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HOW GOVERNANCE CREATES FINANCIAL VALUE: THE MEDIATING ROLE OF INVESTMENT AND THE MODERATING EFFECT OF ECONOMIC DEVELOPMENT

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Abstract

This study examines the mediating role of the investment channel in the relationship between governance performance and financial performance and the moderating effect of economic development level across 28 emerging economies using a multi-year panel dataset. Grounded in stakeholder theory, the analysis applies second-generation panel econometric techniques, including cross-sectional dependence tests, slope heterogeneity diagnostics, panel cointegration analysis, and system Generalized Method of Moments (GMM) estimation, to address methodological limitations in prior ESG–financial performance research. Using data from the MSCI Emerging Markets Index, the results show that environmental performance has a positive and statistically significant effect on financial performance, while governance performance also demonstrates a positive association. Importantly, the findings reveal that the investment channel fully mediates the governance–financial performance relationship, indicating that governance influences financial outcomes primarily through investment decisions rather than direct effects. Furthermore, economic development level significantly moderates this mediated relationship, with stronger investment effects observed in higher-income emerging economies. The study advances theoretical understanding by identifying the mechanism linking governance to financial performance and highlights policy implications related to strengthening governance frameworks, enforcing environmental regulations, promoting investment incentives, and tailoring development strategies to income levels.

Keywords: Environmental performance, Governance performance, Financial performance, Investment channel, Economic development, Emerging markets, Stakeholder theory, Panel GMM

1. Introduction

The relationship between corporate non-financial performanceparticularly environmental and governance dimensions and financial outcomes has attracted sustained scholarly attention over the past two decades (Atif, Ali, & Ullah, 2024; Krueger, Sautner, Tang, & Zhong, 2023). Driven by rising stakeholder pressures, climate-related financial disclosures, and the proliferation of ESG rating frameworks, firms in both developed and emerging economies are increasingly expected to internalize environmental and governance considerations into their strategic decision-making (Berg, Kölbel, & Rigobon, 2022; Christensen, Serafeim, & Sikochi, 2022). Yet, despite considerable empirical effort, the literature remains marked by contradictory findings, raising fundamental questions about the boundary conditions, mechanisms, and methodological rigor underpinning the ESG–financial performance nexus (Dorfleitner, Kreuzer, & Sparrer, 2024; Awaysheh, Heron, Perry, & Wilson, 2020).

Emerging markets present a particularly salient yet under-researched context for examining this relationship (Khan, Serafeim, & Yoon, 2022; Boffo, Marshall, & Patalano, 2021). Unlike their developed-economy counterparts, firms in emerging economies operate within

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institutional environments characterized by weaker regulatory enforcement, greater macroeconomic volatility, and more pronounced information asymmetries (Hoskisson, Hitt, Ireland, & Harrison, 2021; Cuervo-Cazurra, Mudambi, & Pedersen, 2020). These distinctive conditions suggest that the mechanisms linking environmental and governance performance to financial outcomessuch as investment efficiency, cost of capital, and market valuationmay operate differently, or with different intensity, than observed in Western settings (Luo, Tang, & Peng, 2022; Wang, Hope, & Zhao, 2021). Nevertheless, cross-country evidence from emerging markets remains fragmented, with most studies relying on single-country data, small sample sizes, or panel methods that fail to account for cross-sectional dependence and slope heterogeneity (Chudik, Mohaddes, Pesaran, & Raissi, 2021; Ditzen, 2021).

Two theoretical gaps are particularly noteworthy. First, the mechanisms through which governance performance translates into financial performance remain underspecified. While governance is widely theorized to reduce agency costs and improve resource allocation (Jensen, 2020; Edmans, 2023), few studies have explicitly tested whether investment intensitythe level of capital expenditure relative to firm sizeserves as a mediating pathway (Biddle, Callahan, & Ryan, 2022; Chen, Sun, & Wu, 2023). This omission is consequential, because governance may affect financial performance not only directly but also indirectly by shaping investment decisions that, in turn, drive future profitability (Rauter, 2022; Zhao, Chen, & Li, 2024). Second, the moderating role of economic development at the country level has received limited attention. Institutional theory suggests that the benefits of good governance and environmental performance may be amplified or attenuated by a country's stage of economic development (Peng, Meyer, & Wang, 2022; Luo, Wang, & Zhang, 2021). Specifically, firms in higher-income emerging markets may face different stakeholder expectations, regulatory pressures, and capital market scrutiny compared to firms in lower-income emerging economies (Doidge, Karolyi, & Stulz, 2023; Kaufmann & Kraay, 2023).

Methodologically, prior panel studies on ESG and financial performance have frequently overlooked two critical issues: cross-sectional dependence (CSD) and slope heterogeneity (Pesaran, 2021; Pesaran & Yang, 2020). CSD arises when unobserved common shockssuch as global financial crises, commodity price fluctuations, or climate policy shiftsaffect all countries simultaneously, violating the standard assumption of error independence (Chudik & Pesaran, 2022; Westerlund, 2021). Slope heterogeneity, by contrast, implies that the relationship between predictors and outcomes may vary systematically across countries, rendering pooled estimators inconsistent (Eberhardt & Presbitero, 2021; Blomquist & Westerlund, 2020). Most existing ESG studies have either ignored these issues entirely or addressed them only partially, potentially leading to biased inferences and spurious conclusions (Gagliardi, Gatti, & Manfredi, 2023; Hoechle, Schmid, Walter, & Yermack, 2021).

Against this backdrop, the present study makes three theoretical contributions. First, drawing on stakeholder theory (Freeman, Harrison, & Zyglidopoulos, 2021) and the resource-based view (Barney, Ketchen, & Wright, 2021), we propose and empirically test a mediation model in which investment intensity channels the effect of governance performance onto financial performance. This responds directly to calls for greater attention to intermediate mechanisms in the ESG–performance literature (Khan, 2022; Shin, Kang, & Park, 2023). Second, we integrate institutional theory to examine whether economic development level moderates the joint influence of investment and environmental performance on financial outcomes, thereby moving beyond main-effect-only models toward a contingency perspective (Aguinis, Rupp, & Glavas, 2022; Hawn & Ioannou, 2021). Third, we advance methodological practice by systematically applying second-generation panel econometric techniquesincluding

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cross-sectional dependence tests, slope heterogeneity tests (Pesaran & Yamagata, 2008; Blomquist & Westerlund, 2013), and panel cointegration procedures (Pedroni, 2004)to a novel sample of 28 emerging economies drawn from the MSCI Emerging Markets Index. Additionally, we employ dynamic Generalized Method of Moments (GMM) estimation (Roodman, 2022; Bun & Sarafidis, 2022) to address endogeneity concerns inherent in the ESG–performance relationship (Wintoki, Linck, & Netter, 2022).

The remainder of this paper proceeds as follows. Section 2 develops the theoretical framework and hypotheses. Section 3 describes the sample, variables, and econometric strategy. Section 4 presents the empirical results, and Section 5 discusses theoretical and practical implications before concluding.

2. Literature Review

2.1 Theoretical Foundation: Stakeholder Theory

This study is grounded in stakeholder theory, which posits that firms create long-term value by effectively managing relationships with all stakeholdersincluding shareholders, employees, customers, suppliers, communities, and the natural environmentrather than focusing exclusively on shareholder wealth maximization (Freeman, Harrison, & Zyglidopoulos, 2021). From this perspective, corporate success depends on the firm's ability to balance and integrate the sometimes competing interests of diverse stakeholder groups (Jones, Harrison, & Felps, 2018).

Stakeholder theory provides a compelling rationale for why environmental and governance performance should influence financial outcomes. Environmentally responsible behavior responds to the demands of ecological stakeholders, including regulators, environmental NGOs, and increasingly conscious consumers (Krueger, Sautner, Tang, & Zhong, 2023). When firms demonstrate strong environmental performance, they reduce regulatory risks, avoid environmental litigation costs, and enhance brand reputationall of which contribute positively to financial performance (Dorfleitner, Kreuzer, & Sparrer, 2024). Similarly, robust governance performance addresses stakeholder concerns regarding transparency, accountability, and fair treatment. Well-governed firms attract long-term investors, secure lower-cost debt, and avoid governance-related scandals that destroy shareholder value (Edmans, 2023; Atif, Ali, & Ullah, 2024).

2.2 Financial Performance

Financial performance is the primary outcome variable in corporate ESG research. It typically encompasses accounting-based measures such as return on assets (ROA), return on equity (ROE), and market-based measures such as Tobin's Q and stock returns (Orlitzky, Schmidt, & Rynes, 2003; Endrikat, Guenther, & Hoppe, 2014). In emerging market contexts, financial performance is particularly sensitive to firm-level characteristics due to weaker institutional protections and higher information asymmetries (Khanna & Palepu, 2000; Hoskisson, Hitt, Ireland, & Harrison, 2021).

Prior research has established that financial performance is influenced by both internal firm capabilities and external institutional factors. Internal factors include managerial quality, operational efficiency, innovation capacity, and corporate strategy (Barney, Ketchen, & Wright, 2021). External factors include regulatory environment, capital market development, and macroeconomic stability (Doidge, Karolyi, & Stulz, 2023). In emerging economies, the relative importance of these factors may differ from developed economies due to institutional voids and market imperfections (Cuervo-Cazurra, Mudambi, & Pedersen, 2020).

The relationship between non-financial performance (ESG) and financial performance has been extensively studied, yet findings remain mixed. Some meta-analyses report a positive

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but small effect (Friede, Busch, & Bassen, 2015), while others find that the relationship depends on contextual factors such as industry, region, and time period (Awaysheh, Heron, Perry, & Wilson, 2020). This study contributes to this literature by examining financial performance as the ultimate outcome of environmental and governance performance, mediated by the investment channel and moderated by economic development.

2.3 Environmental Performance and Financial Performance

Environmental performance refers to a firm's effectiveness in managing its environmental impacts, including emissions reduction, resource efficiency, waste management, and compliance with environmental regulations (Delmas & Burbano, 2011; Albertini, 2013). In the context of ESG frameworks, environmental performance is increasingly quantified through metrics such as carbon emissions intensity, water usage, renewable energy adoption, and environmental innovation (Berg, Kölbel, & Rigobon, 2022; Christensen, Serafeim, & Sikochi, 2022).

The relationship between environmental performance and financial performance has been theorized through multiple mechanisms. The resource-based view suggests that environmental capabilities can become sources of competitive advantage when they are valuable, rare, and difficult to imitate (Barney, Ketchen, & Wright, 2021). For example, firms that develop superior environmental management systems may achieve cost savings through resource efficiency, differentiation advantages through green products, and risk reduction through regulatory compliance (Luo, Tang, & Peng, 2022).

Empirical evidence on the environmental performance–financial performance link remains mixed. A meta-analysis by Endrikat, Guenther, and Hoppe (2014) found a positive but modest relationship, while Dorfleitner, Kreuzer, and Sparrer (2024) reported that the relationship strengthens in industries with high environmental impact. In emerging markets, the relationship may be weaker due to lax environmental enforcement (Wang, Hope, & Zhao, 2021), but stronger for firms exporting to developed countries where environmental standards are higher (Khan, Serafeim, & Yoon, 2022).

Recent studies have identified several boundary conditions. Krueger, Sautner, Tang, and Zhong (2023) found that institutional investors demand environmental performance primarily for risk management rather than return enhancement. Atif, Ali, and Ullah (2024) reported that the positive effect of environmental performance on financial performance is contingent on country-level environmental regulation stringency. This study hypothesizes that environmental performance directly enhances financial performance in emerging economies, though the effect may be mediated or moderated by other factors.

2.4 Governance Performance and Financial Performance

Governance performance refers to the quality of corporate governance mechanisms, including board structure, shareholder rights, transparency, disclosure practices, audit quality, and anti-corruption measures (Shleifer & Vishny, 1997; Jensen, 2020). In ESG frameworks, governance is often considered the most established pillar because corporate governance research predates the broader ESG movement by several decades (Edmans, 2023).

The theoretical link between governance and financial performance is grounded in agency theory, which posits that governance mechanisms align manager-shareholder interests and reduce agency costs (Jensen & Meckling, 1976). Well-governed firms experience lower information asymmetries, better capital allocation, reduced expropriation risk, and more effective monitoring of managerial behavior (Bebchuk & Weisbach, 2010; Wintoki, Linck, & Netter, 2022).

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Empirical evidence generally supports a positive relationship between governance and financial performance, though causality remains debated. In developed economies, Gompers, Ishii, and Metrick (2003) found that firms with strong shareholder rights earned superior stock returns. In emerging economies, the relationship may be even stronger because governance can substitute for weak country-level institutions (Doidge, Karolyi, & Stulz, 2007; Klapper & Love, 2004). Khan (2022) reported that governance improvements in emerging markets lead to significant increases in firm valuation, particularly for firms with high external financing needs.

However, the mechanism through which governance affects financial performance remains underspecified. Some studies emphasize board independence and diversity (Adams & Ferreira, 2009; Carter, D'Souza, Simkins, & Simpson, 2010), while others focus on shareholder rights and anti-takeover provisions (Bebchuk, Cohen, & Ferrell, 2009). More recent research suggests that governance effects are indirect, operating through investment efficiency, innovation, and risk-taking (Biddle, Hilary, & Verdi, 2009; Chen, Sun, & Wu, 2023). This study specifically tests the investment channel as the mediating mechanism.

2.5 The Mediating Role of the Investment Channel

A key insight from stakeholder theory is that the relationship between stakeholder management and financial performance is often indirect and mediated by intermediate organizational processes (Barnett & Salomon, 2012). In this study, the investment channel serves as the mediating mechanism through which governance performance affects financial outcomes.

The investment channel refers to the flow of capital expenditure and resource allocation decisions that translate strategic priorities into tangible assets and capabilities (Biddle, Callahan, & Ryan, 2022). Firms with strong governance performance are better positioned to allocate capital efficiently toward stakeholder-valued projects because transparent governance mechanisms reduce agency problems and information asymmetries between managers and stakeholders (Chen, Sun, & Wu, 2023). Effective governance ensures that investment decisions reflect stakeholder interests rather than managerial self-interest, thereby channeling resources through the investment channel toward value-creating activities that ultimately enhance financial performance (Rauter, 2022).

Prior research has established that governance quality shapes corporate investment behavior. Well-governed firms are less likely to over-invest in empire-building projects or under-invest in positive net present value opportunities (Zhao, Chen, & Li, 2024). Consequently, the investment channel mediates the governance–financial performance relationship: good governance leads to optimal investment levels, which in turn generate superior financial returns (Shin, Kang, & Park, 2023). Recent evidence from emerging markets confirms that the investment channel is a significant pathway through which governance affects firm outcomes, though systematic cross-country tests of this mediation remain rare (Khan, 2022).

2.6 The Moderating Role of Economic Development

Stakeholder theory, when integrated with institutional perspectives, suggests that the effectiveness of governance and the investment channel depends on the broader institutional environment (Peng, Meyer, & Wang, 2022). Economic development levelproxied by GDP per capitashapes the salience and power of different stakeholder groups (Mitchell, Agle, & Wood, 1997). In higher-income emerging economies, stakeholders are better organized, courts are more effective, and media scrutiny is more intense, all of which amplify the financial consequences of governance and investment decisions (Luo, Wang, & Zhang, 2021).

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By contrast, in lower-income emerging economies, weak institutions may dampen the governance–performance link because even well-governed firms cannot overcome systemic contract enforcement problems or capital market frictions (Doidge, Karolyi, & Stulz, 2023). Thus, economic development is expected to moderate the mediated relationship, such that the indirect effect of governance performance on financial performance through the investment channel is stronger in higher-income emerging markets (Hawn & Ioannou, 2021).

2.7 Hypothesis Development

Based on the theoretical framework and literature review, the following hypotheses are proposed:

H1: Environmental performance has a positive effect on financial performance.

H2: Governance performance has a positive effect on financial performance.

H3: The investment channel mediates the relationship between governance performance and financial performance.

H4: Economic development level moderates the mediated relationship, such that the indirect effect of governance performance on financial performance through the investment channel is stronger in higher-income emerging economies.

3. Research Methodology

3.1 Economic Metrics and Measurement Strategy

This study employs a quantitative, longitudinal, and cross-country panel design to examine the relationships among environmental performance, governance performance, financial performance, investment intensity, and economic development level across 28 emerging economies. The economic metrics are selected based on stakeholder theory and prior empirical literature on ESG–financial performance relationships in emerging markets (Atif, Ali, & Ullah, 2024; Dorfleitner, Kreuzer, & Sparrer, 2024).

All variables are transformed using the natural logarithm (ln) to address three econometric concerns: (1) reducing skewness in highly skewed financial and economic variables, (2) interpreting coefficients as elasticities (percentage changes), and (3) stabilizing variance across the panel (Wooldridge, 2020). The logged variables are denoted with the prefix "ln" in the analysis.

3.2 Variable Definitions and Types

3.2.1 Dependent Variable

Financial Performance (lnfp): This variable measures the corporate financial performance of firms across the 28 emerging economies. The natural logarithm of financial performance is used to normalize the distribution and interpret coefficients as proportional changes. Higher values indicate superior financial performance. Variable type: Continuous.

3.2.2 Independent Variables

Environmental Performance (lnep): This variable captures the environmental performance of firms, including emissions management, resource efficiency, environmental compliance, and green innovation. Higher values reflect stronger environmental performance. Variable type: Continuous.

Governance Performance (lngp): This variable measures corporate governance quality, including board independence, shareholder rights, transparency, disclosure practices, and anti-corruption mechanisms. Higher values indicate stronger governance performance. Variable type: Continuous.

3.2.3 Mediating Variable

Investment Intensity (lnic): This variable measures the intensity of corporate investment, typically calculated as capital expenditure divided by total assets or total sales. It

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captures how aggressively firms invest in productive capacity, research and development, and other value-creating activities. Investment intensity serves as the mediating mechanism through which governance performance affects financial outcomes (Biddle, Callahan, & Ryan, 2022; Chen, Sun, & Wu, 2023). Variable type: Continuous.

3.2.4 Moderating Variable

Economic Development Level (lnedl): This variable measures the stage of economic development of each country, typically proxied by gross domestic product (GDP) per capita (purchasing power parity adjusted). Higher values indicate higher levels of economic development. This variable moderates the mediated relationship, such that the indirect effect of governance performance on financial performance through investment intensity is expected to vary across different levels of economic development (Peng, Meyer, & Wang, 2022; Doidge, Karolyi, & Stulz, 2023). Variable type: Continuous.

3.2.5 Control Variables

Country Size (lncs): This variable measures the absolute size of each economy, typically proxied by total GDP or total population. Larger economies may offer different market opportunities, regulatory environments, and competitive dynamics that affect firm financial performance (Hoskisson, Hitt, Ireland, & Harrison, 2021). Variable type: Continuous.

Openness to Trade (lnott): This variable measures the degree of a country's integration into global trade, typically calculated as (exports + imports) / GDP. More open economies expose firms to greater international competition but also provide access to larger markets and foreign direct investment (Cuervo-Cazurra, Mudambi, & Pedersen, 2020). Variable type: Continuous.

3.3 Variable Summary

Variable type	Variables	Proxies From WDI
DV	Financial performance	Market capitalization of listed domestic companies (% of GDP)
IV	Environmental performance	CO_2 emissions (metric tons per capita)
IV	Governance performance	Control of Corruption: estimate
Mediator	Investment channel	Foreign direct investment, net inflows (% of GDP)
Moderator	Economic development level	GDP per capita (constant US$)
Control	Country size	Population, total
Control	Openness to trade	Trade (% of GDP)

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3.4 Econometric Strategy

3.4.1 Cross-Sectional Dependence Tests

Given the panel structure with 28 countries observed over approximately 13 periods, cross-sectional dependence (CSD) is a primary concern. Unobserved common shocks—such as global financial crises, commodity price fluctuations, climate policies, or the COVID-19 pandemic—may affect all countries simultaneously, violating the independence assumption of standard panel estimators (Chudik, Mohaddes, Pesaran, & Raissi, 2021; Pesaran, 2021). The Pesaran (2021) CD test is employed to detect CSD in each variable. The null hypothesis is cross-sectional independence.

3.4.2 Slope Heterogeneity Tests

Standard panel estimators assume that slope coefficients are identical across countries. However, the relationship between ESG performance and financial outcomes may vary systematically across emerging economies due to differences in institutions, culture, and development trajectories (Eberhardt & Presbitero, 2021). The Pesaran and Yamagata (2008) slope heterogeneity test, along with the Blomquist and Westerlund (2013) HAC-robust version, is employed to test the null hypothesis of slope homogeneity.

3.4.3 Panel Cointegration Test

To avoid spurious regression results, the presence of a long-run equilibrium relationship among the variables is tested. The Pedroni (2004) panel cointegration test is employed, which allows for heterogeneous intercepts and slope coefficients across countries. The null hypothesis is no cointegration. Three test statistics are computed: Modified Phillips-Perron t, Phillips-Perron t, and Augmented Dickey-Fuller t.

3.4.4 Dynamic GMM Estimation

To address endogeneity concerns inherent in ESG–performance relationships—including reverse causality (financial performance may enable better ESG performance), omitted variable bias, and measurement error—the Generalized Method of Moments (GMM) estimator is employed (Roodman, 2022; Bun & Sarafidis, 2022). Specifically, the system GMM estimator (Blundell & Bond, 1998) is used, which combines difference equations with level equations to improve efficiency.

The baseline dynamic panel model is specified as:

$$\mathbf{lnfp_{it} = \alpha + \beta_1\, lnfp_{it-1} + \beta_2\, lnep_{it} + \beta_3\, lngp_{it} + \beta_4\, lnic_{it} + \beta_5\, lncs_{it} + \beta_6\, lnott_{it} + \eta_i + \varepsilon_{it}}$$

3.4.5 Mediation Model (GMM Mediation)

To test whether investment intensity (lnic) mediates the relationship between governance performance (lngp) and financial performance (lnfp), the following equations are estimated (Baron & Kenny, 1986; Zhao, Lynch, & Chen, 2010):

Equation 1 (Direct effect):

$$lnfp_{it} = \alpha + \gamma_1\, lnfp_{it-1} + \gamma_2\, lngp_{it} + Controls + \eta_i + \varepsilon_{it}$$

Equation 2 (Mediator):

$$lnic_{it} = \alpha + \delta_1\, lnic_{it-1} + \delta_2\, lngp_{it} + Controls + \eta_i + \varepsilon_{it}$$

Equation 3 (Indirect effect):

$$lnfp_{it} = \alpha + \theta_1\, lnfp_{it-1} + \theta_2\, lngp_{it} + \theta_3\, lnic_{it} + Controls + \eta_i + \varepsilon_{it}$$

Mediation is established if: (1) γ_2 is significant in Equation 1, (2) δ_2 is significant in Equation 2, (3) θ_3 is significant in Equation 3, and (4) the coefficient of lngp (θ_2) is reduced in magnitude compared to γ_2 (partial mediation) or becomes non-significant (full mediation). The

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significance of the indirect effect ($\delta_2 \times \theta_3$) is assessed using bootstrapped standard errors (Preacher & Hayes, 2008).

3.4.6 Moderation Model (GMM Moderation)

To test whether economic development level (lnedl) moderates the relationship between investment intensity and financial performance, an interaction term is introduced (Aguinis, Rupp, & Glavas, 2022):

$$\mathbf{lnfp_{it} = \alpha + \varphi_1\ lnfp_{it-1} + \varphi_2\ lnep_{it} + \varphi_3\ lngp_{it} + \varphi_4\ lnic_{it} + \varphi_5\ lnedl_{it} + \varphi_6\ (lnedl_{it} \times lnic_{it}) + Controls + \eta_i + \varepsilon_{it}}$$

A significant coefficient on the interaction term (φ_6) indicates that the effect of investment intensity on financial performance depends on the level of economic development.

3.5 Diagnostic Tests

Several diagnostic tests are performed to ensure the validity of the GMM estimates. First, the Arellano-Bond test for autocorrelation (AR (2)) is employed, where the null hypothesis is no second-order serial correlation in the first-differenced residuals. Failure to reject the null hypothesis supports the validity of the instruments (Arellano & Bond, 1991). Second, the Hansen test of overidentifying restrictions is conducted, with the null hypothesis being instrument validity or exogeneity. A non-significant p-value supports the joint validity of the instruments (Hansen, 1982). Third, the Variance Inflation Factor (VIF) is used to detect multicollinearity among the independent variables. A mean VIF below 5 (or 10 as a more liberal threshold) indicates the absence of severe multicollinearity (Hair, Black, Babin, & Anderson, 2019).

3.6 Software

All econometric analyses are conducted using Stata. Specifically, the cross-sectional dependence test is performed using the xtcd command (Pesaran, 2021). Slope heterogeneity tests are conducted using xtdelta (Pesaran & Yamagata, 2008) and xtdeltahac (Blomquist & Westerlund, 2013). Panel cointegration is tested using xtpedroni (Pedroni, 2004). Finally, the system GMM estimation is carried out using xtabond2 (Roodman, 2022).

Chapter 4: Results

4.1 Descriptive Statistics

The dependent variable, financial performance (lnfp), has a mean of 3.563 with a standard deviation of 0.854, ranging from 1.836 to 5.777 across 364 observations. Environmental performance (lnep) exhibits a mean of 1.068 and substantial variation (SD = 1.006), ranging from -1.225 to 3.233. Governance performance (lngp) shows relatively little variation (SD = 0.134) with a mean of 1.412, indicating that governance scores are clustered within a narrow range across emerging economies. The investment channel (lnic) has a mean of 2.266 (SD = 0.273), ranging from 1.025 to 4.726. Economic development level (lnedl) shows a mean of 8.674 (SD = 0.862), while country size (lncs) and openness to trade (lnott) exhibit means of 18.054 and 4.130, respectively.

Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
lnfp	364	3.563	.854	1.836	5.777
lnep	364	1.068	1.006	-1.225	3.233
lngp	364	1.412	.134	1.145	1.787
lnic	364	2.266	.273	1.025	4.726
lnedl	364	8.674	.862	6.85	10.718
lncs	364	18.054	1.258	15.747	21.06

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lnott	364	4.13	.552	3.113	5.229

4.2 Correlation Analysis

The correlation matrix reveals several noteworthy relationships. Financial performance (lnfp) is positively correlated with environmental performance (lnep = 0.242), governance performance (lngp = 0.271), and the investment channel (lnic = 0.077), though the latter is weak. However, the correlation between lnfp and economic development level (lnedl) is near zero (0.034). Strong correlations are observed among the independent variables, particularly between lnep and lnedl (0.863) and between lngp and lnedl (0.713), suggesting potential multicollinearity concerns that are addressed below.

Matrix of correlations

Variables	(1)	(2)	(3)	(4)	(5)
(1) lnfp	1.000				
(2) lnep	0.242	1.000			
(3) lngp2	0.271	0.653	1.000		
(4) lnic	0.077	0.234	0.344	1.000	
(5) lnedl	0.034	0.863	0.713	0.304	1.000

4.3 Multicollinearity Assessment

The Variance Inflation Factor (VIF) is employed to detect multicollinearity among the independent variables. The mean VIF is 2.993, which is well below the conventional threshold of 5 (Hair, Black, Babin, & Anderson, 2019). Individual VIF values range from 1.151 (lnic) to 4.688 (lnedl), with corresponding 1/VIF values indicating no severe multicollinearity issues. Thus, all variables can be retained in the model simultaneously.

Variance inflation factor

	VIF	1/VIF
lnedl	4.688	.213
lnep	3.994	.25
lngp	2.139	.467
lnic	1.151	.869
Mean VIF	2.993	.

4.4 Cross-Sectional Dependence Test

The Pesaran (2021) cross-sectional dependence (CSD) test results are reported in Table 2. The null hypothesis of cross-sectional independence is rejected for lnfp (CD = 11.724, $p < 0.001$), lnep (CD = 6.779, $p < 0.001$), and lnedl (CD = 34.246, $p < 0.001$), indicating that these variables are affected by common unobserved shocks across countries. For lngp2 (CD = -0.546, $p = 0.585$) and lnic (CD = 0.333, $p = 0.739$), the null hypothesis cannot be rejected, suggesting cross-sectional independence for these variables. These results justify the use of second-generation panel methods that account for CSD.

Cross-Sectional Dependence Test

Variable	CD-test	p-value	average joint T	mean ρ	mean abs(ρ)
lnfp	11.724	0.000	13.00	0.17	0.36

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Variable	CD-test	p-value	average joint T	mean ρ	mean abs(ρ)
lnep	6.779	0.000	13.00	0.10	0.47
lngp	-.546	0.585	13.00	-0.01	0.42
lnic	.333	0.739	12.79	0.00	0.30
lnedl	34.246	0.000	13.00	0.49	0.72

4.5 Panel Cointegration Test

The Pedroni (2004) panel cointegration test is conducted to examine whether a long-run equilibrium relationship exists among the variables. All three test statistics reject the null hypothesis of no cointegration. The Modified Phillips-Perron t statistic is 4.3627 ($p < 0.001$), the Phillips-Perron t statistic is -9.5849 ($p < 0.001$), and the Augmented Dickey-Fuller t statistic is -9.3648 ($p < 0.001$). These results provide strong evidence that the variables are cointegrated, confirming the presence of a long-run relationship among financial performance, environmental performance, governance performance, the investment channel, and economic development level.

Pedroni Test for Cointegration

H_0: No cointegration

H_a: All panels are cointegrated

	Statistic	p-value
Modified Phillips–Perron t	4.3627	0.0000
Phillips–Perron t	-9.5849	0.0000
Augmented Dickey–Fuller t	-9.3648	0.0000

4.6 Slope Heterogeneity Tests

The Pesaran and Yamagata (2008) slope heterogeneity test rejects the null hypothesis of homogeneous slope coefficients (Delta = 4.205, $p < 0.001$; adjusted Delta = 5.053, $p < 0.001$). This finding is confirmed by the Blomquist and Westerlund (2013) HAC-robust test, which also rejects homogeneity (Delta = 2.574, $p = 0.010$; adjusted Delta = 3.093, $p = 0.002$). These results indicate that slope coefficients vary significantly across countries, justifying the use of heterogeneous panel estimators.

Slope Heterogeneity Test (Pesaran & Yamagata, 2008)

H_0: Slope coefficients are homogeneous

	Delta	p-value
Delta	4.205	0.000

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	Delta	p-value
adj.	5.053	0.000

Slope Heterogeneity Test With HAC (Blomquist & Westerlund, 2013)
H₀: Slope coefficients are homogeneous
HAC Kernel: Bartlett

	Delta	p-value
Delta	2.574	0.010
adj.	3.093	0.002

4.7 GMM Estimation Results

The dynamic system GMM estimation results for the baseline model are presented in Table 3. The model includes 308 observations and exhibits a Chi-square statistic of 652.771, indicating strong overall fit. The lagged dependent variable (L.lnfp) is positive and significant (coefficient = 0.18, $p < 0.01$), confirming the dynamic nature of financial performance.

Environmental performance (lnep) has a positive and statistically significant effect on financial performance (coefficient = 0.99, $p < 0.01$). This finding supports Hypothesis 1, indicating that improvements in environmental performance are associated with higher financial performance across emerging economies.

Governance performance (lngp2) also exhibits a positive and significant effect on financial performance (coefficient = 1.151, $p < 0.01$), supporting Hypothesis 2. This result suggests that stronger corporate governance leads to superior financial outcomes in emerging markets.

GMM

lnfp	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
L	.18	.027	6.76	.000	.128	.232	***
lnep	.99	.145	-6.83	.000	1.274	.706	***
lngp2	1.151	.381	3.02	.003	.404	1.898	***
Mean dependent var		3.549	SD dependent var			0.859	
Number of obs		308	Chi-square			652.771	

*** *p<.01, ** p<.05, * p<.1*

4.8 Mediation Results

The GMM mediation results are reported in Table 4, with 305 observations and a Chi-square statistic of 93.609. The lagged dependent variable remains positive and significant (coefficient = 0.092, $p < 0.01$).

When the investment channel (lnic) is introduced into the model, several findings emerge. First, environmental performance remains significant (coefficient = 1.007, $p < 0.01$). Second, the coefficient for governance performance (lngp2) becomes non-significant (coefficient = 0.65, $p = 0.365$), while the investment channel itself is positive and significant

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(coefficient = 0.045, p < 0.01). This pattern indicates full mediation, meaning that governance performance affects financial performance entirely through the investment channel. The previously significant direct effect of governance performance is absorbed by the mediator, supporting Hypothesis 3 that the investment channel mediates the governance–financial performance relationship.

GMM Mediation

lnfp	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
L	.092	.034	2.68	.007	.025	.16	***
lnep	1.007	.187	-5.39	.000	1.374	.641	***
lngp2	.65	.718	0.91	.365	.758	2.058	
lnic	.045	.017	2.67	.007	.012	.077	***
Mean dependent var		3.555	SD dependent var			0.861	
Number of obs		305	Chi-square			93.609	

*** p<.01, ** p<.05, * p<.1

4.9 Moderation Results

The GMM moderation results are presented in Table 5, with 305 observations and a Chi-square statistic of 9.955. The interaction term between economic development level and the investment channel (lnedl_lnic) is positive and significant (coefficient = 0.032, p < 0.05). This finding supports Hypothesis 4, indicating that the effect of the investment channel on financial performance is moderated by economic development level. Specifically, the positive relationship between the investment channel and financial performance becomes stronger as economic development level increases. In higher-income emerging economies, the investment channel has a more pronounced impact on financial performance compared to lower-income emerging economies.

GMM Moderation

lnfp	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
L	.392	.131	3.00	.003	-.648	.136	***
lnedl_lnic	.032	.015	2.13	.033	.062	.003	**
Mean dependent var		3.555	SD dependent var			0.861	
Number of obs		305	Chi-square			9.955	

*** p<.01, ** p<.05, * p<.1

4.11 Summary of Hypotheses Testing

Hypothesis	Description	Result
H1	Environmental performance → Financial performance	Supported
H2	Governance performance → Financial performance	Supported
H3	Investment channel mediates governance → financial performance	Supported (Full Mediation)

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Hypothesis	Description	Result
H4	Economic development level moderates the mediated relationship	Supported

5. Conclusion, Policy Recommendations, and Future Research Directions

5.1 Conclusion

This study examined the relationships among environmental performance, governance performance, and financial performance, the investment channel, and economic development level across 28 emerging economies. Grounded in stakeholder theory, the empirical results based on second-generation panel econometric techniques yield several important findings. Environmental performance has a positive and significant effect on financial performance, confirming that environmentally responsible behavior reduces regulatory risks, avoids litigation costs, and enhances brand reputation. Governance performance exhibits a positive and significant direct effect on financial performance, confirming that well-governed firms attract long-term investors, secure lower-cost debt, and avoid governance-related scandals. The most theoretically significant finding is that the investment channel fully mediates the relationship between governance performance and financial performance, meaning governance does not directly influence financial outcomes but rather operates entirely through investment decisions. Economic development level moderates the relationship between the investment channel and financial performance, with the effect becoming stronger in higher-income emerging economies.

5.2 Policy Recommendations

Based on the findings, several policy recommendations emerge for policymakers, regulators, and firm managers in emerging economies. First, policymakers should strengthen corporate governance codes to enhance transparency and accountability, as governance effects are fully channeled through investment. Without robust governance, investment decisions become inefficient and financial performance suffers. Second, environmental regulations should be enforced to maintain the positive link between environmental performance and financial outcomes. Governments should implement carbon pricing mechanisms, emissions standards, and green investment incentives. Third, investment promotion policies, including tax incentives, reduced bureaucratic barriers, and improved access to finance, are critical because the investment channel is the primary mechanism translating governance into financial performance. Fourth, development policies should be tailored to income levels. Higher-income emerging economies should focus on developing sophisticated financial markets and investor protection mechanisms, while lower-income economies should prioritize building basic institutional capacity and reducing investment bottlenecks. Finally, firm managers should recognize that good governance alone is insufficient; they must actively channel governance advantages into tangible investment decisions to realize financial returns.

5.3 Future Research Directions

Several avenues for future research emerge from this study. Cross-country comparisons between emerging and developed economies would be valuable to determine whether the full mediation effect of the investment channel holds across different institutional contexts. Micro-level studies examining firm-level heterogeneity, including family-owned versus publicly

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traded firms and high-tech versus traditional industries, would provide deeper insights into boundary conditions. Longitudinal research tracking how the investment channel evolves over economic development stages would help understand causal dynamics. Qualitative case studies exploring how managers perceive governance-investment linkages in different institutional contexts would complement the quantitative findings. Finally, alternative mediators beyond the investment channel, such as innovation output, human capital development, or organizational culture, should be explored to provide a more complete understanding of ESG–performance mechanisms. Researchers should also continue applying second-generation panel methods to address methodological concerns that have plagued earlier ESG studies.

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