The Role of Institutional Quality in Shaping Environmental Performance

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ABSTRACT: This study explores the influence of country-level governance on firms' environmental performance and examines the moderating role of foreign ownership using balanced panel data analysis of 198 non-financial Pakistani firms over the period 2016-2023. This present study employed a random effects regression model to estimate the direct and interaction effects, with the Hausman test to confirm the suitability of the selected estimator. However, the empirical findings suggest that country-level governance has a statistically significant and positive effect on environmental performance, signifying that at the firm level, country-level factors improve and contribute to stronger environmental outcomes at the firm level. In contrast, foreign ownership exhibits a negative but statistically insignificant direct effect and does not significantly moderate the association between country-level governance and environmental performance. Furthermore, the results of control variables like market capitalization, firm size, and revenue growth are found to be insignificant. These findings indicate that in the Pakistani context, country-level governance indicators promote environmental performance more than foreign ownership structure. Although the explanatory power of the estimated models is modest, with R^2 values of 0.024, 0.025, and 0.038, indicating limited but meaningful variance explanation. Overall, the results of this study underscore and contribute to the growing literature by providing empirical evidence from an emerging economy and shedding light on the vital role of country-level governance in driving environmental performance, while highlighting the limited role of foreign ownership alone may be insufficient. These findings also offer implications for corporate stakeholders, policymakers, and regulators seeking to strengthen governance and environmental performance towards ESG-related practices.

KEYWORDS: Country-Level Governance, Environmental Performance, Foreign Ownership, Panel Data, Sustainability, Random Effects Model

Pages: 1 – 13
Volume: 5
Issue: 5 (May 2026)

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Cite this Article: Parwar, M. A., & Naeem, M. (2026). The Role of Institutional Quality in Shaping Environmental Performance. *The Regional Tribune, 5*(5), 1-13. https://doi.org/10.55737/trt/v-v.261

Introduction

In recent decades, one of the most escalating global challenges and a major goal for firms has been to accomplish environmental sustainability. (Naseer et al., 2025)The rising urgency of greenhouse gas emissions, resource depletion, and increasing environmental degradation has placed developing countries under a disproportionate burden and threatens long-term economic and social stability. (Hilson, 2012; Cao et al., 2025). According to the

Intergovernmental Panel on Climate Change, global temperatures have already increased by approximately 1.1°C above pre-industrial levels, largely driven by human activities. Similarly, global estimates indicate that total GHG emissions reached approximately 53.2 gigatonnes of CO_2-equivalent in 2024, reflecting a continued upward trend despite international mitigation efforts. As a result, Environmental, Social and Governance (ESG) has become a critical non-financial indicator of corporate accountability and long-term value creation. (Ye & Sha, 2025). Among these three ESG dimensions, corporate environmental performance has emerged as a central concentration for corporations, stakeholders, and regulators to establish environmental benchmarks and evaluate environmental-related performance. Moreover, firms are increasingly expected to mitigate environmental-related risks, reduce emissions, and implement environmentally sustainable practices.

Despite the growing global attention, the significance of corporate environmental performance across different firms and countries varies according to institutional environments. This variation is not solely determined by firm-level attributes but also raises an important question regarding the role of national institutional environments in shaping corporate sustainability outcomes. However, stakeholder theory provides empirical evidence to support and mitigate risks, along with fostering long-term value creation and cultivating trust when prioritizing ESG-related practices. (Ali et al., 2025). Institutional theory suggests that firms' long-term strategic decisions and outcomes are influenced by the broader regulatory, governmental, and legal frameworks of a country. Combining together, these two theories form a holistic framework that captures both internal stakeholder expectations and external institutional pressures that shape firms' sustainability disclosures and ESG performance. Empirical evidence suggests that countries with higher institutional qualities—characterized by effective rule of law, regulatory effectiveness, corruption control, and regulatory quality—encourage firms to enforce environmental-related practices and standards. (Saba et al., 2025)Consequently, country-level governance plays a vital role in shaping firms' environmental performance by establishing and enforcing compliance, regulatory standards, and reducing opportunistic behavior.

At the same time, the growing global integration of capital markets has imposed additional dynamic pressures on firms to establish state-of-the-art environmental practices. Similarly, these dynamics reflect firms' efforts to address the governance–sustainability relationship. Particularly, foreign ownership is considered a superior and interesting dimension in the institutional and environmental nexus. Foreign investors often possess global expertise, superior monitoring capabilities, and stronger sustainability expectations, leading to heightened sensitivity towards environmental risks. Therefore, foreign owners exert pressure on firms and tend to demand higher levels of environmental and social performance. Recently, several prior studies, such as (Alsayegh et al., (2026) and Temiz et al., (2026) suggest that firms with higher foreign ownership are positively associated with environmental performance, particularly in improving disclosure quality and promoting accountability and transparency as international investors seek to protect their investments through best sustainable practices. However, across countries, foreign owners are often more sensitive to environmental risks and regulatory compliance and may act as catalysts for enhancing environmental performance, especially in emerging markets.

However, across firms, the association between country-level governance and environmental performance may not be uniform. Although promoting environmental outcomes is mainly correlated with national institutions, it also depends on firm-specific characteristics, especially ownership structure. Particularly, determining the moderating role of foreign ownership between country-level governance and environmental performance remains underexplored in the existing literature. Prior literature has extensively examined the independent role of ownership structure or the direct effects of country-level governance on ESG performance. Moreover, limited attention has been given to how foreign ownership settings may amplify or weaken the impact of country-level governance (CLG) on environmental performance (EPer). Emerging evidence indicates that the association between foreign investment and ESG-related practices is contingent upon governance quality and ESG disclosure, demonstrating that institutional contexts may strengthen or weaken the influence of external investors. (Temiz et al., 2026). Although this gap remains unresolved and requires significant attention in the context of emerging economies, notably in environments where institutional frameworks are typically heterogeneous and dynamic.

Against this backdrop, this research examines the extent to which country-level governance affects firms' environmental performance, with a specific emphasis on the moderating role of foreign ownership in linking this relationship, using panel data from firms operating in Pakistan. In Addition, this present study enriches the prior literature in several respects. Firstly, this study underscores explicitly the crucial role of CLG in shaping how firms perform environmentally. Secondly, adopting a global perspective, it merges institutional and stakeholder theories in order to examine how foreign ownership and country-level governance interact. Thirdly, it provides context-sensitive empirical evidence from Pakistan, investigating whether the exclusive role of the moderating effect of foreign ownership alone alters the connection between CLG and EPer.

This study's empirical findings yield valuable insights for regulators, investors, and firms, enabling them to reinforce governance frameworks and the harmonization of firms' sustainability strategies with institutional and investor expectations. By taking this stance, this study underlines the importance of contemplating both foreign capital flows and national institutional settings in driving firms' environmental performance.

Literature Review and Research Hypotheses

Country-Level Governance on Environmental Performance

Recently, the growing attention of academic researchers has shifted the interest to how Country-Level Governance (CLG) influences a firm's Environmental Performance (EPer). According to institutional theory, a firm's long-term strategic decisions such as environmental practices and sustainability initiatives are deeply embedded in and shaped by the broader governance and regulatory environments in which it operates. Similarly, robust institutional systems—characterized by high regulatory quality, political stability, governance effectiveness, voice and accountability, rule of law, and control of corruption—constrain firms' opportunistic behavior, encouraging the adoption of environmental corporate actions.

Contemporary empirical evidence suggests that robust CLG plays a decisive role in determining sustainability-related outcomes at the firm level. For example, cross-country studies point out that higher-quality governance—captured by indicators like voice and accountability, regulatory quality, rule of law, governance effectiveness, corruption control, and political stability—significantly improves firms' ESG performance and enhances their sustainability initiatives (Luo et al., 2024). Similarly, country-level governance has been identified as an important determinant and foundational driver of environmental disclosures (Ahmed et al., 2025; Baalouch et al., 2019). Indeed, many studies have also investigated how country-level governance affects ESG-related outcomes using data from developed economies (Hamed et al., 2022; Öcal & Kamil, 2021) and the EU (Pereira da Silva, 2022). These findings demonstrate that firms operating within strong institutional frameworks are more likely to comply with environmental regulations and are better positioned to invest in sustainable development initiatives.

From ESG and economic perspectives, governments and regulatory institutions play a critical role in designing and enforcing environmental regulations in response to increasing social and political pressures. (Elsheikh et al., 2024; Albitar et al., 2020). In this context, robust CLG ensures that environmental-related policies are effectively implemented and enforced to maintain stakeholders' trust. On the other hand, inadequate country-level governance frequently brings regulatory inefficiencies, weak enforcement abilities, and corruption that harm corporations' willingness to fund and implement corporate environmental practices. Real-world evidence further suggests that macro-level institutional uncertainties weaken ESG performance, highlighting the importance of stable institutional environments in achieving sustainability goals. (Abdullah et al., 2024).

Furthermore, improving environmental performance through CLG effectiveness helps curb opportunistic behavior when a firm's resources are measured along with stakeholder trust and organizational legitimacy. However, firms operating under credible governance frameworks tend to enjoy greater stakeholders' confidence and more favorable financial backing, which enable them to invest in sustainable environmental ventures. Hence, CLG acts as an external driver that shapes firms' strategic decisions and environmental practices.
Therefore, it is credible to hypothesize that:

H1: Country-level governance positively impacts the corporate environmental performance.

Foreign Ownership and Environmental Performance

In addition, ownership structure is considered one of the influential factors that critically affect environmental performance alongside country-level governance effectiveness. Notably, in recent years, foreign ownership has emerged as a significant determinant shaping ESG-related performance to adhere to superior sustainability standards due to increased pressure from global expertise and rigorous supervision.

Foreign investors are generally more sensitive to exposed ecological risks and compliance with regulatory requirements and environmental risks, because they work across different jurisdictions and know global sustainability-related criteria. Therefore, foreign investors are improving firms' accountability and transparency to upgrade their disclosure practices, embrace eco-friendly initiatives, and synchronize with globally accepted ESG benchmarks. Empirical studies consistently support such findings. For example, recent evidence shows that firms with a higher level of foreign ownership tend to exhibit stronger corporate ESG performance in association with enhanced sustainability indicators. (Zhang & Wu, 2024). Correspondingly, foreign institutional investors have been found to promote long-term value creation mechanisms and strengthen oversight to enhance environmental performance.

Furthermore, foreign investors facilitate the transfer of global practices and technological innovation that can improve firms' environmental performance. Therefore, foreign owners' involvement is often associated with governance structures, greater transparency in disclosure practices, and enhanced environmental accountability. In the milieu of emerging economies—where local governance mechanisms may be relatively weak- foreign ownership can serve as an external governance force to enhance oversight and promote higher levels of corporate sustainability practices.
H2: Foreign ownership positively influences corporate environmental performance.

Moderating Role of Foreign Ownership

The interaction between CLG and foreign ownership, which independently influence environmental performance, remains relatively underexplored, particularly in emerging economies such as Pakistan where institutional heterogeneity is pronounced. However, the significant role of foreign ownership as a moderator has still not been sufficiently examined in prior empirical research, particularly in emerging economies settings where institutional environments are heterogeneous, To understood the competing perspectives regarding foreign ownership, two major viewpoints are highlighted: the complementarity perspective and the substitution perspective, which are which are derived from prior empirical literature on governance–ownership interactions rather than being purely generic theoretical extensions.

Moreover, the complementarity perspective suggests that to enhance national institutional effectiveness, foreign ownership reinforces the monitoring system and regulatory compliance, as consistently evidenced in prior studies showing that foreign investors improve governance quality and environmental accountability in strong institutional settings. In developed economies, ensuring stricter adherence to regulations and promoting higher environmental standards through foreign investors complements institutional structures, as supported by empirical evidence. For instance, Dyck et al., (2019) demonstrate that the primary focus of firms is to promote and adopt social responsibilities and societal norms in the context of European foreign institutional investors. This synergy facilitates and positively improves environmental performance at the firm level, particularly where institutional enforcement is already effective.

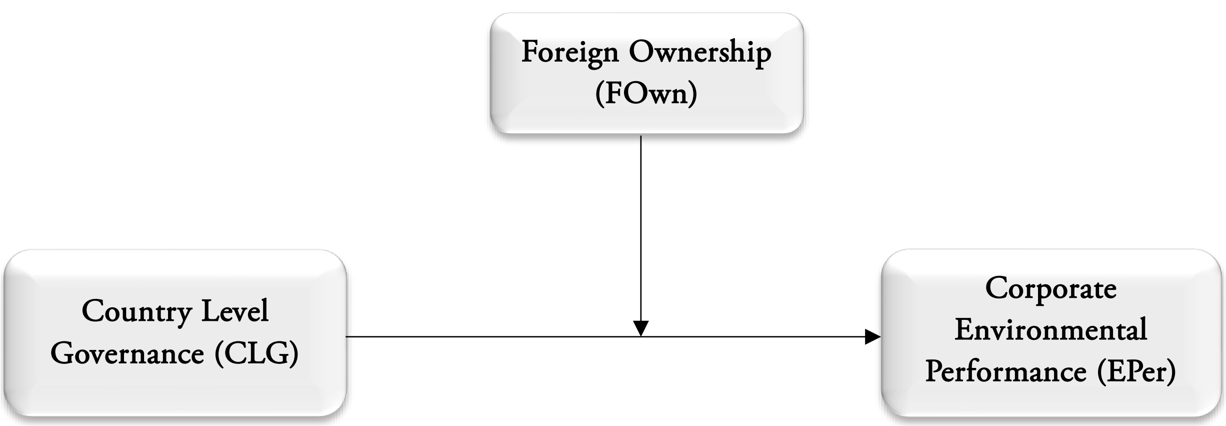
Alternatively, from a substitution standpoint, foreign ownership serves as a compensatory governance mechanism to mitigate deficiencies in weak institutional frameworks, as documented in studies of emerging markets where governance gaps are prevalent. Similarly, within weak CLG frameworks, foreign ownership may act as an external disciplinary force by enforcing rigorous environmental standards to strengthen monitoring intensity, thereby compensating for institutional weaknesses rather than amplifying them. Existing literature reveals that the link between ESG performance and foreign ownership is strongly contingent upon effective governance frameworks and information quality, thereby underscoring the context-dependent and conditional role of foreign investors across diverse institutional environments. (Temiz et al., 2026)Rather than producing uniform outcomes.

Collectively, these insights from prior empirical research indicate that both foreign ownership and country-level governance interact in complex and context-specific ways to influence environmental performance rather than functioning as universally reinforcing or substitutive forces, which directly addresses the limitations identified in earlier studies that treat this relationship in a generic manner. Examining this interaction is especially critical in emerging economies such as Pakistan, where institutional frameworks remain heterogeneous and are undergoing continuous transformation, making the direction of moderation theoretically and empirically testable rather than ambiguous.

H3: Foreign ownership moderates the relationship between CLG and environmental performance such that the positive effect of governance on environmental performance is stronger in firms with higher foreign ownership.

Figure 1

Conceptual Framework



Methodology

Data And Sample

To examine the role of foreign ownership as a moderating variable, in association with country-level governance and environmental performance, using balanced panel data from 2016 to 2023. However, a final sample of 198 non-financial firms listed on the Pakistan Stock Exchange (PSX) was selected for empirical analysis based on data availability constraints. Particularly, environmental pillar score data were obtained from the LSEG Workspace (Refinitiv) database, while data related to country-level governance indicators were obtained from the World Bank (WGI). Data related to foreign ownership were collected from firms' annual reports. Moreover, firms with missing or incomplete ESG environmental data were excluded to ensure balanced and consistent panel estimation.

Measurement of the Variables

Table 1

Measurement of Variables

Variables	Description	Proxy/Measurement	Source
Dependent Variables			
EPer	Environmental Performance	Firm's Environmental pillar score, ranging from 0 to 100 percent.	LSEG (Refinitiv)
Independent Variables			
CLG	Country Level Governance	CLG is a composite of six indicators (voice and accountability, political stability, government effectiveness, regulatory quality, the rule of law, and control of corruption) using a PCA index.	WGI
Moderating Variable			
FOwn	Foreign Ownership	The percentage of shares owned by foreign investors.	Annual Reports
Control Variables			
FirS	Firm Size	The natural log of total assets.	LSEG (Refinitiv)
RevG	Revenue Growth	Over year-over-year changes in firm revenue.	LSEG (Refinitiv)
MkC	Market Capitalization	The product of total outstanding shares and the current market price.	LSEG (Refinitiv)

Econometric Model and Analysis

To investigate the direct effect of CLG on EPer and the moderating role of foreign ownership, this study primarily focuses on the direct and interaction effects of the variables to identify the underlying pathways. First, to address potential multicollinearity among the six World Governance Indicators, a composite Country-Level Governance (CLG) index was constructed using Principal Component Analysis (PCA) (Kaufmann et al., 2011). This generates an orthogonal factor capturing the maximum shared variance among governance dimensions. Subsequently, to establish a proper analytical framework, this study first employed Ordinary Least Squares (OLS) methods as a benchmark to examine the prominent association between CLG and EPer. Second, Fixed Effects (FE) and Random Effects (RE) models were estimated, and the Hausman test was executed. However, the Hausman test results (p-value> 0.05) indicate that the RE model is the most suitable model for this study. In addition to checking the presence of heteroscedasticity, the Breusch–Pagan test was employed, and robust standard errors were used to ensure reliable inference.

(a) Direct Effect Models

$$EPer_{it} = \alpha + \beta 1\ CLG_{it} + \beta 2\ FirS_{it} + \beta 3\ MkC_{it} + \beta 4\ RevG_{it} + \varepsilon_{it} \qquad \textit{(Model 1)}$$

$$EPer_{it} = \alpha + \beta 1\ CLG_{it} + \beta 2\ FOwn_{it} + \beta 3\ FirS_{it} + \beta 4\ MkC_{it} + \beta 5\ RevG_{it} + \varepsilon_{it}$$
(Model 2)

(b) Moderating Effect Model

$$EPer_{it} = \alpha + \beta 1\ CLG_{it} + \beta 2\ FOwn_{it} + \beta 3\ CLG * FOwn_{it} + \beta 4\ FirS_{it} + \beta 5\ MkC_{it} + \beta 6\ RevG_{it} + \varepsilon_{it}$$
(Model 3)

Whereas:

$EPer_{it}$ represents the dependent variable for firm i at time t.

CLG_{it} represents the independent variable.

$FOwn_{it}$ represents the additional explanatory variable to measure the direct effect of foreign ownership.

$(CLG_{it} * FOwn_{it})$ represents the interaction term measuring the moderation effect of foreign ownership.

$FirS_{it}$, MkC_{it}, and $RevG_{it}$ represent the control variables.

α_i represents the constant/intercept term.

ε_{it} represents the error term capturing unexplained variation.

Results and Analysis

Descriptive Statistics and Correlation Analysis

To illustrate the significant relationship between the variables, the basic descriptive statistics are reported in Table 2. For example, the mean value of environmental performance (EPer) using overall Pakistani firms' data is 25.360, which indicates a moderate level of environmental sustainability among firms. At the same time, country-level governance (CLG) demonstrates 2.68762 mean value which shows relatively low variation across firms. Moreover, the mean value of foreign ownership (FOwn) is 0.133, signifying that, on average, approximately 13.3% of firm ownership is held by foreign investors. The value of skewness for most of the variables falls within the acceptable range ±3, while the value of kurtosis falls within the threshold of ±10. This confirms that the data do not suffer from severe departures from normality and are considered acceptable for panel regression analysis.

Table 3

Descriptive Statistics

Variables	n	Mean	SD	Min	Max	skewness
EPer	1,5,84	25.36002	17.03994	1.55	86.82	0.712
CLG	1,5,84	2.68762	0.1653129	2.392398	2.930037	-0.154
FOwn	1,5,84	0.1335686	0.2576654	0	0.9766	2.013
FirS	1,5,84	9.333346	1.42995	3.59	13.32	-0.584
MkC	1,5,84	7.903902	1.336593	2.83	12.63	0.055
RevG	1,5,84	9.598359	17.65352	-67.11	108.24	0.783

To further demonstrate the significance of selected variables of the study, Table 3 presents the correlation matrix. The result reveals that CLG is positively and significantly associated with environmental performance (EPer) (0.0847^{***}), demonstrating a preliminary positive association between CLG and environmental performance outcomes. Moreover, firm size, market capitalization, and revenue growth, used as control variables, exhibit relatively weak correlations with the EPer.

Furthermore, to address potential multicollinearity concerns, all explanatory variables' Variance Inflation Factor (VIF) values are reported. The VIF values are close to 1, which are below the conventional threshold of 5 and below 3, which remains within the acceptable threshold, confirming the absence of multicollinearity issues among all the variables. Overall, these results indicate and provide an empirical foundation for the regression model without biased estimates.

Table 3

Correlation Matrix

Variable	EPer	CLG	FOwn	FirSi	MkC	RevG
EPer	1					
CLG	0.0847***	1				
FOwn	0.0173	0.00372	1			
FirS	-0.0986***	-0.0307	0.0992***	1		
MkC	-0.0283	0.00200	0.00320	-0.0111	1	
RevG	-0.00887	0.0392	-0.0100	-0.0358	-0.0243	1
VIF		1.002	1.010	1.012	1.001	1.003

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Regression Results

Direct Effect of Country-Level Governance on Environmental Performance

Table 4 (Model 1) examines the direct relationship between country-level governance and environmental performance. The results indicate that CLG has a positive and highly significant effect on environmental performance (β = 8.705***).

In relation to current results, this study reveals that firms with stronger CLG structures tend to exhibit robust environmental performance. Moreover, the results further support the theoretical argument that encourages firms to adopt sustainable environmental practices through efficient and effective country-level governance to improve firms' monitoring mechanisms and strengthen institutional oversight.

Correspondingly, the designated control variables of this study exhibit that, for instance, firm size (FirS), market capitalization (MkC), and revenue growth (RevG), within a specific sample of non-financial firms, do not indicate any substantial role in explaining environmental performance, as the results are found statistically insignificant.

Based on Model 2, Table 4 demonstrates the empirical findings and extends the baseline model by introducing foreign ownership (FOwn) as a moderating variable. The direct effect of CLG remains positive and statistically significant (β = 8.688***, $p < 0.01$), confirming the robustness of the baseline results.

However, the coefficient of foreign ownership is positive but statistically insignificant (β = 2.308), suggesting that foreign ownership alone does not directly influence environmental performance.

Interaction Effect (Moderation Analysis)

Column 3 of Table 4 introduces the interaction term, representing country-level governance and foreign ownership (CLG * FOwn). The results indicate that the value of the interaction term is directionally positive (β = 3.578), but this effect is statistically insignificant.

Based on this empirical finding, results demonstrate that foreign ownership does not significantly moderate the association between country-level governance and environmental performance. In other words, the effectiveness of country-level governance in improving environmental performance does not depend on the level of foreign ownership.

Table 4

Regression Analysis

Variables	1	2	3
CLG	8.705*** (1.291)	8.688*** (1.288)	8.203*** (1.445)
FirS	-0.510 (0.425)	-0.521 (0.425)	-0.523 (0.426)
MkC	-0.367 (0.351)	-0.363 (0.351)	-0.366 (0.351)
RevG	-0.024 (0.017)	-0.024 (0.017)	-0.023 (0.017)
FOwn		2.308 (3.373)	-7.349 (12.705)
CLG_c			8.681*** (1.289)
FOwn_c			2.268 (3.357)
CLG * FOwn			3.578 (4.626)
Constant	9.854* (6.288)	9.667* (6.318)	33.361*** (5.209)
Num.Obs.	1584	1584	1584
R2	0.024	0.025	0.038
R2 Adj.	0.022	0.021	0.036
F-Stat / Wald χ^2	39.56	49.31	50.31
Hausman Test (p_value)	0.813	0.875	0.935
Breusch-Pagan Test (p_value)	< 0.0001		
Standard errors in parentheses * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$			

Results and Discussion

The empirical results provide strong evidence that CLG plays a critical role in enhancing environmental performance. The statistically significant and positive coefficient of CLG suggests that firms operating under stronger governance frameworks are likely to adopt environmentally responsible practices and achieve superior sustainability outcomes. This finding is consistent with institutional theory, which posits that an effective governance system creates regulatory pressure, improves transparency and accountability, and encourages firms to align their strategies with environmental sustainability outcomes. The result also supports prior studies, Ahmed et al., (2025) and Ioannou & Serafeim, (2010) highlights that effective environmental governance significantly enhances firms' ESG and underscores the importance of regulatory effectiveness, corruption control, institutional quality, and rule of law in promoting environmental and sustainability outcomes through proper implementation mechanisms characterized by regulatory effectiveness, rule of law, and corruption control. It is important to acknowledge that the explanatory power of the estimated models is relatively low, with R^2 values ranging from 0.024 to 0.038. However, such values are not uncommon in firm-level ESG and governance research, where environmental performance is influenced by numerous observed and unobserved industry, institutional, firm-specific, and macroeconomic factors. Therefore, low R^2 values should not be interpreted as evidence of model inadequacy but rather as a reflection of the complex and multidimensional nature of environmental performance. Prior literature, Ioannou & Serafeim, (2010) and Khan et al., (2016) also report and identify the modest explanatory power in the relationship between CG and sustainability studies.

Furthermore, the empirical findings indicate that robust CLG factors reduce opportunistic behavior and strengthen firms' monitoring mechanisms, thereby facilitating the implementation of environmental-related initiatives and sustainability standards. An effective institutional setting can improve both ESG disclosure and sustainability outcomes positively and provide firms with clearer regulatory guidance and stronger incentives.

Subsequently, environmental performance can be enhanced through quality CLG and serves as a foundational mechanism, particularly in emerging economies where governance framework structures remain to evolve.

Despite this, the findings further demonstrate that the association between CLG and EPer is notably negative and insignificant when foreign ownership does not significantly moderate the relationship. At the same time, this finding differs from several prior studies that report foreign ownership as a positive association among ESG -related objectives and foreign ownership. However, one possible explanation is the relatively low level of foreign ownership participation in Pakistan compared with many developed and emerging economies. Similarly, such limited ownership stakes may also constrain the ability to impact strategic decisions, environmental initiatives, and corporate policies. As a result, changes in firms' environmental practices may need foreign investors' active involvement.

Additionally, in the context of emerging markets like Pakistan, foreign investors may not actively participate in firms' environmental strategic decisions or may be more in favor of achieving financial objectives than of environmental issues. In such circumstances, environmental considerations may receive less attention unless supported by strong regulatory requirements and enforcement mechanisms. Furthermore, slack environmental frameworks and weaker institutional implementation may discourage foreign investors from investing or supporting ESG initiatives. Consistent with this, previous studies suggest that ESG practices and ownership-related governance mechanisms are broadly contingent upon factors such as the quality of governance, information transparency, and institutional settings. (Aguilera et al., 2006; Huang & Huang, 2025; Temiz et al., 2026).

However, the insignificance of foreign ownership as a moderating effect further shows that the association between environmental performance and CLG does not depend on the extent of foreign ownership. In addition to this, empirical findings of this study also highlight the importance of effective institutional quality in exerting direct influence on environmental performance rather than foreign ownership structure alone. Hence, this study confirms that CLG plays an important role in enhancing environmental performance.

Finally, revenue growth, market capitalization, and firm size as control variables also exhibit negative and insignificant results across all models' specifications. At the same time, several studies report a significant association among ESG outcomes and institutional quality. However, the current study documented that these control variables have limited explanatory power once governance frameworks are considered.

Conclusion

The main purpose of this study is to examine the impact of country-level governance on environmental performance while assessing the role of foreign ownership as a moderator using balanced panel data analysis. The empirical results indicate robust evidence that country-level governance positively and statistically influences environmental performance. These findings posit that effective CLG, such as government effectiveness, rule of law, voice and accountability, regulatory quality, and control of corruption, create robust ground for firms and encourage them to adopt environmental-related practices through strict and effective country-level governance mechanisms. Moreover, this empirical evidence is consistent with institutional theory and suggests that regulatory frameworks and institutional quality factors enhance both ESG performance and shape organizational behavior.

The results further disclose that, in relation to environmental performance, foreign ownership does not exert a significant direct effect, nor does it exhibit any moderating effect on the relationship between country-level governance and environmental outcomes. However, previous literature underscores the importance of foreign ownership in promoting environmental and sustainability practices and argues that it can be enhanced through the implementation of international ESG standards, superior governance practices, and effective monitoring. (Dyck et al., 2019; Zhang & Wu, 2024). The present findings highlight that such effects may be highly context-dependent. However, in the context of Pakistan, one plausible explanation is that foreign investment is relatively low compared to other emerging and developed economies. Furthermore, one possible reason can be prioritizing financial objectives over environmental-related ones, where sustainability initiatives remain evolving.

The results also show that across all model specifications, revenue growth, firm size, and market capitalization indicate negative and insignificant coefficients, which suggest that these control variables may be more consistent with conventional firm-level financial characteristics. This argument confirms that environmental performance is influenced by stakeholder pressures and regulatory compliance.

In contrast, these empirical findings suggest that the explanatory power of the models is modest, which is informative in the context of governance and environmental perspectives; similarly, this is due to the complex nature of environmental metrics affected by several institutional-specific, firm-specific, and industry-specific factors. Consequently, low R^2 values are not uncommon in firm-level ESG and governance research, and do not diminish the importance of statistically significant country-level governance. (Colton & Bower, 2002; Lin & Wiegand, 2023).

Moreover, these findings of this study contribute to the literature by offering empirical evidence from an emerging economy like Pakistan that received limited attention, particularly country-level governance factors and environmental performance literature. This study also underscores the importance of environmental performance over strengthening country-level governance rather than foreign ownership within the institutional context of Pakistan. However, the empirical findings provide a nuanced understanding of how country-level governance influences environmental performance across different institutional frameworks and environmental laws.

Moreover, these findings of this study offer several policy implications. First, this study underscores the importance of environmental performance through environmental enforcement mechanisms, regulatory effectiveness, and strengthening governance quality to ensure that environmental performance continues to improve. Second, firms must integrate environmental considerations into their strategic decision-making, and regulators must enforce governance standards to enhance and promote corporate environmental performance. Third, results signify that policymakers should not rely solely on foreign ownership as a driver of sustainability; Instead, firms should emphasize domestic regulatory compliance and mandatory environmental standards. Third, to promote sustainable business practices across all firms, governments should focus on environmental laws and strengthening institutional frameworks.

Despite its contributions, the present study has faced several limitations that create opportunities for future research directions. This study focuses only on Pakistani non-financial listed firms, and therefore the findings may not be generalizable to other sectors or economies. Future studies may incorporate additional dimensions, for example, sustainability teams, managerial ownership, and audit quality, to understand a more comprehensive role of environmental performance. Broadening the temporal scope and incorporating sector-wise datasets may extend and enhance the reliability of the current findings, which may lead to better results in the future. Moreover, future studies may also employ alternative econometric approaches, such as endogeneity-corrected models and dynamic panel estimators, or expand sample size and include other emerging or developed economies.

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