS interaction models. This procedure provides a more substantively interpretable assessment of the conditional relationship than coefficient estimates alone. Taken together, the dynamic panel estimator, instrumental-variable robustness tests, and conditional marginal-effect analysis provide complementary evidence regarding the moderating role of institutional environments in shaping the financial consequences of ESG disclosure.

4. RESULTS

4.1 Descriptive Statistics and Correlation Analysis

Table 1 presents descriptive statistics for the full sample of 826 MNEs across 28 countries. Firms vary considerably in size and ESG disclosure intensity, with mean ESG scores of 38.4 (on a 0–100 scale). Average ROA and ROE are 4.9 and 17.2 percent, respectively, and the mean Tobin's Q is 1.69, indicating moderate market valuation. Variance inflation factors (VIFs) for all variables in the main models are around 2, which is well below the commonly used threshold of 10 for identifying problematic multicollinearity (Cohen et al., 2003).

(Table 1 here)

While VIFs alone cannot fully rule out concerns about multicollinearity (Kalnins & Praitis Hill, 2023), the low VIF values, moderate correlations, and the stability of interaction effects when all moderators are included simultaneously provide reassurance that the estimated relationships are not driven by overlapping constructs. Conceptually, these variables capture distinct institutional mechanisms—verifiability, independent scrutiny, and normative trust—representing the regulative, cognitive, and normative pillars of the credibility infrastructure (Scott, 1995).

The correlation matrix also shows that ESG disclosure exhibits weak or near-zero correlations with the three measures of firm performance (ROA, ROE, and Tobin's Q). This pattern suggests that ESG disclosure, in isolation, is not automatically associated with stronger CFP. Consistent with our theoretical argument, this descriptive evidence indicates that the financial implications of ESG disclosure likely depend on the broader institutional environment in which such disclosures are interpreted.

4.2 Baseline Results

Table 2 reports the baseline two-step system GMM results from the full specification, in which the three interaction terms are entered simultaneously. This provides a stricter test of whether each institutional meta-signal retains explanatory power net of the others. The identification diagnostics are acceptable: the Hansen J-tests do not reject instrument validity, and the number of instruments remains well below the number of firms, reducing concerns about instrument proliferation (Roodman, 2009). Appendix Table A2 reports supplementary models in which each interaction term is entered separately.

(Table 2 here)

Across the baseline models, the direct effect of ESG disclosure is negative or weakly negative across the three performance measures. This pattern suggests that ESG disclosure alone is not consistently associated with improved firm performance. One possible interpretation is that disclosure may entail compliance costs, increase investor scrutiny, or be discounted by investors when the surrounding institutional environment does not provide sufficient credibility signals.

Consistent with our theoretical argument, the key coefficients of interest in Table 2 are the interaction terms between ESG disclosure and the three institutional moderators. These terms indicate whether the relationship between ESG disclosure and CFP varies across institutional contexts. Although the magnitude and statistical significance of these interactions differ across models, the results suggest that the financial value of ESG disclosure is contingent on the institutional environment in which disclosure occurs.

In particular, the interaction between ESG disclosure and auditing and accounting standards is positive and statistically significant at the 90% level for ROE ($p = 0.060$), providing cautious support for H1, which predicts that stronger reporting institutions enhance the positive association between

ESG disclosure and CFP. Similarly, the interaction between ESG disclosure and press freedom is positive and statistically significant at the 90% level for Tobin's Q ($p = 0.059$), offering support for H2, which predicts that more independent information environments strengthen the financial value of ESG disclosure. The interaction between ESG disclosure and social capital is positive but not statistically significant in the baseline specification, providing limited support for H3.

Taken together, these findings are broadly consistent with the theoretical premise of this study. ESG disclosure does not have a fixed economic meaning independent of context; rather, its relationship with CFP depends on the institutional environment through which stakeholders interpret and evaluate corporate disclosures. In this sense, institutional conditions function as meta-signals that shape the credibility and financial relevance of sustainability disclosure.

4.3 Robustness checks

As a robustness check, we estimate 2SLS models using the country–industry average ESG disclosure level, excluding the focal firm, as an instrument for firm-level ESG disclosure. Given that this instrument may also capture broader contextual influences, we interpret the IV results cautiously and use them to assess whether the baseline findings remain robust. Table 3 reports the first-stage 2SLS results. The instrument is strongly correlated with firm-level ESG disclosure ($p < 0.01$), confirming its relevance. Instrument strength diagnostics further support this conclusion: the Kleibergen–Paap rk Wald F statistics substantially exceed the conventional threshold of 10 (Staiger & Stock, 1997; Stock & Yogo, 2005), indicating that weak instruments are unlikely.

(Table 3 here)

Table 4 reports the second-stage 2SLS estimates. The results broadly reinforce the patterns observed in the baseline system GMM models. Across specifications, the direct effect of ESG disclosure remains negative and statistically significant, again suggesting that disclosure alone does not guarantee superior CFP.

(Table 4 here)

Even when addressing endogeneity and including all interactions simultaneously, the distinct moderating roles of institutional meta-signals persist. Specifically, the interaction between ESG disclosure and auditing and accounting standards is positive and significant for ROA and Tobin's Q, while the interaction between ESG disclosure and press freedom is positive and significant for Tobin's Q. The interaction between ESG disclosure and social capital is positive and marginally significant for Tobin's Q.

These results provide additional robustness evidence for the moderating role of institutional environments. Overall, the 2SLS estimates reinforce the baseline findings by showing that the financial value of ESG disclosure is greater in institutional contexts that provide stronger credibility signals.

4.4 Marginal Effects of Institutional Meta-Signals

Figure 2-4 present the average marginal effects of ESG disclosure on CFP across the observed range of each institutional meta-signal, with 95% confidence intervals for Tobin's Q, ROA, and ROE. Overall, the plots suggest that the ESG–CFP relationship becomes more favourable as institutional credibility strengthens, although the precision of these effects varies across moderators and outcome measures.

For auditing and accounting standards, the marginal-effect plots show the clearest and most consistent upward pattern, indicating that stronger reporting and verification environments improve the financial implications of ESG disclosure. This pattern is most evident for ROA and ROE and is broadly consistent with H1. Figure 2 shows the marginal effects of ESG disclosure on Tobin's Q, ROA, and ROE across auditing and accounting standards (left to right).

(Figures 2 here)

For press freedom, the marginal effects become less negative or more positive as media independence increases, but the confidence intervals remain wide and often cross zero across the observed range, particularly for Tobin's Q. We therefore interpret the evidence for H2 as suggestive rather than conclusive. Figure 3 shows the marginal effects of ESG disclosure on Tobin's Q, ROA, and ROE across press freedom (left to right).

(Figures 3 here)

For social capital, the marginal effects also become more positive at higher levels of societal trust, but the confidence intervals again indicate substantial uncertainty across much of the observed range. Accordingly, the plots provide only limited support for H3. Figure 4 shows the marginal effects of ESG disclosure on Tobin's Q, ROA, and ROE across social capital (left to right).

(Figures 4 here)

Overall, the marginal-effects analysis supports the view that institutional credibility conditions the financial relevance of ESG disclosure, although this effect is estimated with greater precision for auditing and accounting standards than for press freedom or social capital. While the confidence intervals cross zero across parts of the observed range for some moderators, the

overall pattern remains consistent with the estimated interaction effects. This pattern is particularly evident for auditing and accounting standards, where the evidence is most robust.

The next section discusses the theoretical and practical implications of these findings.

5. DISCUSSION

The overall pattern of results across the different empirical specifications supports the central argument of this study. In the baseline dynamic panel models, ESG disclosure alone does not consistently enhance CFP, indicating that sustainability disclosure may impose costs or generate limited financial value when not supported by credible institutional environments. However, the interaction terms between ESG disclosure and institutional variables are generally positive, suggesting that stronger institutional environments enhance the credibility and informational value of ESG disclosures.

The 2SLS estimations provide additional support for this moderating mechanism. In particular, ESG disclosure becomes more positively associated with CFP in environments characterised by stronger auditing and accounting standards, with weaker but directionally similar evidence for press freedom and social capital. The marginal-effect plots reinforce this interpretation by showing that the ESG–CFP relationship becomes more favourable as institutional credibility strengthens, especially in the case of auditing and accounting standards.

Taken together, these findings suggest that the financial consequences of ESG disclosure depend less on the act of disclosure itself than on the institutional context through which stakeholders interpret such disclosures. In this sense, home-country institutions operate as meta-signals that shape whether ESG communication is perceived as credible, verifiable, and informative. More broadly, ESG disclosure should therefore be understood not simply as a firm-level signal, but as one whose

meaning and value are socially constructed through the institutional environments in which firms operate.

This evidence extends existing ESG–CFP research in several important ways. *First*, it challenges the conventional assumption that transparency automatically generates financial benefits. Instead, ESG disclosure appears to create financial value only when surrounding institutions provide meta-signals of verifiability and trustworthiness. *Second*, it shows that institutions are not merely background conditions but active moderators shaping how nonmarket strategies are interpreted in global markets. The marginal-effect evidence further suggests that institutional credibility operates less as a simple additive condition and more as a contextual boundary for when ESG disclosure becomes financially meaningful.

5.1 Theoretical Contributions

This study advances theory in three interrelated ways. *First*, it extends signalling theory by demonstrating that the value of a signal depends not solely on its costliness or clarity, but also on the credibility of the environment in which it is issued. Traditional signalling models focus on sender intent and receiver inference (Spence, 1973; Connelly et al., 2011). Our findings indicate that signal effectiveness is contextually contingent: stakeholders interpret ESG disclosures through institutional meta-signals that amplify or attenuate signal credibility, ultimately influencing firms' financial performance. Hence, signal effectiveness is a joint function of what is communicated and the institutional context in which it is communicated.

Second, the study contributes to institutional theory by reconceptualising institutions as interpretive infrastructures rather than merely exogenous constraints or antecedents of behaviour. Whereas prior research has examined how institutions shape firms' propensity to engage in CSR or ESG practices

(Ioannou & Serafeim, 2012; Marano & Kostova, 2016), this study shows that institutions also condition how stakeholders evaluate those practices. These findings suggest that regulative, cognitive, and normative institutional elements can operate as meta-signals that provide the context for sensemaking and legitimacy judgments (Scott, 1995; Bitektine & Haack, 2015).

Third, this work deepens understanding of nonmarket strategy by identifying the institutional conditions under which ESG disclosure becomes strategically valuable. Nonmarket strategies succeed not merely because they demonstrate social responsibility, but because they are interpreted as credible by relevant stakeholders (Doh et al., 2021). Our evidence positions institutional credibility as a boundary condition for the financial and strategic value of ESG disclosure, thereby helping to explain why prior findings vary across countries.

5.2 Managerial and Policy Implications

For managers, these findings underline that ESG disclosure is not universally rewarded. Firms headquartered in countries with robust auditing systems, freer media environments, and higher civic trust are more likely to benefit from an institutional credibility premium, as their ESG statements are more likely to be perceived as credible and informative by stakeholders. Conversely, firms from weaker institutional environments may face a credibility discount, with their disclosures more likely to be viewed sceptically or discounted as symbolic.

To mitigate this disadvantage, firms operating in lower-credibility institutional environments may adopt several strategic responses. *First*, they may seek credible third-party verification of ESG disclosures through recognised reporting and assurance frameworks such as the Global Reporting Initiative (GRI), the Task Force on Climate-related Financial Disclosures (TCFD), or independent ESG assurance providers. Such mechanisms provide external validation that can partially

compensate for weaker institutional credibility. **Second**, multinational enterprises may consider locating or coordinating ESG reporting and assurance functions through units based in jurisdictions with stronger disclosure and verification infrastructures, thereby leveraging more credible reporting environments when communicating with global investors. **Third**, firms can invest in transparent, standardised, and longitudinal ESG reporting practices that build reputational credibility over time, enabling stakeholders to assess consistency across reporting periods rather than relying solely on one-off disclosures.

For policymakers, the findings suggest that mandating ESG disclosure alone is insufficient to generate meaningful financial market responses. Our results indicate that the value relevance of ESG disclosure depends on the broader institutional credibility infrastructure in which disclosures are embedded. The evidence is strongest for high-quality auditing and accounting standards, with more limited but directionally similar support for media independence and civic trust as factors that can enhance the credibility of sustainability communication. For regulators, particularly in emerging and developing markets, this implies that ESG policy should not focus solely on disclosure mandates but should also strengthen the institutional mechanisms that enable credible verification and interpretation of corporate sustainability claims.

Concrete policy measures may include developing national ESG reporting standards aligned with emerging international frameworks, establishing clearer guidelines for ESG assurance providers, and strengthening enforcement mechanisms for sustainability reporting, such as mandatory third-party limited assurance for high-impact sectors. In addition, improving transparency by increasing media independence and broadening public access to corporate information can strengthen the interpretive environment in which ESG disclosures are evaluated. Such reforms can strengthen

investor confidence and improve the conditions under which countries attract sustainable investment.

For international investors and ESG rating agencies, the findings highlight that institutional context shapes the reliability of ESG signals across countries. Incorporating institutional meta-signals such as auditing quality, press freedom, and societal trust into ESG evaluation frameworks can improve portfolio screening and risk assessment. Investors evaluating firms across jurisdictions may therefore benefit from integrating institutional indicators into ESG scoring models to better distinguish between credible sustainability commitments and symbolic disclosure practices.

5.3 Limitations and Implications for Future Research

While the empirical analysis provides evidence that home-country institutional credibility moderates the relationship between ESG disclosure and financial performance, several limitations provide opportunities for future research.

First, this study focuses primarily on home-country institutions, yet multinational enterprises operate simultaneously within multiple institutional environments. Our findings suggest that home-country institutional credibility conditions how ESG disclosures are interpreted by stakeholders. However, ESG signals may also be evaluated by stakeholders in host-country markets operating under different institutional conditions. Future research could therefore examine institutional misalignment between home- and host-country environments, exploring how cross-border differences in institutional credibility affect the reception and financial consequences of ESG disclosure.

Second, the study covers the period 2013–2019, which, as explained in Section 3.1, was deliberately chosen to capture a stable pre-pandemic phase of ESG disclosure and institutional credibility. This design enhances comparability across countries by reducing the likelihood that major regulatory and macroeconomic disruptions distort the moderation estimates. As a result, the study excludes the post-2020 period, during which major ESG reporting reforms and broader shocks reshaped disclosure incentives and stakeholder expectations. Extending the dataset to more recent years would therefore enable scholars to examine whether the institutional moderation effects identified in this study persist under an evolving global ESG regulatory landscape.

Third, Bloomberg’s ESG disclosure score captures the extent of disclosure rather than the underlying quality or substance of ESG practices. While this measure is appropriate for examining signalling behaviour, future research could complement disclosure-based indicators with qualitative or perception-based measures to investigate how stakeholders distinguish between symbolic and substantive ESG communication. Such work would help clarify the mechanisms through which institutional credibility shapes the interpretation of corporate sustainability signals.

Finally, the growing use of digital analytics, algorithmic ESG ratings, and artificial intelligence in financial markets introduces new intermediaries into the meta-signalling environment. Future studies could examine how algorithmic rating systems, data platforms, and digital disclosure technologies interact with institutional credibility to shape the valuation of ESG signals. Investigating these technological intermediaries would deepen understanding of how digital information-processing infrastructures shape the credibility, interpretation, and financial consequences of corporate sustainability communication.

6. CONCLUSION

This study provides evidence that the financial outcomes of ESG disclosure are contingent on home-country institutional credibility. Using panel data on 826 MNEs from 28 countries, this paper shows that the financial value of ESG disclosure is greater when firms operate in home-country environments characterised by stronger auditing standards, with weaker but directionally similar evidence for press freedom and social capital. These findings suggest that transparency alone is insufficient; the value of ESG disclosure depends on the credibility of the institutional environment in which it is embedded.

Conceptually, the paper advances the ESG–performance debate by positioning institutions as meta-signals—macro-level cues that shape how global stakeholders interpret firm disclosures. This integration of signalling and institutional perspectives helps explain cross-national heterogeneity in the value of ESG transparency and identifies an important contextual boundary condition for nonmarket strategy.

In practice, firms can enhance the value of ESG disclosure by pairing it with credible assurance mechanisms, while policymakers should prioritise institutional reforms to improve verification, transparency, and trust. For researchers, the findings open up promising avenues for examining host-country dynamics, digital credibility filters, and the evolving role of algorithmic ESG evaluations. Overall, the study underscores that markets respond not to disclosure alone, but to disclosure made credible by the institutional environments in which it is interpreted.

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Appendix Table A1. Distribution of Observations by Country

Country	Number of observations	Percent of total observations	Cumulative
Australia	26	0.47	0.47
Belgium	13	0.24	0.71
Brazil	25	0.45	1.16
China	107	1.94	3.10
Denmark	7	0.13	3.23
Finland	12	0.22	3.45
France	203	3.68	7.13
Germany	151	2.74	9.87
Hong Kong	34	0.62	10.48
India	11	0.20	10.68
Ireland	7	0.13	10.81
Italy	53	0.96	11.77
Japan	287	5.20	16.97
South Korea	61	1.11	18.08
Luxembourg	55	1.00	19.08
Malaysia	7	0.13	19.21
Mexico	14	0.25	19.46
Norway	19	0.34	19.80
Russia	22	0.40	20.20
Saudi Arabia	7	0.13	20.33
Singapore	14	0.25	20.58
South Africa	7	0.13	20.71
Spain	46	0.83	21.55
Sweden	27	0.49	22.03
Switzerland	61	1.11	23.14
Turkey	7	0.13	23.27
United Kingdom	184	3.34	26.61
United States	4,047	73.39	100
Total	5,514	100	

TABLE 1: Descriptive statistics and correlation matrix

Variable	Mean	S.D.	Min	Max	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	
1 ROA	4.855	6.821	104	128	1.00																	
2 ROE	17.153	40.447	527	1049	0.46***	1.00																
3 TobinQ	1.694	1.104	1	14	0.52***	0.33***	1.00															
4 ESG	38.367	16.063	6	78	-0.00	0.02	-0.03	1.00														
5 Pressfree	25.47	9.017	7.6	78.9	-0.04	-0.02	-0.05	-0.09**	1.00													
6 AA	5.622	0.376	3.8	7	0.08***	0.08***	0.10***	0.04**	-0.60***	1.00												
7 Socialcapital	61.6	5.684	41	66.8	0.10***	0.09**	0.21***	-0.20***	-0.55***	0.59***	1.00											
8 CEOduality	0.401	0.49	0	1	0.05***	0.05***	0.06***	-0.03	-0.00	-0.01	0.12***	1.00										
9 CEOowner	0.823	4.746	0	91	0.03	0.03	-0.00	-0.06***	0.01	0.00	0.03	0.06***	1.00									
10 CEOage	57.979	6.801	33	89	0.00	-0.01	-0.07***	0.01	0.09**	-0.02	-0.16***	0.24***	0.03	1.00								
11 CEOtenure	6.804	6.206	1	50	0.06***	-0.01	0.04**	-0.17***	0.08**	-0.02	0.01	0.34***	0.04*	0.44***	1.00							
12 Boardsize	11.215	2.702	4	23	-0.05**	0.01	-0.05***	0.36***	-0.08**	-0.05***	-0.06*	-0.00	-0.01	0.02	0.05***	1.00						
13 Bindependent	75.104	20.856	0	100	0.09***	0.13***	0.19***	-0.06***	-0.14***	0.16***	0.58***	0.14***	0.06**	0.22***	-0.01	0.14***	1.00					
14 Boarddiversity	3.749	2.439	0	10	0.05**	0.07***	0.09***	0.26***	-0.21***	0.03	0.24***	0.06***	0.02	0.20***	0.08***	0.22***	0.27***	1.00				
15 Leverage	0.014	0.145	1.25	4	0.00	0.03*	0.03*	-0.06***	-0.01	0.00	0.03	0.02	0.00	0.00	0.01	-0.04**	0.03*	-0.01	1.00			
16 Assets	2.47E+06	1.92E+07	71	3.53E+08	-0.03	-0.03*	-0.08***	0.09***	0.00	-0.16***	-0.20***	-0.02	-0.02	0.10***	-0.03	-0.04**	-0.16***	0.16***	-0.01	1.00		
17 Employees	68694.315	1.18E+05	175	2.30E+06	0.03	0.05***	0.01	0.22***	-0.02	-0.01	-0.11***	-0.02	0.07***	0.02	-0.01	0.22***	-0.12***	0.06**	-0.04*	0.04**	1.00	

* p<0.05; ** p<0.01; *** p<0.001

TABLE 2: Baseline two-step system GMM results: joint interaction model

Variable	Model 1: ROA		Model 2: ROE		Model 3: Tobin's Q	
	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
<i>L.ESG</i>	-0.586	0.425	-8.517**	0.023	-0.358*	0.069
<i>L.AA</i>	-0.614	0.920	-50.369	0.128	-1.111	0.484
<i>L.ESG*AA</i>	0.067	0.578	1.116*	0.060	0.038	0.204
<i>L.Pressfree</i>	0.013	0.941	-1.206	0.218	-0.053	0.223
<i>L.ESG*Pressfree</i>	-0.000	0.965	0.029	0.128	0.002*	0.059
<i>L.Socialcapital</i>	-0.254	0.333	-1.122	0.238	-0.072	0.176
<i>L.ESG*Socialcapital</i>	0.004	0.495	0.025	0.242	0.002	0.112
<i>L.CEOduality</i>	0.461	0.697	4.608	0.288	-0.287	0.289
<i>L.CEOownership</i>	-0.044	0.535	-0.068	0.868	0.018	0.244
<i>L.CEOage</i>	0.024	0.725	-0.169	0.576	0.006	0.684
<i>L.CEOtenure</i>	0.018	0.812	0.005	0.985	-0.010	0.519
<i>L.Boardsize</i>	0.071	0.591	1.593**	0.017	0.036	0.352
<i>L.Bindependent</i>	0.014	0.426	0.090	0.264	0.002	0.608
<i>L.Boarddiversity</i>	-0.161	0.462	-0.955	0.241	-0.032	0.498
<i>L.Leverage</i>	15.721	0.820	177.570**	0.018	-16.323	0.229
<i>L.LnAssets</i>	-0.684**	0.035	-2.054**	0.036	-0.271***	0.000
<i>L.LnEmployees</i>	0.265	0.403	1.802	0.263	0.172**	0.014
<i>Industrydummy</i>	Y		Y		Y	
<i>Countrydummy</i>	Y		Y		Y	
<i>Yeardummy</i>	Y		Y		Y	
<i>_cons</i>	23.841	0.527	389.972*	0.055	14.057	0.178
N	5,514		5,514		5,514	
Hansen test	0.775		0.766		0.108	

***, **, and * indicate significance at the 1%, 5%, and 10% levels.

Hansen tests do not reject the validity of the instruments.

Two-step system GMM estimation with collapsed instrument matrix to avoid instrument proliferation (Roodman, 2009).

Number of instruments = 50.

Industry, country, and year fixed effects included in all models.

TABLE 3: First-stage regression for ESG (IV 2SLS)

	Coefficient	P-value
<i>L.Instrument</i>	0.010***	0.004
<i>L.Pressfree</i>	-0.208***	0.000
<i>L.AA</i>	-7.331***	0.000
<i>L.Socialcapital</i>	-0.077***	0.003
<i>L.CEOduality</i>	-0.002	0.914
<i>L.CEOownership</i>	0.001	0.937
<i>L.CEOage</i>	0.002	0.522
<i>L.CEOtenure</i>	0.002	0.422
<i>L.Boardsize</i>	0.010	0.383
<i>L.Bindependent</i>	-0.001	0.824
<i>L.Boarddiversity</i>	-0.002	0.800
<i>L.Leverage</i>	0.057	0.439
<i>L.LnAssets</i>	-0.024**	0.033
<i>L.LnEmployees</i>	0.011	0.329
N	5,514	
R ²	0.696	

***, **, and * indicate significance at the 1%, 5%, and 10% levels.

Instrument: Country-industry average ESG disclosure

TABLE 4: IV 2SLS regression outputs for robustness check

Variable	Model 4: ROA		Model 5: ROE		Model 6: Tobin's Q	
	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
<i>L.ESG</i>	-2.001**	0.032	-6.713*	0.053	-0.557***	0.000
<i>L.AA</i>	-11.847*	0.097	-34.415	0.170	-3.057***	0.009
<i>L.ESG*AA</i>	0.280**	0.036	0.849*	0.071	0.068***	0.002
<i>L.Pressfree</i>	-0.288	0.217	-0.773	0.481	-0.112***	0.002
<i>L.ESG*Pressfree</i>	0.006	0.204	0.022	0.305	0.002***	0.000
<i>L.Socialcapital</i>	-0.234	0.390	-0.841	0.415	-0.073	0.112
<i>L.ESG*Socialcapital</i>	0.004	0.490	0.022	0.336	0.002*	0.061
<i>L.CEOduality</i>	-0.106	0.888	1.969	0.563	0.017	0.920
<i>L.CEOownership</i>	-0.026	0.213	0.494	0.465	-0.005	0.196
<i>L.CEOage</i>	0.067	0.237	0.048	0.844	0.003	0.825
<i>L.CEOtenure</i>	-0.011	0.877	-0.290	0.268	0.001	0.924
<i>L.Boardsize</i>	0.089	0.458	1.089*	0.051	0.021	0.472
<i>L.Bindependent</i>	0.009	0.536	0.077	0.239	0.003	0.427
<i>L.Boarddiversity</i>	0.021	0.864	-0.070	0.904	0.010	0.737
<i>L.Leverage</i>	8.653*	0.093	79.728	0.125	0.312	0.854
<i>L.LnAssets</i>	-0.700***	0.000	-2.097**	0.012	-0.217***	0.000
<i>L.LnEmployees</i>	0.172	0.542	2.090	0.200	0.029	0.710
<i>Industrydummy</i>	Y		Y		Y	
<i>Countrydummy</i>	Y		Y		Y	
<i>Yeardummy</i>	Y		Y		Y	
N	5,514		5,514		5,514	
R ²	0.053		0.064		0.104	
Shea partial R ²	0.536		0.536		0.536	
Kleibergen-Paap rk	1245.967		1165.933		1245.967	
Wald F statistic						
Chi-sq(29) P-val	0.006		0.010		0.006	

***, **, and * indicate significance at the 1%, 5%, and 10% levels.

Instrument: Country–industry average ESG disclosure. High Kleibergen–Paap F-statistics reflect the strong correlation between the country–industry average ESG disclosure instrument and firm-level ESG disclosure.

Appendix Table A2: Supplementary two-step system GMM results: single-interaction models

Variable	Model 1:	Model 2:	Model 3:	Model 1:	Model 2:	Model 3:	Model 1:	Model 2:	Model 3:
	ROA	ROE	Tobin's Q	ROA	ROE	Tobin's Q	ROA	ROE	Tobin's Q
	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient
L.ESG	-0.197*** (0.000)	-0.239*** (0.000)	0.040 (0.946)	-1.349 (0.492)	-0.103*** (0.000)	0.982 (0.218)	0.000 (.)	-0.622*** (0.000)	-3.974 (0.202)
<i>L.AA</i>	0.000 (.)	0.000 (.)	0.489 (0.872)						
L.ESG*AA	-0.090*** (0.000)	-0.191*** (0.000)	-0.005 (0.964)						
<i>L.Pressfree</i>				-0.983 (0.631)	0.000 (.)	-0.391 (0.807)			
L.ESG*Pressfree				0.052 (0.473)	0.008*** (0.000)	-0.033 (0.177)			
<i>L.Socialcapital</i>							0.000 (.)	0.000 (.)	3.148*** (0.009)
L.ESG*Socialcapital							0.004*** (0.000)	0.012*** (0.000)	0.069 (0.196)
<i>L.CEOduality</i>	4.192*** (0.000)	0.805 (0.765)	-0.154 (0.369)	6.765 (0.439)	3.516 (0.313)	-2.662** (0.021)	0.193 (0.795)	0.092 (0.979)	-2.359** (0.011)
<i>L.CEOownership</i>	-0.075* (0.073)	-0.097 (0.711)	-0.004 (0.506)	-0.668 (0.520)	0.026 (0.954)	0.101 (0.778)	-0.062 (0.500)	0.571 (0.182)	-0.212 (0.166)
<i>L.CEOage</i>	0.308*** (0.000)	0.813*** (0.000)	0.007 (0.410)	-0.824 (0.521)	0.000 (.)	0.263 (0.232)	-0.062*** (0.000)	0.476*** (0.000)	-0.086 (0.254)
<i>L.CEOtenure</i>	0.000 (.)	0.000 (.)	-0.007 (0.609)	-0.299 (0.463)	0.000 (.)	0.113* (0.067)	0.000 (.)	0.348*** (0.000)	0.123 (0.271)
<i>L.Boardsize</i>	0.000 (.)	0.000 (.)	0.019 (0.504)	-0.168 (0.799)	0.000 (.)	0.147 (0.478)	0.000 (.)	0.000 (.)	-0.050 (0.753)
<i>L.Bindependent</i>	0.385*** (0.000)	0.559*** (0.000)	-0.000 (0.965)	-0.761 (0.508)	-0.021*** (0.000)	0.189 (0.447)	-0.040*** (0.000)	-0.320*** (0.000)	-0.042* (0.099)
<i>L.Boarddiversity</i>	0.000 (.)	0.000 (.)	0.027 (0.419)	0.194 (0.829)	0.000 (.)	0.678 (0.597)	0.000 (.)	0.000 (.)	0.840 (0.200)
<i>L.Leverage</i>	0.000 (.)	0.000 (.)	-1.182 (0.524)	129.050 (0.507)	0.000 (.)	-12.285 (0.866)	0.000 (.)	0.000 (.)	-11.959 (0.885)
<i>L.LnAssets</i>	0.000 (.)	0.000 (.)	-0.226** (0.034)	1.670 (0.601)	0.000 (.)	-1.367** (0.015)	0.000 (.)	0.000 (.)	-1.464** (0.028)
<i>L.LnEmployees</i>	0.000 (.)	0.000 (.)	0.123 (0.166)	2.918 (0.560)	0.000 (.)	-0.495 (0.758)	0.000 (.)	0.000 (.)	0.604** (0.019)
<i>Industrydummy</i>	Y	Y	Y	Y	Y	Y	Y	Y	Y
<i>Countrydummy</i>	Y	Y	Y	Y	Y	Y	Y	Y	Y
<i>Yeardummy</i>	Y	Y	Y	Y	Y	Y	Y	Y	Y
N	5,514	5,514	5,514	5,514	5,514	5,514	5,514	5,514	5,514

***, **, and * indicate significance at the 1%, 5%, and 10% levels; P-value in parenthesis.

Note: Sargan test (not robust; reported for completeness): 0.000. AR(1)/AR(2) statistics not reported by Stata due to short panel length. Number of instruments: 48.

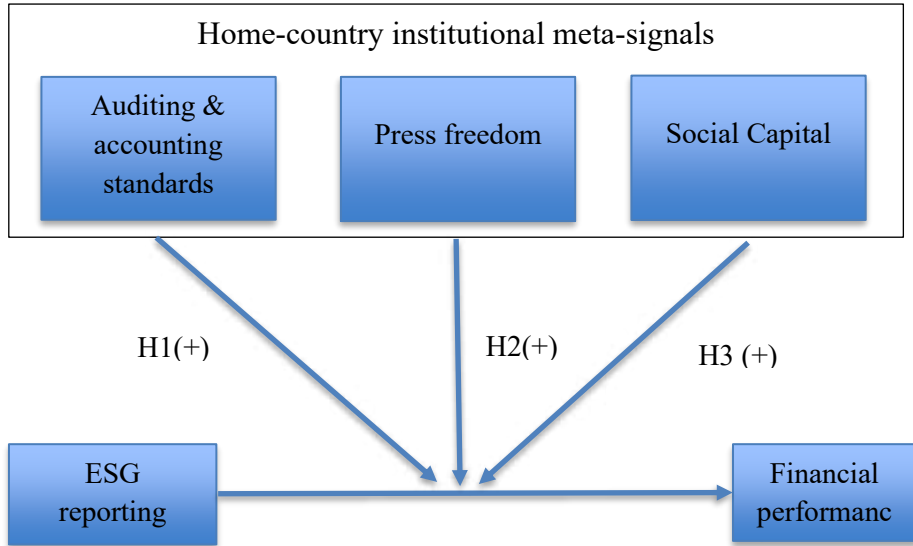


Figure 1: Conceptual framework

Home-country institutional meta-signals moderate the relationship between ESG disclosure and financial performance.

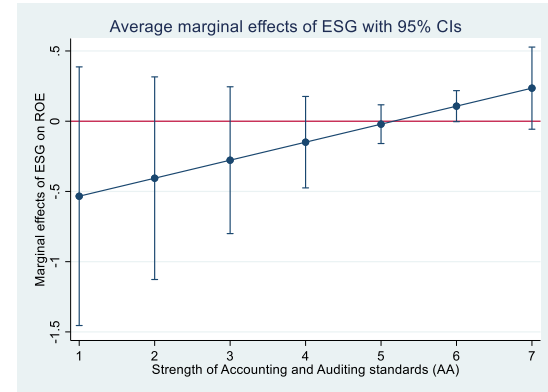
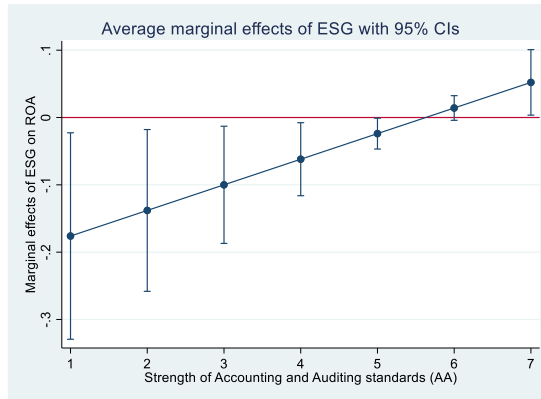
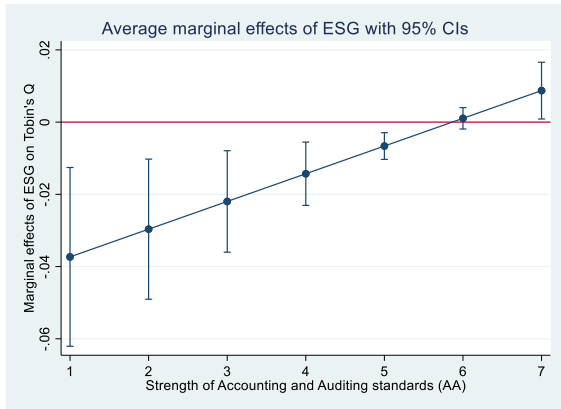


Figure 2: Marginal effects of ESG on Tobin's Q, ROA, and ROE across auditing and accounting standards (left to right)

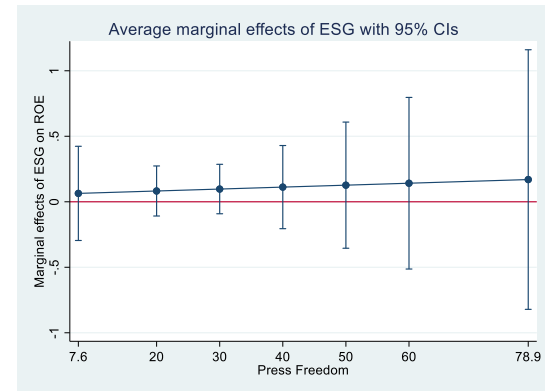
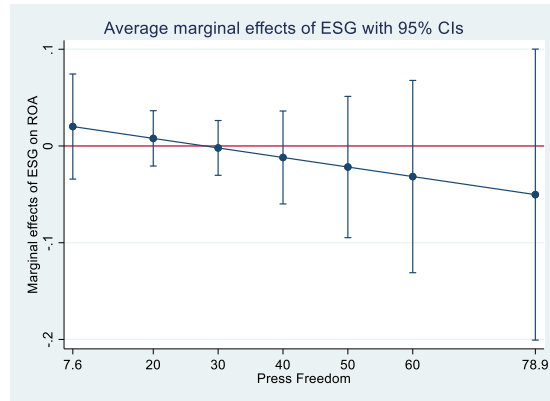
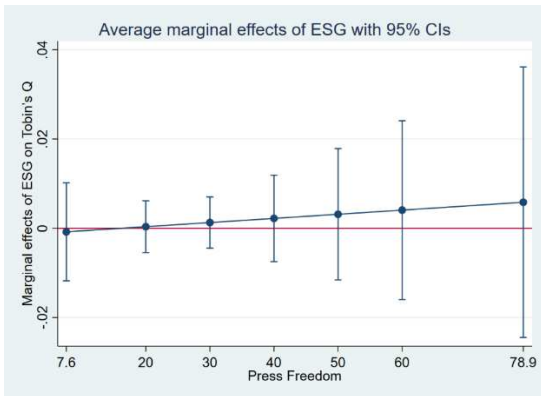


Figure 3: Marginal effects of ESG on Tobin's Q, ROA, and ROE across press freedom (left to right)

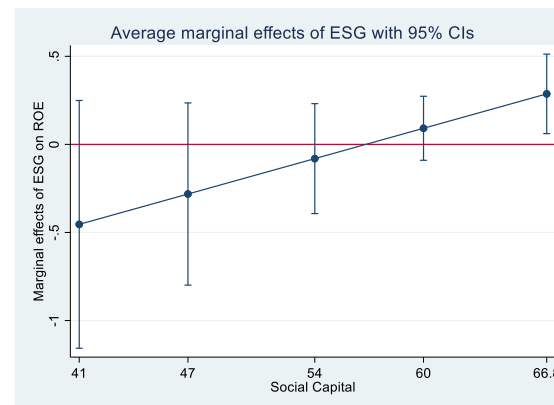
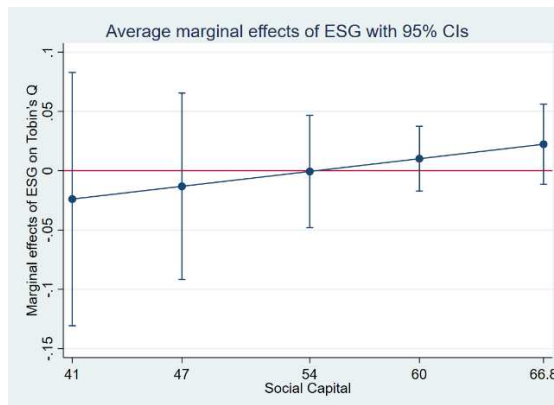
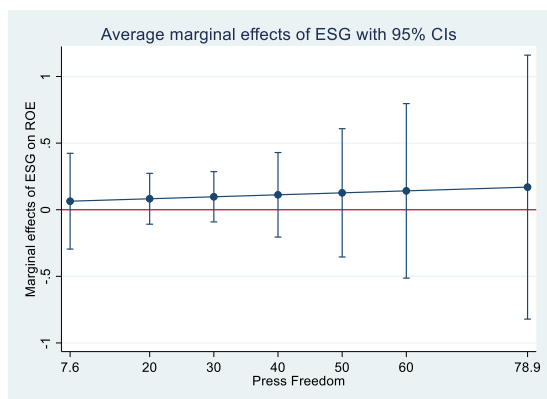


Figure 4: Marginal effects of ESG on Tobin's Q, ROA, and ROE across social capital (left to right)