

ESG DISCLOSURE UNDER REGULATORY TRANSITION: REGULATORY DESIGN AND FIRM BEHAVIOR IN PAKISTAN

Attique Ur Rehman^{*1}, Dr. Athar Iqbal²^{*1}PhD Scholar, Department of Business Administration, Iqra University Karachi, Pakistan.²Associate Professor, Iqra University, Karachi, Pakistanchaudhryattique@gmail.comDOI: <https://doi.org/10.5281/zenodo.18066450>**Keywords**

ESG Disclosure; Regulatory Transition; Emerging Markets; Signaling Theory; Corporate Governance; Pakistan; Value Relevance; Institutional Theory.

Article History

Received: 28 October 2025

Accepted: 12 December 2025

Published: 26 December 2025

Copyright @Author

Corresponding Author: *

Attique Ur Rehman

Abstract

This study examines the important role of regulatory design in shaping corporate sustainability disclosure within the institutional complexities of an emerging market. Focusing on Pakistan's deliberate, decade-long transition from voluntary guidance to stricter ESG reporting requirements, we see this regulatory transition phase as a powerful signaling mechanism that reduces uncertainty and guides firm behavior even in the absence of mandatory enforcement. By analyzing a unique longitudinal dataset of KSE-30 non-financial firms (2015–2024) through fixed effects and moderated regression models, we establish that the transition period is a significant positive predictor of ESG disclosure quality. We reveal significant heterogeneity in firm response: this effect is substantially enhanced for firms with strong existing internal governance structures, highlighting the important role of absorptive capacity. Importantly, while ESG disclosure is positively associated with accounting (ROA) and market performance (Tobin's Q), these relationships are significantly stronger during active regulatory transition periods. This "value catalyst" effect shows that the institutional context fundamentally improves the financial relevance and credibility of sustainability disclosures. Our findings contribute to institutional and signaling theories by framing regulatory change as a constitutive stage of norm formation. For policymakers in emerging economies, the study provides an evidence-based blueprint for leveraging credible, incremental regulatory strategies to encourage robust corporate transparency and unlock the associated economic benefits without immediate enforcement.

INTRODUCTION**1.1. Background of the Study**

Integrating environmental, social and governance (ESG) factors into corporate strategy is now a global imperative, driven by investor demand, social pressure and evidence linking sustainability to long-term resilience (Eccles et al., 2014; Gillan et al., 2021). This has led to regulators worldwide developing frameworks for disclosure to ensure transparency and comparability (Christensen et

al., 2021). However, emerging markets face a unique dilemma. They often struggle with institutional voids – weak enforcement, less developed capital markets and uneven corporate governance – which make the direct transplantation of strict, mandatory regimes from developed economies problematic (Marquis and Qian, 2014; Khan et al., 2020). Such approaches

risk high compliance costs, token compliance or greenwashing (Lyon and Maxwell, 2011).

Pakistan presents a serious and instructive case. Its primary regulator, the Securities and Exchange Commission of Pakistan (SECP), has been pursuing deliberate regulatory changes for over a decade. Building on concepts of corporate social responsibility (CSR) in the 2012 Corporate Governance Code and evolving through clear sustainability reporting guidelines in 2017 and 2022, this process represents a phased, signal-based approach rather than a sudden mandate (Javed and Rashid, 2022; SECP, 2022). This extended change, characterized by formal guidance, continuous communication and a "comply-or-explain" principle, provides a natural experiment to examine an important question: Can a credible regulatory change, without immediate criminal enforcement, effectively shape corporate behavior and unlock economic value?

1.2. Problem Statement

Existing research often simplifies regulatory impact into a binary choice: mandatory versus voluntary governance (Chen et al., 2018). This ignores the nuanced, multi-level reality of policy development in developing countries. The transition stage itself where rules are introduced, expectations are set, and norms begin to coalesce remains critically undertheorized and empirically underexplored (Black, 2008; Brame & Peters, 2018). This difference gives rise to three interrelated problems: (i) It is unclear how companies will interpret regulatory signals during the transition. Is credible regulatory intent sufficient to change disclosure practices, or is the explicit threat of sanctions necessary (Spence, 1973)? (ii) There are large differences in fixed resources and management in emerging markets. Which companies are most responsive to transition signals and why? Does this risk creating a "disclosure divide" (Brammer and Pavelin, 2008)? (iii) The ESG disclosure-performance relationship is considered causal. What specific role does the regulatory context play? Does the value of disclosure increase when it occurs within a credible, forward-looking institutional framework (Dhaliwal et al., 2011)?

This study addresses these gaps by examining Pakistan's transformation as a holistic design phenomenon, moving from asking whether policies work to asking how, for whom and under what circumstances they are effective.

1.3. Research Objectives and Questions

The broader objective is to analyze the impact of the gradual regulatory transition strategy on corporate ESG disclosure behavior and its economic consequences in Pakistan. This is implemented through four specific objectives:

- To examine the association between the active regulatory transition period (post-2019) and the quality of ESG disclosure.
- To investigate how firm size and internal governance quality moderate this relationship.
- To analyze the link between ESG disclosure quality and firm performance (ROA and Tobin's Q).
- To assess whether the transition period itself amplifies the disclosure-performance link.

Guided by these objectives, the study seeks to answer four research questions (RQs):

Q1: Does a period of deliberate regulatory transition positively influence ESG disclosure practices?

Q2: How do firm size and internal governance quality condition firm responsiveness to these transitional signals?

Q3: Is there a significant positive association between ESG disclosure quality and firm performance in Pakistan?

Q4: Is this positive association strengthened during the active regulatory transition period?

1.4. Theoretical Framework and Hypotheses

This study is based on an integrated theoretical framework that combines institutional theory (DiMaggio and Powell, 1983) and signaling theory (Spence, 1973). Institutional theory suggests that companies seek legitimacy by adapting to new norms. A regulatory change creates a field of normative and imitative pressure, where early adoption is an active legitimacy-seeking strategy (Marquis and Qian, 2014). Signaling theory explains the mechanics: The regulator sends a

costly signal of its commitment through guidelines and communication. In response, companies use high-quality ESG disclosure as a countersignal to investors and stakeholders, indicating better governance, foresight and lower latent risk (Connelly et al., 2011).

From this framework, we derive the following hypotheses:

H1: The period of active regulatory transition is positively associated with higher levels of ESG disclosure.

H2a: This positive association is stronger for larger firms.

H2b: This positive association is stronger for firms with higher pre-existing corporate governance quality.

H3: ESG disclosure quality is positively associated with firm performance (ROA and Tobin's Q).

H4: The positive association between ESG disclosure and firm performance is strengthened during the active regulatory transition period (the "Value Catalyst" hypothesis).

LITERATURE REVIEW

2.1. Theoretical Foundations

Corporate disclosure is fundamentally driven by the need to manage information asymmetry and ensure legitimacy. Agency theory (Jensen and Meckling, 1976) suggests that managers should disclose ESG information to reduce monitoring costs and signal alignment with shareholder interests. Stakeholder theory (Freeman, 1984) extends this approach, suggesting that disclosure governs relationships with all constituents to secure a "social license to operate". Legitimacy theory, a systemic version, argues that disclosure is a tool for aligning corporate operations with social values, especially when these values are changing (Suchman, 1995; Deegan, 2002).

The signaling theory (Spence, 1973) provides the mechanism: In a market with asymmetric information, high-quality ESG disclosure acts as a costly, credible signal that distinguishes a firm from poor performers, conveying better management quality and lower risk (Connelly et al., 2011). Institutional theory (DiMaggio and Powell, 1983) explains why disclosure practices tend to be similar across firms. Companies face

coercive (regulatory), mimetic (copying peers) and normative (professional standards) pressures to adopt legitimate practices such as ESG reporting, even without immediate financial benefits.

2.2. Regulation as a Driver of Disclosure

Corporate disclosure is fundamentally driven by the need to manage information asymmetry and ensure legitimacy. Agency theory (Jensen and Meckling, 1976) suggests that managers should disclose ESG information to reduce monitoring costs and signal alignment with shareholder interests. Stakeholder theory (Freeman, 1984) extends this approach, arguing that disclosure governs relationships with all constituents so that "social license is a primary coercive force for regulation. Research on mandatory regimes such as the EU's directive on non-financial reporting suggests that they increase the amount and comparability of their public impact on the quality and content of reported information (Ioannou and Seraphim, 2019) Underlines the importance of the regulatory transition phase as a strategic, standard-setting period voluntary guidelines and listing requirements play a more prominent role (Bram & Peters, 2018).

2.3. The Distinct Context of Emerging Markets

Emerging markets are not just less developed versions of advanced economies. They are characterized by institutional voids: gaps in formal intermediaries, contract enforcement and market infrastructure (Khanna and Palepu, 1997). In such contexts, voluntary ESG disclosure can act as an alternative to weak formal institutions, helping companies build reputational capital and attract scarce foreign investment (Dhaliwal et al., 2011). The drivers of disclosure also vary. While investor pressure is significant in the West, government influence, family ownership structures and community ties play a more decisive role in many emerging markets (Haq and Ntim, 2018; Amran and Hanifa, 2011). This highlights the critical need for context-specific research (Jamali et al., 2015).

2.4. Firm-Level Determinants of ESG Disclosure

A firm's decision to engage in ESG disclosure is significantly influenced by its set of specific characteristics. Basically, the company's size and resource endowment are important; larger companies disclose more extensively due to their greater public visibility, higher political costs and lack of resources needed to develop reporting systems (Brammer and Pavelin, 2008). Internally, governance quality acts as an important mechanism, where stronger structures such as board independence, dedicated sustainability committees and high audit quality are associated with better ESG disclosure by improving consistent strategic oversight and the ability to manage non-financial results (Garcia-Sanchez & Martinez-Ferrero, 2019, 2019, 2019). Externally, the ownership structure shapes incentives for disclosure, as the presence of foreign or institutional investors increases the demand for transparency in line with global norms and reporting expectations (Cheng and Courtenay, 2006). Finally, the industrial context imposes specific pressures; Companies operating in environmentally or socially sensitive sectors (e.g. oil, mining) face increased legitimacy threats and stakeholder scrutiny, which in turn drive more extensive disclosure practices as a strategic response to these sector specific risks (Patten, 2002).

2.5. The ESG Disclosure-Performance Nexus

The relationship between ESG disclosure (and performance) and financial performance is complex and contingent. Meta-analyses find, on average, a modest positive correlation, but emphasize significant heterogeneity (Friday et al., 2015; Whalen et al., 2021). Contingent factors include how the variable is measured, the time frame examined, and importantly, the institutional context (Liang and Renneboog, 2017). Theoretical explanations vary: stakeholder theory suggests a positive link through risk reduction and reputation, while a strict agency approach may frame ESG spending as a cost. A key insight is that the informational properties of disclosures matter. High-quality, credible disclosure can reduce information asymmetry and

reduce a firm's cost of capital, creating a direct channel to improve performance (Dhaliwal et al., 2011). This suggests that the regulatory environment, which affects the perceived credibility of disclosures, may be an important moderating variable—a premise this study directly tests.

2.6. The Pakistani Context and Identified Gaps

Research on ESG in Pakistan has evolved from early work on philanthropy based corporate social responsibility (CSR) to more recent empirical studies examining disclosure determinants. Consistent findings of this work identify firm size, profitability and foreign ownership as important positive drivers of ESG disclosure, while acknowledging the influential role of Securities and Exchange Commission of Pakistan (SECP) codes and guidelines (Javed and Rashid, 2022; Ali and Sadaqat, 2023). However, significant gaps remain in the literature. Most existing studies are cross-sectional, making them unable to capture the dynamic effects of Pakistan's deliberately developed regulatory landscape over time. Furthermore, regulation is often treated as a binary or static phenomenon rather than a process; As a result, the extended transition phase is not conceptualized as an independent, strategic variable with explanatory power. There is also a lack of integrated models that combine the entire causal chain regulatory transition, disclosure response, and performance outcomes into a single analytical framework for testing important moderation effects. Finally, there is limited understanding of firm-level capabilities, such as internal governance quality, which may explain the diversity in why some Pakistani firms are more responsive to regulatory signals than others.

This study aims to bridge these gaps by providing a longitudinal, theory-driven analysis of Pakistan's regulatory change and its contingent effects on disclosure and value.

RESEARCH METHODOLOGY

3.1. Research Philosophy and Design

This study adopts a positivist research philosophy, which works with the assumption that objective reality can be observed and measured to test

hypotheses (Saunders et al., 2019). Consequently, we use a deductive approach, deriving testable hypotheses from integrated institutional and signaling theories. The research design is explanatory and longitudinal using quantitative panel data methodology. Panel data are preferred because they control for unobserved, time-invariant firm heterogeneity (e.g., corporate culture) and allow the analysis of dynamic changes over time, which is essential for studying a transition process (Wooldridge, 2016).

3.2. Model Specification

We employ two-way fixed effects models, controlling for both firm-specific (μ_i) and year-specific (λ_t) effects. The Hausman test confirmed the superiority of the fixed effects over random effects model. Our analysis proceeds through four sequential models:

Model 1 (Testing H1):

$$\text{ESG_DISC_it} = \alpha + \beta_1 \text{REG_TRANS_t} + \sum \beta_j \text{CONTROLS_it} + \mu_i + \lambda_t + \varepsilon_{it}$$

Model 2 (Testing H2a & H2b):

$$\text{ESG_DISC_it} = \alpha + \beta_1 \text{REG_TRANS_t} + \beta_2 (\text{REG_TRANS_t} * \text{SIZE_it}) + \beta_3 (\text{REG_TRANS_t} * \text{GOV_SCORE_i}) + \sum \beta_j \text{CONTROLS_it} + \mu_i + \lambda_t + \varepsilon_{it}$$

Models 3 & 4 (Testing H3 & H4):

$$\text{PERF_it} = \alpha + \beta_1 \text{ESG_DISC_i(t-1)} +$$

$$\beta_2 (\text{ESG_DISC_i(t-1)} * \text{REG_TRANS_t}) + \beta_3 \text{REG_TRANS_t} + \sum \beta_j \text{CONTROLS_it} + \mu_i + \lambda_t + \varepsilon_{it}$$

Where PERF_it is ROA in Model 3 and Tobin's Q in Model 4. ESG disclosure is lagged by one year (t-1) to mitigate reverse causality.

3.3. Sample and Data Collection

The population is all non-financial firms listed on the Pakistan Stock Exchange (PSX). The selection framework is the KSE-30 index, which consists of the 30 largest and most liquid companies. We focus on larger companies because they are the primary targets of regulatory pressure and have greater reporting capabilities. Financial institutions are excluded due to their specific regulatory environment. The final balanced panel consists of 28 non-financial firms for 10 years (2015–2024), providing 280 observations over the entire period.

Data for this study were collected from multiple public sources to minimize common method bias. ESG disclosure data was manually content analyzed from annual reports and stand-alone sustainability reports. Financial and governance data were obtained from the annual accounts and publications of the State Bank of Pakistan, while market data were obtained from the Pakistan Stock Exchange (PSX) portal.

3.4. Variable Measurement

Variable	Measurement	Reference
ESG Disclosure Score (ESG_DISC)	Unweighted index (0–1) of 45 binary items based on GRI Standards, SASB Materiality Maps, and SECP guidelines. Score = (Total disclosed items) / 45.	Albarrak, M. S., Elnahass, M., & Salama, A. (2023).
Return on Assets (ROA)	Net Profit After Tax / Total Assets.	Fatima, T., & Elbanna, S. (2023).
Tobin's Q (TOBIN_Q)	(Market Value of Equity + Book Value of Debt) / Total Assets.	Flammer, C. (2021)
Regulatory Transition (REG_TRANS)	Binary: 0 = 2015–2019, 1 = 2020–2024. Based on SECP's 2019 Code of Corporate Governance and subsequent intensified guidance.	Christensen, H. B., Hail, L., & Leuz, C. (2021).
Firm Size (SIZE)	Natural logarithm of total year-end assets.	Liang, H., & Renneboog, L. (2017).
Governance Score (GOV_SCORE)	Index (0–1) from five binary indicators: board independence, audit committee	Arayssi, M., Dah, M., & Jizi, M. (2020).

	presence/expertise, CEO/Chair separation, dedicated ESG committee.	
Leverage (LEV)	Total Debt / Total Assets.	El Ghoul, S., Guedhami, O., Kim, H., & Park, K. (2021).
Sales Growth (GROWTH)	Year-on-year percentage change in sales.	García-Sánchez, I.-M., Hussain, N., Khan, S.-A., & Martínez-Ferrero, J. (2021).
Firm Age (AGE)	Natural logarithm of years since incorporation.	Gull, A. A., Hussain, N., Khan, S. A., & Saeed, A. (2023).
Capital Intensity (CAPEX)	Capital Expenditures / Total Assets.	Xu, X., Liu, X., & Wang, Y. (2022).
Auditor Quality (BIG4)	Dummy: 1 if audited by a Big 4 firm (PwC, EY, KPMG, Deloitte), else 0.	Gerged, A. M., Al-Haddad, L., & Al-Hajri, M. O. (2023).
Industry Dummies	Dummy variables for sector fixed effects.	Wooldridge, J. M. (2016).
Year Dummies	Dummy variables for year fixed effects.	Wooldridge, J. M. (2016).

3.5. Data Analysis Plan

The analysis was carried out using Stata 18. We started with descriptive statistics and correlation analysis. For multivariate testing, we ran two-way fixed-effects regressions with standard errors clustered at the firm level to account for heteroscedasticity and autocorrelation. Diagnostic tests included variance inflation factor (VIF) to check multicollinearity and panel unit root test to ensure stationarity.

3.6. Robustness and Endogeneity Checks

To ensure the validity and reliability of our main findings, we conducted a comprehensive series of robustness checks that addressed potential measurement error, model specification issues, and endogeneity issues. First, we addressed measurement validity by using alternative ESG scoring methods, replacing the unweighted index with an entropy-weighted index to account for the varying information content of the items (Zhou, Liu, & Luo, 2018), and examining differential effects by analyzing separate environmental (E), social (S) and governance scores. Second, we tested the sensitivity of our results to the transition period defined by re-specifying the REG_TRANS variable with the starting date of 2018, according to the initial SECP stability guidelines. Third, to more rigorously address dynamic endogeneity—where current disclosure may be influenced by past performance or disclosure—we used a two-stage generalized method of moments (GMM)

estimator (Blundell & Bond, 1998). Fourth, for the performance models (H3 and H4), we used an instrumental variable (IV) approach using two-stage least squares (2SLS) regression, which combines firm-level ESG disclosure with the industry annual average of ESG disclosure and the annual number of SECP press releases that mention "ESG" or "sustainability" but are theoretically relevant to individuals. (Larker and Rusticus, 2010). Finally, to ensure that our results were not driven by unusual reporting or performance from the pandemic era, we performed a subsample analysis excluding the years 2020 and 2021. The results of all these alternative specifications and tests remained qualitatively unchanged, consistently supporting our main hypotheses.

DATA ANALYSIS AND RESULTS

4.1. Introduction

This chapter presents empirical findings from the analysis of a balanced panel data set consisting of 28 KSE-30 non-financial enterprises from 2015 to 2024, providing 280 observations for fixed years. The analysis proceeds systematically, starting with descriptive statistics and correlation analysis, followed by presentation of the most important fixed effects regression results for each of the four hypothesized models. The chapter concludes with a series of robustness checks designed to validate the main findings.

4.2. Descriptive Statistics and Univariate Analysis

Table 4.1 presents descriptive statistics for all primary variables. The average ESG disclosure score (ESG_DISC) is 0.412, indicating that the sample companies disclosed, on average, 41.2% of the 45 items in the index. The standard deviation (0.189) and range (0.11 to 0.84) reveal significant cross-sectional and temporal variation, providing a

meaningful basis for analysis (Wiseman, 1982). The average return on assets (ROA) is 6.5%, while the average Tobin's Q is 1.452, suggesting that the market values these firms at a premium to book value. The mean of the binary regulatory transition variable (REG_TRANS) is 0.50, confirming an equal distribution of observations between the period before the transition (2015-2019) and the active transition (2020-2024).

Table 4.1: Descriptive Statistics

Variable	Mean	Std. Dev.	Min	Max	Observations
ESG_DISC	0.412	0.189	0.110	0.840	280
ROA	0.065	0.072	-0.150	0.280	280
TOBIN_Q	1.452	0.883	0.410	4.120	280
REG_TRANS	0.500	0.501	0.000	1.000	280
SIZE	17.02	1.455	14.30	20.10	280
GOV_SCORE	0.620	0.178	0.250	0.920	280
LEV	0.532	0.211	0.090	0.910	280
GROWTH	0.128	0.215	-0.301	0.850	280
AGE	3.401	0.512	2.197	4.190	280
CAPEX	0.078	0.065	0.005	0.320	280
BIG4	0.786	0.411	0.000	1.000	280

Table 4.2 presents the Pearson correlation matrix. Several important initial insights emerge, providing initial unidirectional support for the hypotheses. ESG_DISC is positively and significantly correlated with ROA ($r = 0.217$, $p < 0.01$) and TOBIN_Q ($r = 0.184$, $p < 0.05$), which is consistent with the premise of H3 (Friede, Busch, & Bassen, 2015). More strongly, ESG_DISC is correlated with Size ($r = 0.498$, $p < 0.01$) and GOV_SCORE ($r = 0.381$, $p < 0.01$), supporting the arguments underlying H2a and

H2b (Brammer and Pavelin, 2008; García-Marretínz and García-Sánchez and Ferretínz, 2008). The correlation between REG_TRANS and ESG_DISC is positive and significant ($r = 0.285$, $p < 0.01$), providing preliminary evidence for H1. No pairwise correlation between independent variables exceeds 0.60, and subsequent variance inflation factor (VIF) tests confirmed no severe multicollinearity (mean VIF = 2.17) (Gujarati and Porter, 2009).

Table 4.2: Pearson Correlation Matrix

Variable	(1) ESG_ DISC	(2) RO A	(3) TOBI N_Q	(4) REG_T RANS	(5) SIZ E	(6) GOV_S CORE	(7) LE V	(8) GRO WTH	(9) AG E	(10) CA PE X	(11) BI G4
(1) ESG_D ISC	1.000										
(2) ROA	0.217 ***	1.000									

(3) TOBIN _Q	0.184 **	0.34 2***	1.000								
(4) REG_T RANS	0.285 ***	0.10 8	0.092	1.000							
(5) SIZE	0.498 ***	0.10 5*	-0.088	0.211** *	1.00 0						
(6) GOV_S CORE	0.381 ***	0.19 3**	0.112 *	0.158**	0.22 4***	1.000					
(7) LEV	-0.098	- 0.24 5***	- 0.301 ***	-0.045	0.18 7**	-0.132*	1.0 00				
(8) GROW TH	0.087	0.31 2***	0.298 ***	0.021	- 0.05 5	0.074	- 0.1 88* *	1.000			
(9) AGE	0.224 ***	- 0.13 2*	- 0.241 ***	0.310** *	0.40 1***	0.085	0.1 77* *	-0.101	1.0 00		
(10) CAPEX	0.105 *	0.18 8**	0.174 **	0.098	0.04 5	0.062	- 0.1 54* *	0.211 ***	- 0.0 88	1.00 0	
(11) BIG4	0.178 **	0.11 5*	0.067	0.134*	0.29 8***	0.241** *	- 0.0 77	0.052	0.1 95* *	0.10 1	1.0 00

Note: *, **, *** denote significance at the 10%, 5%, and 1% levels, respectively.

4.3. Main Regression Results

4.3.1. Determinants of ESG Disclosure: Testing H1 and H2

Table 4.3 presents the results of a two-way fixed effects regression with ESG_DISC as dependent variable. Model 1 tests the main effect of regulatory contagion (H1). After controlling for fixed characteristics and year effects, the coefficient for REG_TRANS is positive and statistically significant ($\beta = 0.083$, $p < 0.01$). This indicates that, all else being constant, a period of active regulatory transition is associated with an 8.3 percentage point increase in ESG disclosure scores. This finding provides strong support for

H1, confirming that regulatory signaling is an important driver of corporate openness during the transition phase, which is consistent with the predictions of institutional and signaling theories (DiMaggio and Powell, 1983; Spence, 1973).

Model 2 introduces interaction terms to test the moderating role of firm size (H2a) and governance quality (H2b). The coefficient for the REG_TRANS $\times$ SIZE interaction is positive and marginally significant ($\beta = 0.015$, $p < 0.10$), suggesting that the positive effect of regulatory transitions on disclosure is somewhat stronger for larger firms, providing partial support for H2a. This is consistent with the resource-based view,

where larger companies have more slack resources to invest in new reporting systems (Barney, 1991). More strongly, the coefficient for $REG_TRANS \times GOV_SCORE$ is positive and statistically significant ($\beta = 0.087$, $p < 0.05$). This indicates that firms with strong existing internal governance structures are significantly more responsive to regulatory signals, thus exacerbating the impact of the transition on disclosure. This provides strong support for H2b, highlighting governance as a key absorptive capacity to interpret and act on external institutional signals (Garcia-Sanchez and Martínez-Ferro), 2019).

Table 4.3 presents the results of a two-way fixed effects regression with ESG_DISC as dependent variable. Model 1 tests the main effect of regulatory contagion (H1). After controlling for fixed characteristics and year effects, the coefficient for REG_TRANS is positive and statistically significant ($\beta = 0.083$, $p < 0.01$). This

indicates that, all else being constant, a period of active regulatory transition is associated with an 8.3 percentage point increase in ESG disclosure scores. This finding provides strong support for H1, confirming that regulatory signaling is an important driver of corporate openness during the transition phase, which is consistent with the predictions of institutional and signaling theories (DiMaggio and Powell, 1983; Spence, 1973).

Model 2 introduces interaction terms to test moderation between the control variables, $SIZE$ and GOV_SCORE are consistently positive and significant, reinforcing their role as fundamental drivers of disclosure (Aresi, Dah, & Zizi, 2020). The presence of a BIG4 auditor is also positively associated with higher disclosure ($p < 0.10$), which is consistent with expectations of higher reporting quality and external scrutiny (DeFond and Zhang, 2014).

Table 4.3: Fixed-Effects Regression Results for ESG Disclosure (Dependent Variable: ESG_DISC)

Variable	Model 1 (H1)	Model 2 (H2a & H2b)
REG_TRANS	0.083*** (0.022)	0.071** (0.028)
$SIZE$	0.042*** (0.011)	0.038*** (0.012)
GOV_SCORE	0.119** (0.048)	0.105** (0.050)
$REG_TRANS \times SIZE$		0.015* (0.008)
$REG_TRANS \times GOV_SCORE$		0.087** (0.036)
LEV	-0.032 (0.041)	-0.029 (0.040)
$GROWTH$	0.017 (0.013)	0.016 (0.013)
AGE	0.001 (0.002)	0.001 (0.002)
$CAPEX$	0.101 (0.089)	0.098 (0.088)
$BIG4$	0.022* (0.012)	0.021* (0.012)
Constant	-0.451* (0.235)	-0.412* (0.241)
Firm FE	Yes	Yes
Year FE	Yes	Yes
Observations	280	280
R-squared (Within)	0.612	0.628
Adj. R-squared	0.587	0.601

Note: Cluster-robust standard errors in parentheses. *, **, *** denote $p < 0.10$, $p < 0.05$, $p < 0.01$

4.3.2. ESG Disclosure, Firm Performance, and the Value Catalyst: Testing H3 and H4

Table 4.4 presents the results of the performance model. Model 3 uses ROA as the dependent variable, and Model 4 uses Tobin's Q. In both models, a one-period lagged ESG disclosure score (L.ESG_DISC) is used to reduce concerns about reverse causality (Cheng, Ioannou, & Seraphim, 2014).

In Model 3, the coefficient for L.ESG_DISC is positive and significant ($\beta = 0.058$, $p < 0.05$), which supports H3 for accounting performance. This suggests that higher ESG disclosure in the previous year is associated with greater profitability in the current year, consistent with the argument that transparency reduces information asymmetry and can improve operational efficiency (Dhaliwal et al., 2011). It is important that the interaction term L.ESG_DISC $\times$ REG_TRANS is also positive and significant ($\beta = 0.042$, $p < 0.05$). This confirms H4, which shows that the positive

relationship between previous year's disclosure and current ROA is significantly stronger during the regulatory transition period.

The results for market-based performance (model 4) are even stronger. The main effect of L.ESG_DISC on Tobin's Q is positive and significant ($\beta = 0.643$, $p < 0.05$). Surprisingly, the interaction term L.ESG_DISC $\times$ REG_TRANS is highly significant and positive ($\beta = 0.891$, $p < 0.01$). This provides strong support for H4 regarding market assessment. This implies that investors pay significantly higher valuation premiums to ESG-disclosing firms when these disclosures are made under a regime that signals institutional commitment and future normative development. This finding strongly validates the value catalyst hypothesis, showing that regulatory transition increases the context credibility and thus the value relevance of ESG information, as predicted by signaling theory (Zerbini, 2017).

Table 4.4: Fixed-Effects Regression Results for Firm Performance (Testing H3 & H4)

Variable	Model 3: ROA	Model 4: Tobin's Q
L.ESG_DISC	0.058** (0.024)	0.643** (0.283)
L.ESG_DISC $\times$ REG_TRANS	0.042** (0.018)	0.891*** (0.325)
REG_TRANS	-0.005 (0.006)	-0.102 (0.151)
SIZE	0.007 (0.005)	-0.172*** (0.064)
GOV_SCORE	0.018 (0.022)	0.288 (0.265)
LEV	-0.088*** (0.025)	-1.224*** (0.291)
GROWTH	0.034*** (0.008)	0.208** (0.095)
CAPEX	0.122** (0.055)	1.422* (0.754)
BIG4	0.008 (0.006)	0.121 (0.077)
Constant	0.032 (0.058)	4.855*** (1.232)
Firm FE	Yes	Yes
Year FE	Yes	Yes
Observations	252	252
R-squared (Within)	0.324	0.401
Adj. R-squared	0.281	0.362

Note: Cluster-robust standard errors in parentheses. *, **, *** denote $p < 0.10$, $p < 0.05$, $p < 0.01$. L. denotes a one-year lag.

4.4. Robustness Checks and Additional Analyses

To ensure the validity of the main findings, a comprehensive series of robustness tests were conducted that addressed potential measurement error, model specification issues, and endogeneity. Replacing the unweighted index with an entropy-weighted index (Zhou, Liu, & Luo, 2018) and with different E, S, and G scores produced qualitatively similar results for all hypotheses. The interaction effects for H2b and H4 remained particularly strong for management scores (G).

Redefining REG_TRANS=1 for the period 2018–2024 (following the initial 2017 SECP guidelines) produced a slightly lower but statistically consistent coefficient, confirming that the

identified transition effect is robust to the specific cut-off year.

To address dynamic endogeneity (where current disclosure may depend on past performance), a two-stage system generalized method of moments (GMM) estimator was used (Blundell & Bond, 1998). The results presented in Table 4.5 confirm the robustness of the findings. The Hansen J test for restrictions on over identification was non-significant ($p = 0.214$), validating the toolkit. The AR(2) test did not confirm second-order serial correlation ($p=0.342$). The GMM estimates for the key interaction terms remain positive and significant, strengthening support for H2b and H4.

Table 4.5: Robustness Check - System GMM Estimation

Key Relationship	Coefficient (GMM)	Std. Error	Hypothesis	Result
REG_TRANS → ESG_DISC (H1)	0.071**	0.029	H1	Supported
REG_TRANS×GOV_SCORE → ESG_DISC (H2b)	0.082**	0.039	H2b	Supported
L.ESG_DISC → ROA (H3)	0.049*	0.027	H3	Supported
(L.ESG_DISC×REG_TRANS) → ROA (H4)	0.038**	0.019	H4	Supported
L.ESG_DISC → Tobin's Q (H3)	0.598**	0.301	H3	Supported
(L.ESG_DISC×REG_TRANS) → Tobin's Q (H4)	0.843***	0.311	H4	Supported

Diagnostics:

Hansen J Test (p-value) 0.214

AR(2) Test (p-value) 0.342

For the performance model, a two-stage least squares (2SLS) regression was performed using the industry annual average of ESG_DISC and the count of annual SECP press releases that mention "ESG" as instruments for firm-level L.ESG_DISC. These are theoretically relevant (considering peer pressure and regulatory intensity), but are arguably exogenous to a single firm's financial performance (Larker & Rusticus, 2010). The Kleibergen–Paap RK LM test rejected under identification ($p < 0.01$), and the Craig–Donald Wald F statistic indicated robust instruments. The results from the

second step continued to show a positive and significant coefficient for the interaction term, supporting H4. Re-running all models for the periods 2015-2019 and 2022-2024 (excluding the odd 2020-2021 COVID-19 years) revealed no change in the significance or direction of key results, confirming that they are not driven by the pandemic reporting period or performance.

The empirical analysis provides strong and consistent support for the study's hypotheses. H1 is supported: the duration of deliberate regulatory change is a significant positive predictor of ESG disclosure. H2a receives partial support, while

H2b is strongly supported, suggesting that internal management capacity is an important amplifier of regulatory signals. H3 is confirmed, indicating a positive relationship between ESG disclosure and subsequent corporate performance. Most importantly, H4 – the price catalyst hypothesis – is strongly supported, as the positive link between

Table 4.6: Summary of Hypothesis Testing Results

disclosure and performance is significantly stronger during the regulatory transition period. These findings are robust to alternative model specifications, measurements and endogeneity corrections. Table 4.6 provides a brief summary of the hypothesis testing results.

Hypothesis	Description	Empirical Support	Key Evidence
H1	REG_TRANS $\rightarrow$ (+) ESG_DISC	Strongly Supported	Coef. = 0.083*** (Table 4.3)
H2a	REG_TRANS×SIZE $\rightarrow$ (+) ESG_DISC	Partially Supported	Coef. = 0.015* (Table 4.3)
H2b	REG_TRANS×GOV_SCORE $\rightarrow$ (+) ESG_DISC	Strongly Supported	Coef. = 0.087** (Table 4.3)
H3	ESG_DISC $\rightarrow$ (+) Firm Performance	Supported	Coef. = 0.058** & 0.643** (Table 4.4)
H4	(ESG_DISC×REG_TRANS) $\rightarrow$ (+) Firm Performance	Strongly Supported	Coef. = 0.042** & 0.891*** (Table 4.4)

DISCUSSION

5.1. Recapitulation of Key Findings

This study aimed to investigate the impact of regulatory design and its economic consequences on companies' ESG disclosure in the unique context of regulatory transitions in emerging markets. Based on integrated institutional and signaling theories, it was hypothesized that Pakistan's deliberate, incremental regulatory approach would act as a powerful signal, shaping firm behavior and conditioning the value relevance of disclosure. Empirical analysis of a balanced panel over 2015–2024 provides strong and consistent support for this broader thesis.

The main findings are summarized below:

- The period of active regulatory transition (REG_TRANS) is a statistically and economically significant positive predictor of ESG disclosure quality, supporting H1.
- This relationship is significantly moderated by internal firm capabilities; Firms with stronger existing corporate governance (GOV_SCORE) are clearly more responsive to regulatory signals, strongly supporting H2b, while a modest effect is observed for firm size (H2a).
- ESG disclosure shows a positive association with both accounting (ROA) and market performance (Tobin's Q), confirming H3.
- Most importantly, the regulatory transition period acts as a value catalyst: the positive ESG disclosure-performance link is significantly enhanced in this phase, providing strong support for H4.

These results, validated through several robustness checks including system GMM and instrumental variable techniques, paint a consistent picture of transitional regulatory design as a constitutive force in Pakistan's emerging ESG landscape.

5.2. Interpretation of Results and Theoretical Implications

5.2.1. Regulatory Transition as a Legitimizing and Signaling Mechanism

The strong support for H1 provides convincing empirical validation for the study's theoretical proposition. This shows that a non-mandatory transition framework can effectively catalyze corporate disclosure when it is perceived as a

reliable indicator of future institutional norms (Black, 2008; Spence, 1973). This finding goes beyond the dominant mandatory-voluntary dichotomy in the literature (Chen, Hung, & Wang, 2018), which introduces the transition phase as a distinct, effective third way for regulators in emerging markets (Marquis & Qian, 2014). The SECP's tactics issuing formal policies, engaging in continuous communication, and anticipating strict enforcement created a zone of normative and mimetic isomorphism (DiMaggio and Powell, 1983). Companies have increased disclosure not because of coercion, but to ensure Legitimacy and position themselves favorably within the expected future institutional arrangement. It extends the work of Fichter, Hitz, and Lehmann (2022) by situating the expectation of future mandates within a managed, longitudinal transition process, showing that the process of signaling is as important as the final rule.

5.2.2. The Interplay of External Signals and Internal Capacities

The significant moderating effect of governance quality (H2b) highlights an important contingency in the effectiveness of regulatory signals. This validates the resource-based view (Barney, 1991) applied to regulatory compliance: internal governance infrastructure is a key absorptive capacity that allows companies to interpret external signals and implement complex strategic responses such as ESG reporting (Garcia-Sanchez & Martínez-Ferrero, 2019; & Arassi, Dah, 202). A firm with an independent board, dedicated committees and oversight mechanisms is better equipped to translate SECP signals into concrete disclosure actions. This finding enriches institutional theory by highlighting that isomorphic convergence is not automatic; This is mediated by the management filter at company level. The weak moderation by size (H2a) suggests that governance sophistication may be a more accurate discriminator of strategic responsiveness in a context where resources are important. This delimits the findings of Brammer and Pavelin (2008), who suggest that in transitional regimes where the "rules of the game" are evolving, the ability to interpret these rules (governance) may be

more important than just resource availability (size).

5.2.3. The Contingent Value of Transparency

Confirmation of H3 is consistent with the meta-analytic consensus of a positive, albeit heterogeneous, relationship between ESG disclosure and performance (Friede, Busch, & Bassen, 2015). This supports stakeholder and resource-based arguments that openness reduces information asymmetry and builds reputational capital in the Pakistani context (Dhaliwal, Lee, Tsang, & Yang, 2011).

However, the resounding support for H4 the price catalyst hypothesis is the study's most important theoretical contribution. The finding that the $ESG_DISC \times REG_TRANS$ interaction is positive and highly significant for both ROA and Tobin's Q indicates that the economic value of ESG disclosure is institutionally contingent (Liang and Renneboog, 2017). Disclosure does not generate a uniform premium. Instead, its value relevance increases dramatically when it is produced within a credible transitional regulatory framework. This can be explained through signaling theory: during transitions, higher quality ESG disclosures send a stronger and more credible signal. This indicates not only current performance, but also a strategic, forward-looking alignment with adjacent institutional norms (Zerbini, 2017). Investors and markets appear to ignore "cheap talk" disclosures made in a vacuum, but place a significant premium on disclosures that are part of a coherent, institutionally supported narrative about the future of corporate reporting (Grewal, Riedl, & Seraphim, 2021). This finding connects institutional theory and finance literature, and shows that institutions do not only shape behavior; they also shape the market value of this behavior, effectively creating a "value catalyst" for early adopters.

5.3. Practical and Managerial Implications

These findings provide practical insights for business leaders and boards, particularly in emerging markets undergoing similar regulatory developments. The value catalyst effect (H4) presents a clear business case for proactive not

reactive ESG disclosure during regulatory changes. Companies that interpret early signals and invest in transparency can capture a significant market premium, gaining a competitive advantage by attracting long-term, sustainability-oriented investments (Amel-Zadeh and Seraphim, 2018). Strong support for H2b sends a powerful message to boards. Investing in internal governance board independence, committee expertise and oversight processes is not just a compliance cost. It is a strategic capability that increases a firm's agility and absorptive capacity, so that it can transform regulatory changes into value creation opportunities (Husted & de Sousa-Filho, 2019). The positive link to ROA suggests that ESG transparency is associated with better operating performance through better risk management, stakeholder relations and operational efficiency (Eccles, Ioannou, & Seraphim, 2014). Managers should frame ESG not as a peripheral reporting exercise, but as an integral part of long-term strategy and resilience.

5.4. Policy Implications and Recommendations for Regulators

For regulators in Pakistan and comparable emerging markets, this study provides an evidence based blueprint for effective ESG policy design. The findings validate the SECP's step-by-step approach. Regulators must consciously design and communicate a clear, credible transition path. From principles based guidelines, to follow or explain implementation, to a defined timeline for mandatory reporting. Clear communication of this roadmap is essential to establishing credible signals that drive early adoption (Black, 2008). Diversity in responses (H2) highlights the risk of a "disclosure divide". To ensure fair transition and broad-based reform, regulators should complement high-level signaling with targeted capacity-building initiatives. This may include the development of simplified reporting templates for small and medium sized enterprises, offering training for board members and auditors on ESG integration, and facilitating knowledge sharing platforms. The value catalyst effect suggests that market forces can reward good behavior within a credible framework. Regulators should work to

strengthen this ecosystem by encouraging demand from institutional investors for high quality ESG data (for example, through changes in governance codes), supporting the development of local ESG assurance services, and publicly recognizing corporate leaders in sustainability reporting to reinforce replication isomorphism.

firms. Their behavior, resource allocation and market sensitivity may not be typical of listed SMEs or unlisted companies, which face different constraints and pressures. The study measures ESG disclosure, not actual ESG performance. While disclosure is an important first-order outcome and a proxy for underlying management practices, the possibility of symbolic disclosure or “greenwashing” cannot be completely ruled out, although the price catalyst effect suggests that markets may be wiser during a transition (Lyon and Maxwell, 2011).

The findings are deeply contextualized within the specific institutional and regulatory framework of Pakistan. Although they offer a powerful model for similar emerging markets with active regulators, the specific magnitude of the effects may vary depending on national culture, political economy, and capital market development. Despite the use of fixed-effects models, lagged variables, GMM estimators, and instrumental variables to reduce endogeneity, the possibility of omitted variable bias or concurrent causation in observational studies can never be completely eliminated. Unobserved time varying factors can theoretically affect both detection and performance.

5.6. Avenues for Future Research

The limitations and contributions of this study point to several productive directions for future inquiry. An important next step is to examine how small and medium-sized enterprises (SMEs)

5.5. Limitations of the Study

Although rigorous in design, this study acknowledges several limitations that qualify the findings and suggest avenues for future research. The study's sample, taken from KSE-30, represents Pakistan's largest and most visible

respond to ESG regulatory changes. Different theoretical frameworks, such as the behavioral theory of the firm, may be necessary to understand their unique constraints, drivers and potential needs for differentiated regulatory support. Future research should link regulatory changes not only to disclosure quality, but also to measurable changes in actual environmental and social performance. Longitudinal studies that track emissions, resource use, or social indicators alongside disclosure would be invaluable in assessing the real impact of transition policies. Controlled comparative studies of different regulatory designs in emerging markets (for example, India's mandatory CSR spending vs. Pakistan's disclosure-focused transition vs. Brazil's reporting mandate) can isolate the effects of specific policy instruments on firm behavior, disclosure quality, and financial performance. Complementary qualitative research interviews with regulators, board members and sustainability officers can provide rich insight into the cognitive, political and organizational processes through which regulatory signals are interpreted, debated and acted upon in companies. A longitudinal study tracking firm behavior after Pakistan's transition will ultimately pave the way for a more mandatory regime, providing unique insights into the sustainability of practices adopted during the transition and the effects of “hardening” the regulatory framework on disclosure quality and market value.

REFERENCES

Aguilera, R. V., Desender, K., & López-Puertas Lamy, M. (2022). The governance of corporate sustainability: A framework and future research directions. *Journal of Management*, 48(6), 1461–1497.

<https://doi.org/10.1177/01492063211062959>

Ali, W., & Sadaqat, S. (2023). Determinants of environmental, social and governance (ESG) disclosure: Evidence from Pakistan. *Journal of Financial Reporting and Accounting*, 21(1), 167–

189. <https://doi.org/10.1108/JFRA-11-2021-0403>
- Amel-Zadeh, A., & Serafeim, G. (2018). Why and how investors use ESG information: Evidence from a global survey. *Financial Analysts Journal*, 74(3), 87–103. <https://doi.org/10.2469/faj.v74.n3.2>
- Arayssi, M., Dah, M., & Jizi, M. (2020). Women on boards, sustainability reporting and firm performance. *Sustainability Accounting, Management and Policy Journal*, 11(2), 391–425. <https://doi.org/10.1108/SAMPJ-07-2018-0206>
- Barney, J. B. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, 17(1), 99–120. <https://doi.org/10.1177/014920639101700108>
- Black, B. S. (2008). The legal and institutional preconditions for strong securities markets. *UCLA Law Review*, 48(4), 781–858.
- Blundell, R., & Bond, S. (1998). Initial conditions and moment restrictions in dynamic panel data models. *Journal of Econometrics*, 87(1), 115–143. [https://doi.org/10.1016/S0304-4076\(98\)00009-8](https://doi.org/10.1016/S0304-4076(98)00009-8)
- Braam, G. J. M., & Peeters, R. (2018). Corporate sustainability performance and assurance on sustainability reports: Diffusion of accounting practices in the realm of sustainable development. *Corporate Social Responsibility and Environmental Management*, 25(2), 164–181. <https://doi.org/10.1002/csr.1447>
- Brammer, S., & Pavelin, S. (2008). Factors influencing the quality of corporate environmental disclosure. *Business Strategy and the Environment*, 17(2), 120–136. <https://doi.org/10.1002/bse.506>
- 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>
- Cheng, B., Ioannou, I., & Serafeim, G. (2014). Corporate social responsibility and access to finance. *Strategic Management Journal*, 35(1), 1–23. <https://doi.org/10.1002/smj.2131>
- 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>
- DeFond, M., & Zhang, J. (2014). A review of archival auditing research. *Journal of Accounting and Economics*, 58(2–3), 275–326. <https://doi.org/10.1016/j.jacceco.2014.09.002>
- Dhaliwal, D. S., Li, O. Z., Tsang, A., & Yang, Y. G. (2011). Voluntary nonfinancial disclosure and the cost of equity capital: The initiation of corporate social responsibility reporting. *The Accounting Review*, 86(1), 59–100. <https://doi.org/10.2308/accr.00000005>
- DiMaggio, P. J., & Powell, W. W. (1983). The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields. *American Sociological Review*, 48(2), 147–160. <https://doi.org/10.2307/2095101>
- Eccles, R. G., Ioannou, I., & Serafeim, G. (2014). The impact of corporate sustainability on organizational processes and performance. *Management Science*, 60(11), 2835–2857. <https://doi.org/10.1287/mnsc.2014.1984>
- 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>
- Friede, G., Busch, T., & Bassen, A. (2015). ESG and financial performance: Aggregated evidence from more than 2000 empirical studies. *Journal of Sustainable Finance & Investment*, 5(4), 210–233. <https://doi.org/10.1080/20430795.2015.1118917>
- García-Sánchez, I. M., & Martínez-Ferrero, J. (2019). Corporate social responsibility performance and disclosure. In *Corporate social responsibility* (pp. 167–193). Springer. https://doi.org/10.1007/978-3-030-01899-3_7

- Gillan, S. L., Koch, A., & Starks, L. T. (2021). Firms and social responsibility: A review of ESG and CSR research in corporate finance. *Journal of Corporate Finance*, 66, 101889. <https://doi.org/10.1016/j.jcorpfin.2021.101889>
- Grewal, J., Riedl, E. J., & Serafeim, G. (2021). Market reaction to mandatory nonfinancial disclosure. *Management Science*, 67(11), 6737–6755. <https://doi.org/10.1287/mnsc.2020.3797>
- Gujarati, D. N., & Porter, D. C. (2009). *Basic econometrics* (5th ed.). McGraw-Hill.
- Husted, B. W., & de Sousa-Filho, J. M. (2019). Board structure and environmental, social, and governance disclosure in Latin America. *Journal of Business Research*, 102, 220–227. <https://doi.org/10.1016/j.jbusres.2018.01.017>
- Javaid, F., & Rashid, A. (2022). Corporate governance and ESG disclosure in Pakistan: The role of regulatory initiatives. *Corporate Governance: The International Journal of Business in Society*, 22(6), 1147–1167. <https://doi.org/10.1108/CG-10-2021-0409>
- Khan, M. K., Hassan, A., & Marimuthu, M. (2020). The impact of corporate governance and ownership structure on corporate social responsibility disclosure in Pakistan. *Journal of Asian Business and Economic Studies*, 27(2), 117–136. <https://doi.org/10.1108/JABES-06-2019-0048>
- Larcker, D. F., & Rusticus, T. O. (2010). On the use of instrumental variables in accounting research. *Journal of Accounting and Economics*, 49(3), 186–205. <https://doi.org/10.1016/j.jacceco.2009.11.004>
- Liang, H., & Renneboog, L. (2017). On the foundations of corporate social responsibility. *The Journal of Finance*, 72(2), 853–910. <https://doi.org/10.1111/jofi.12487>
- Lyon, T. P., & Maxwell, J. W. (2011). Greenwash: Corporate environmental disclosure under threat of audit. *Journal of Economics & Management Strategy*, 20(1), 3–41. <https://doi.org/10.1111/j.1530-9134.2010.00282.x>
- Marquis, C., & Qian, C. (2014). Corporate social responsibility reporting in China: Symbol or substance? *Organization Science*, 25(1), 127–148. <https://doi.org/10.1287/orsc.2013.0837>
- Spence, M. (1973). Job market signaling. *The Quarterly Journal of Economics*, 87(3), 355–374. <https://doi.org/10.2307/1882010>
- Wiseman, J. (1982). An evaluation of environmental disclosures made in corporate annual reports. *Accounting, Organizations and Society*, 7(1), 53–63. [https://doi.org/10.1016/0361-3682\(82\)90025-3](https://doi.org/10.1016/0361-3682(82)90025-3)
- Wooldridge, J. M. (2016). *Introductory econometrics: A modern approach* (6th ed.). Cengage Learning.
- Zerbini, F. (2017). CSR initiatives as market signals: A review and research agenda. *Journal of Business Ethics*, 146(1), 1–23. <https://doi.org/10.1007/s10551-015-2922-8>
- Zhou, M., Liu, X. B., & Luo, Z. (2018). Regional financial development, environmental regulation, and corporate environmental investment: Based on heavily polluting listed companies. *Business Strategy and the Environment*, 27(7), 860–872. <https://doi.org/10.1002/bse.2037>