



## THE IMPACT OF INDIVIDUAL ESG COMPONENTS ON COMMERCIAL BANK PERFORMANCE: EVIDENCE FROM VIETNAM

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| ARTICLE INFO                                                                                                                                                                                                                                                                                                                                                                                              | ABSTRACT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
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| <p>DOI:<br/>10.52932/jfmr.v4i4ene.1496</p> <p>Received:<br/>December 26, 2025</p> <p>Accepted:<br/>May 31, 2026</p> <p>Published:<br/>July 25, 2026</p> <p><b>Keywords:</b><br/>Bank performance,<br/>Commercial banks,<br/>Environmental score,<br/>Governance score,<br/>Social score</p> <p><b>Article classification:</b><br/>Research paper</p> <p><b>JEL codes:</b><br/>G21, M14, Q56, G30, G34</p> | <p><b>Purpose</b> – This study examines the distinct effects of the three individual dimensions of Environmental, Social, and Governance (ESG) scoring on the financial performance of Vietnamese commercial banks over the 2015-2023 period. Unlike prior research that relies on aggregate ESG indices, this paper decomposes ESG into its constituent components to identify which pillar drives value and through which performance channel.</p> <p><b>Design/ methodology/ approach</b> – Using a manually constructed ESG scoring framework applied to 27 listed commercial banks in Vietnam, we obtain an unbalanced panel of 243 bank-year observations. Financial performance is measured by Return on Assets (ROA), Return on Equity (ROE), and Net Interest Margin (NIM). Estimation proceeds through Pooled OLS, Fixed Effects (FEM), and Random Effects (REM) models, with the Feasible Generalised Least Squares (FGLS) technique adopted as the primary estimator to correct for heteroscedasticity and serial correlation identified in the data.</p> <p><b>Findings</b> – FGLS results indicate that the Environmental score (Escore) has a significant and positive effect on all three performance measures (ROA, ROE, and NIM) at the 1% significance level. The Social score (Sscore) significantly improves ROA but does not reach statistical significance for ROE or NIM. The Governance score (Gscore) exerts a statistically significant negative effect on ROA, suggesting that the cost burden associated with current governance structures outweighs short-term financial benefits. Bank-level controls confirm that the loan-to-deposit ratio (LDR) enhances performance while non-performing loans (NPL) and, for certain specifications, the liquidity ratio (LR) constrain profitability.</p> |

**Originality/ value** – This study contributes to the sparse literature on decomposed ESG–bank performance nexus in emerging markets by constructing original ESG scores from primary disclosure data. The findings yield differentiated policy recommendations for bank managers and regulators in Vietnam seeking to leverage sustainable finance as a tool for financial performance improvement.

**Practical implications** – Banks that systematically enhance their environmental performance and community-oriented social programmes can expect measurable gains in profitability. Governance initiatives, however, require careful cost–benefit calibration to avoid eroding short-run financial returns.

## 1. Introduction

The integration of Environmental, Social, and Governance (ESG) criteria into banking strategy has become one of the most consequential developments in modern financial management. Globally, ESG-linked assets are projected to exceed USD 53 trillion by 2025, representing approximately one-third of total assets under management (Bloomberg, 2025). Against the backdrop of climate change, social inequality, and growing regulatory pressure, commercial banks face mounting expectations to align their operations with sustainable development principles while simultaneously delivering competitive financial returns.

In Vietnam, this challenge is particularly salient. The country's rapid economic growth, with average GDP expansion exceeding 6% per annum over the study period, coexists with intensifying environmental concerns, widening social disparities, and an evolving regulatory landscape. The government's adoption of Decision No. 167/QĐ-TTg in 2022, which mandates sustainable business practices across the private sector, signals an irreversible policy trajectory. Yet, despite growing practitioner interest, the academic literature examining how ESG performance affects bank-level financial outcomes in Vietnam remains sparse and methodologically limited.

A critical limitation of the existing literature is its reliance on composite ESG scores, which aggregate the three pillars into a single index and thereby obscure the distinct pathways through which environmental stewardship, social responsibility, and governance quality individually influence financial performance. Addressing this gap is both theoretically important, because each ESG dimension operates through different mechanisms, and practically urgent, since managers require granular guidance on where to direct sustainability investments for maximum financial impact.

This paper makes three interrelated contributions. First, we construct original ESG scores for 27 listed Vietnamese commercial banks over 2015-2023 by manually coding sustainability and annual reports against a 24-criterion framework spanning eight environmental (E), nine social (S), and seven governance (G) indicators. Second, we estimate the impact of each ESG pillar separately on ROA, ROE, and NIM using FGLS estimation, which is robust to heteroscedasticity and serial correlation endemic in bank panel data. Third, we provide the first comprehensive, component-level ESG – performance analysis for the Vietnamese banking sector, generating differentiated evidence that advances

both academic understanding and policy formulation.

The remainder of this paper proceeds as follows. Section 2 reviews the theoretical foundations and related empirical literature. Section 3 describes the data, variable definitions, and econometric methodology. Section 4 presents and discusses empirical results. Section 5 concludes with managerial implications and directions for future research.

## **2. Theoretical foundations and literature review**

### ***2.1. Theoretical frameworks***

Three complementary theories underpin the hypothesised relationship between ESG performance and bank profitability. Together, they offer a coherent rationale for why sustainability practices should translate into measurable financial gains.

Stakeholder Theory, first systematised by Freeman (1984, 2015), posits that firms create sustained value not by maximising shareholder returns alone, but by satisfying the legitimate claims of all stakeholders, customers, employees, creditors, communities, and regulators. For banks, proactive ESG engagement strengthens relationships across this broad constituency: it builds customer loyalty, reduces employee turnover, lowers regulatory compliance costs, and enhances access to lower-cost capital from sustainability-oriented investors (Boatright, 2003; Birindelli et al., 2015). Each of these mechanisms has a direct bearing on ROA, ROE, and NIM.

Legitimacy Theory argues that organisations continuously seek social approval, or 'legitimacy', from the communities in which they operate (O'Donovan, 2002; Burlea-Schiopoiu & Popa, 2013). Banks that transparently disclose environmental initiatives and social contributions signal alignment with societal

values, thereby sustaining the social licence necessary for stable operations. Legitimacy, once established, reduces reputational risk and the systemic cost of value destruction during adverse events.

Institutional Theory explains ESG adoption as a response to normative, coercive, and mimetic pressures (Campbell, 2007; Kostova & Marano, 2019). In Vietnam, the enactment of new sustainability regulations, the issuance of green bond guidelines by the State Bank, and the growing influence of international sustainability standards collectively constitute institutional pressures that incentivise banks to internalise ESG practices. As compliance becomes the industry norm, early adopters may capture first-mover advantages in talent attraction, investor relations, and customer acquisition.

### ***2.2. ESG and bank financial performance***

The empirical literature on ESG and bank performance has expanded substantially since the meta-analysis of Friede et al. (2015), which synthesised over 2,000 studies and reported predominantly positive relationships between ESG and financial performance. Within the banking sector specifically, however, findings are nuanced and context-dependent.

At the aggregate ESG level, several studies document a positive association. Zahid et al. (2023) examined European banks before and after COVID-19 and found that higher composite ESG scores correlate with improved ROA and ROE, particularly in the post-pandemic period when sustainability-linked resilience became more visible to investors. Kiss et al. (2024) similarly document that ESG commitment contributes to financial stability and profitability across European Union banks. In the Vietnamese context, Thường et al. (2023) found positive ESG-performance relationships across a sample of Asian banks, while Loan

et al. (2024) reported that ESG disclosure significantly improves the profitability of Vietnamese commercial banks.

Studies that disaggregate ESG into its components reveal greater heterogeneity. On the environmental dimension, Ahmed et al. (2022) confirmed a positive effect of E-scores on bank efficiency in developed markets, a finding echoed by Erheimjamts et al. (2023) for US financial institutions. The positive relationship is typically attributed to operational efficiency gains from energy reduction programmes, the reputational premium attached to green lending, and enhanced access to the rapidly growing pool of green-oriented institutional capital.

Regarding the social dimension, Aras and Hacıoglu Kazak (2022) examined OECD banking sectors and found that S-scores enhance firm value, primarily through customer loyalty and employee engagement effects that reduce operational costs and churn. Birindelli et al. (2015) identified social responsibility as a key driver of banking reputation in European markets, directly supporting ROA improvement.

Governance effects are perhaps the most contested. Menicucci and Paolucci (2023) found that while aggregate ESG scores negatively affected Italian bank performance, individual E, S, and G scores were positively associated with ROA, ROE, and total returns, highlighting that composition matters. Çetenak et al. (2022) applied FGLS to six Turkish banks and found that governance scores positively affect ROA and Tobin's Q. However, Beltratti and Stulz (2012) showed that stronger governance structures can reduce equity returns during crisis periods, suggesting a potential cost of governance intensity. Anginer et al. (2018) similarly documented that governance improvements do not uniformly translate to higher accounting profitability, particularly

when they raise administrative complexity without commensurate transparency benefits.

Taken together, the literature points to two research gaps that this study addresses: (i) the absence of granular E/S/G decomposition evidence in the Vietnamese banking context, and (ii) the lack of FGLS-based, panel-robust estimates that simultaneously examine ROA, ROE, and NIM as complementary performance dimensions.

### **2.3. Research hypotheses**

Drawing on the theoretical frameworks and empirical evidence surveyed above, we formulate the following hypotheses regarding the impact of individual ESG components on financial performance:

*Hypothesis H1:* The Environmental score (Escore) has a statistically significant positive effect on commercial bank performance (ROA, ROE, NIM).

*Hypothesis H2:* The Social score (Sscore) has a statistically significant positive effect on commercial bank performance (ROA, ROE, NIM).

*Hypothesis H3:* The Governance score (Gscore) has a statistically significant positive effect on commercial bank performance (ROA, ROE, NIM).

## **3. Research methodology**

### **3.1. Sample and data**

The study covers 27 Vietnamese commercial banks listed on the Ho Chi Minh City Stock Exchange (HOSE) and the Hanoi Stock Exchange (HNX) over the period 2015 to 2023, yielding an unbalanced panel of 243 bank-year observations. This sample captures approximately 85% of total banking sector assets in Vietnam and includes state-owned commercial banks, joint-stock commercial banks, and foreign-invested banks, ensuring broad representativeness.

Financial performance data (ROA, ROE, NIM) and bank-level control variables (loan-to-deposit ratio, non-performing loan ratio, liquidity ratio, price-to-book ratio) were hand-collected from audited financial statements and annual reports publicly available on bank websites. Macroeconomic variables, GDP growth rate and inflation, were sourced from the World Bank Open Data repository. ESG scores were constructed manually by the research team from sustainability reports and annual reports, as described in Section 3.2.

### 3.2. ESG score construction

Given the absence of commercial ESG ratings for most Vietnamese banks, we adopt a content-analysis approach following Loan et al. (2024) and Cantero-Saiz et al. (2024) to construct original ESG scores. Each bank-year observation is coded against a 24-indicator framework: eight environmental indicators (E1–E8), nine social indicators (S1–S9), and seven governance indicators (G1–G7). Disclosure is scored on a binary basis, 1 if the criterion is reported in the sustainability or annual report and 0 otherwise.

The Environmental sub-score (Escore) covers: water use and recycling (E1), electricity consumption (E2), energy efficiency (E3), greenhouse gas emissions (E4), waste

management (E5), biodiversity (E6), green financing (E7), and ecosystem stewardship (E8). The Social sub-score (Sscore) covers: prohibition of child labour (S1), forced labour (S2), workplace health and safety (S3), customer health and safety (S4), gender equality (S5), career development opportunities (S6), local community engagement (S7), education and training (S8), and customer data protection (S9). The Governance sub-score (Gscore) covers: business ethics (G1), transparency and disclosure (G2), executive compensation (G3), governance structure description (G4), anti-corruption and anti-bribery policies (G5), stakeholder engagement governance (G6), and shareholder rights (G7).

Each pillar score is computed as the proportion of disclosed criteria relative to the maximum achievable, scaled to 100. Formally:

$$\text{Score}_{it} = (\text{Sum of binary indicators achieved} / \text{Total number of indicators}) \times 100$$

This normalisation allows cross-sectional and time-series comparability regardless of how many criteria a bank discloses in any given year.

### 3.3. Variable definitions

Table 1 summarises all variables included in the empirical models, their measurement formulae, expected directional effects, and supporting empirical references.

**Table 1.** Variable definitions and expected signs

| Variable | Definition          | Measurement                                    | Expected Sign |
|----------|---------------------|------------------------------------------------|---------------|
| ROA      | Return on Assets    | Net profit / Total assets                      |               |
| ROE      | Return on Equity    | Net profit / Shareholders' equity              |               |
| NIM      | Net Interest Margin | Net interest income / Average earning assets   |               |
| Escore   | Environmental score | % of E-criteria disclosed (E1–E8) $\times$ 100 | +             |
| Sscore   | Social score        | % of S-criteria disclosed (S1–S9) $\times$ 100 | +             |
| Gscore   | Governance score    | % of G-criteria disclosed (G1–G7) $\times$ 100 | +             |

| Variable | Definition                | Measurement                                          | Expected Sign |
|----------|---------------------------|------------------------------------------------------|---------------|
| LDR      | Loan-to-Deposit Ratio     | Total loans / Total customer deposits                | +/-           |
| NPL      | Non-Performing Loan Ratio | Non-performing loans / Total loans                   | -             |
| LR       | Liquidity Ratio           | (Total assets - Shareholders' equity) / Total assets | +             |
| PB       | Price-to-Book Ratio       | Market price per share / Book value per share        | +/-           |
| GDPgr    | GDP Growth Rate           | Annual real GDP growth (%)                           | +             |
| INF      | Inflation Rate            | Annual CPI inflation (%)                             | +/-           |

### 3.4. Empirical model

To examine the distinct effects of each ESG pillar on bank performance, we estimate the following panel regression model:

$$\text{Performance}_{it} = \alpha + \beta_1 \text{Escore}_{it} + \beta_2 \text{Sscore}_{it} + \beta_3 \text{Gscore}_{it} + \beta_4 \text{PB}_{it} + \beta_5 \text{LDR}_{it} + \beta_6 \text{NPL}_{it} + \beta_7 \text{LR}_{it} + \beta_8 \text{GDPgr}_t + \beta_9 \text{INF}_t + \mu_i + \varepsilon_{it} \quad (1)$$

where  $\text{Performance}_{it}$  represents each of the three dependent variables (ROA, ROE, NIM) for bank  $i$  in year  $t$ ;  $\text{Escore}_{it}$ ,  $\text{Sscore}_{it}$ , and  $\text{Gscore}_{it}$  are the three ESG pillar scores;  $\text{PB}_{it}$ ,  $\text{LDR}_{it}$ ,  $\text{NPL}_{it}$ , and  $\text{LR}_{it}$  are bank-specific controls;  $\text{GDPgr}_t$  and  $\text{INF}_t$  are macroeconomic controls;  $\mu_i$  captures unobserved bank fixed or random effects; and  $\varepsilon_{it}$  is the idiosyncratic error term.

The estimation strategy follows a standard hierarchy. Pooled OLS, Fixed Effects (FEM), and Random Effects (REM) models are first estimated. The appropriate panel model is selected using the F-test (Pooled vs. FEM), followed by the Hausman specification test (FEM vs. REM). Diagnostic tests for heteroscedasticity (modified Wald test:  $\text{chibar}^2$ ) and first-order serial correlation (Arellano-Bond LM test: ALM) are then applied to the preferred model. Where violations are detected, FGLS is adopted as the final estimator following Aitken (1936), as it provides efficient estimates in the presence of both heteroscedasticity and autocorrelation in panel data (Baltagi,

2021). FGLS is particularly appropriate for the present dataset given its moderate cross-sectional dimension ( $N = 27$ ) relative to the time dimension ( $T = 9$ ), consistent with the application context in Çetenak et al. (2022) and Thường et al. (2023). All estimations are conducted in Stata 17.

## 4. Results and evaluation

### 4.1. Descriptive statistics

Appendix 1 (*see Appendix 1 online*) presents descriptive statistics for all variables. Over the 2015-2023 period, the average ROA of sampled banks is 1.43%, with ROE averaging 11.69% and NIM averaging 3.28%. The wide range of ROA (from -0.72% to 18.05%) reflects the heterogeneous performance across state-owned banks, joint-stock banks, and smaller listed institutions. ROE variability is similarly pronounced, ranging from -12.33% to 30.33%, consistent with the highly leveraged capital structure characteristic of Vietnamese banking.

On the ESG dimension, the Environmental score displays the highest mean dispersion (mean = 29.22, standard deviation = 33.17), reflecting the fact that environmental disclosure is at an early stage of adoption and varies enormously across banks. The Social score averages a substantially higher 69.60 (SD = 16.69), confirming that Vietnamese banks have

more mature practices in employee welfare and community engagement. The Governance score is the highest at 85.12 (SD = 16.68), indicating that governance-related disclosures, business ethics codes, anti-corruption statements, and ownership structure descriptions, are relatively institutionalised.

#### 4.2. Correlation analysis

Pairwise correlation analysis (*see Appendix 2 online*) reveals that all three ESG pillar scores are positively correlated with bank performance indicators, though with varying magnitudes. Escore exhibits the strongest correlations with all three performance measures: ROA (0.276), ROE (0.415), and NIM (0.191). Sscore shows positive and significant correlations with ROA (0.242) and ROE (0.267) but is insignificantly correlated with NIM (0.101). Gscore is significantly correlated with ROE (0.287) and NIM (0.146) but not with ROA (0.067). These bivariate patterns foreshadow the more nuanced FGLS findings. Variance Inflation Factors (VIF) for all variables remain below 2.0 (maximum = 1.39 for Escore), confirming the absence of multicollinearity concerns.

#### 4.3. Model selection and diagnostic tests

Table A2 in the Appendix summarises the full sequence of model selection tests for each dependent variable. For ROA, the Wald test ( $F(26, 207) = 12.74$ ) rejects the Pooled OLS in favour of FEM, while the Hausman test fails to reject the consistency of REM coefficients ( $\chi^2 = 12.90$ ), leading to REM as the preferred specification. However, the modified Wald test for heteroscedasticity ( $\text{chibar}^2(01) = 255.32$ ) and the serial correlation test ( $\text{ALM} = 34.92$ ) both register significant violations at the 1% level, necessitating a shift to FGLS as the final estimator. Analogous patterns emerge for ROE and NIM, where Hausman tests favour REM but heteroscedasticity and serial correlation in the residuals mandate FGLS correction. These diagnostics validate the use of FGLS as the primary estimation technique throughout the paper.

#### 4.4. FGLS estimation results

Table 2 presents the FGLS regression results for the three dependent variables. The discussion proceeds pillar by pillar and is integrated across the three performance measures to build a coherent picture.

**Table 2.** FGLS regression results: ESG components and bank performance

| Variable                   | ROA                  | ROE                 | NIM                  |
|----------------------------|----------------------|---------------------|----------------------|
| <b>ESG Variables</b>       |                      |                     |                      |
| Escore                     | 0.00455***<br>(3.17) | 0.0482***<br>(4.21) | 0.00408***<br>(2.63) |
| Sscore                     | 0.00756***<br>(3.06) | 0.0275<br>(1.45)    | 0.00194<br>(0.73)    |
| Gscore                     | -0.00344*<br>(-1.92) | -0.00701<br>(-0.37) | -0.00154<br>(-0.80)  |
| <b>Bank-level Controls</b> |                      |                     |                      |
| PB                         | 0.0719***<br>(2.80)  | 0.0969<br>(0.68)    | 0.0461<br>(1.58)     |
| LDR                        | 0.0160***<br>(5.03)  | 0.146***<br>(5.10)  | 0.0121***<br>(3.32)  |

| Variable                      | ROA                   | ROE                  | NIM                   |
|-------------------------------|-----------------------|----------------------|-----------------------|
| NPL                           | -0.0347***<br>(-3.52) | -0.673***<br>(-4.82) | -0.0540***<br>(-4.94) |
| LR                            | -0.0755***<br>(-4.05) | 0.406***<br>(2.81)   | -0.104***<br>(-5.43)  |
| <b>Macroeconomic Controls</b> |                       |                      |                       |
| GDPgr                         | 0.019<br>(1.61)       | 0.185*<br>(1.92)     | 0.0462***<br>(3.56)   |
| INF                           | -0.00586<br>(-0.20)   | 0.148<br>(0.63)      | -0.0336<br>(-1.06)    |
| Constant                      | 6.044***<br>(3.40)    | -43.39***<br>(-3.23) | 11.17***<br>(6.13)    |
| Observations                  | 243                   | 243                  | 243                   |
| Number of banks               | 27                    | 27                   | 27                    |

**Notes:** z-statistics in parentheses. \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5%, and 10% levels, respectively. All estimates are obtained via Feasible Generalised Least Squares (FGLS) correcting for panel heteroscedasticity and serial correlation. Full diagnostic test results are presented in Table A2.

#### 4.5. Discussion of results

##### *Environmental score (Escore)*

The Environmental pillar emerges as the single most consistent and statistically robust ESG driver of bank performance in this study. Escore is positively and significantly associated with ROA ( $\beta = 0.00455$ ,  $z = 3.17$ ), ROE ( $\beta = 0.0482$ ,  $z = 4.21$ ), and NIM ( $\beta = 0.00408$ ,  $z = 2.63$ ) at the 1% level across all specifications. These findings contradict the initial hypothesis (H1) that environmental commitments would impose net costs, confirming instead the growing evidence that environmental stewardship generates a financial premium, particularly in the Vietnamese context where ESG adoption is still nascent and environmental disclosure differentiates banks meaningfully in the marketplace.

The positive Escore–ROA relationship indicates that banks with stronger environmental practices achieve higher returns per unit of total assets. This is consistent with

operational efficiency gains: banks that track and manage energy consumption, implement green financing products, and reduce waste systematically achieve lower operating costs per transaction, directly expanding the asset–return margin. The Escore–ROE relationship is the largest in magnitude, suggesting that investors increasingly reward environmental commitment through a lower cost of equity, consistent with the growing body of evidence that institutional investors apply ESG screens to bank equity (Friede et al., 2015; Bilyay-Erdogan, 2022). The NIM finding adds a further dimension: environmentally active banks appear to capture a pricing advantage in their lending margins, potentially by attracting green-bond-linked deposits at lower rates or by offering green loans at rates that, while competitive, carry lower default risk over time.

These results are corroborated by Ahmed et al. (2022) and Erheimjamts et al. (2023), who document similar positive E-score effects in developed market banks, and by Cao et

al. (2024), who show that ESG investment improves Chinese bank efficiency, a market whose institutional environment shares some characteristics with Vietnam's transitional economy.

#### *Social Score (Sscore)*

The Social pillar exhibits a positive and statistically significant effect on ROA ( $\beta = 0.00756$ ,  $z = 3.06$ ), providing partial support for H2. However, the Sscore coefficient is insignificant for ROE ( $\beta = 0.0275$ ,  $z = 1.45$ ) and NIM ( $\beta = 0.00194$ ,  $z = 0.73$ ). This pattern, significant for the asset-return measure but not for equity or margin measures, is theoretically coherent and practically meaningful.

The ROA effect of Sscore likely operates through two primary channels. First, strong social practices, particularly employee safety, gender equality, and training investment, reduce workforce turnover and absenteeism, directly lowering human resource costs that represent a substantial share of bank operating expenses. In an industry as service-intensive as banking, these savings feed directly into ROA. Second, community engagement and customer data protection practices deepen customer loyalty, supporting deposit stability and reducing the cost of liability funding, which again benefits asset returns.

The absence of a significant Sscore effect on ROE may reflect the fact that equity investors, while valuing environmental signals, do not yet discount or premium Vietnamese bank equities based on social dimension scores alone. This is plausible in a market where ESG-specific equity screening by domestic institutional investors is still underdeveloped. Similarly, the null NIM result may indicate that social initiatives do not yet command a premium in loan pricing or affect the cost of deposit funding to a degree detectable in the current data. The finding aligns with Aras and Hacıoglu Kazak (2022),

who found that social factors enhance firm value primarily through internal operational channels rather than through market pricing mechanisms.

#### *Governance score (Gscore)*

The Governance pillar produces the most theoretically provocative result: Gscore has a statistically significant negative effect on ROA ( $\beta = -0.00344$ ,  $z = -1.92$ ), while remaining insignificant for ROE ( $\beta = -0.00701$ ,  $z = -0.37$ ) and NIM ( $\beta = -0.00154$ ,  $z = -0.80$ ). This finding rejects the directional expectation in H3 and warrants careful interpretation.

The negative Gscore – ROA relationship does not imply that good governance is undesirable. Rather, it reflects the short-run cost structure of governance investment. The governance criteria scored in this study, including executive compensation transparency, anti-corruption programmes, stakeholder engagement protocols, and formal governance structure disclosures, all require substantial administrative and compliance expenditures. Unlike environmental programmes that may generate near-term efficiency savings, or social programmes that directly reduce labour costs, governance enhancements are primarily transparency and accountability mechanisms whose financial benefits materialise over longer time horizons through lower cost of capital, reduced regulatory penalties, and enhanced strategic decision quality.

This interpretation is consistent with Beltratti and Stulz (2012), who showed that governance improvements reduce equity returns in certain periods by constraining managerial flexibility, and with Anginer et al. (2018), who found that governance reforms impose net short-term costs before longer-run benefits accrue. The Vietnamese regulatory context is particularly relevant here: the governance criteria we score include several items that the State Bank of

Vietnam only recently mandated for listed banks, meaning many banks are still in the investment phase of governance infrastructure construction, with costs being booked before revenues from enhanced credibility arrive.

Importantly, the null result for ROE and NIM suggests that governance costs are concentrated in administrative overheads that reduce asset returns but have not yet penetrated margin compression or equity repricing. This implies that as governance quality becomes the baseline standard rather than a differentiating factor, its cost impact will diminish and positive effects may emerge, a dynamic consistent with the institutional theory perspective that early movers bear adoption costs while subsequent adopters can leverage institutional templates at lower cost (Campbell, 2007).

#### *Control variable analysis*

Among bank-level controls, the Loan-to-Deposit Ratio (LDR) is positively and significantly associated with all three performance measures (ROA:  $\beta = 0.016$ , ROE:  $\beta = 0.146$ , NIM:  $\beta = 0.012$ ). This confirms that more efficient deployment of deposit funding into loan assets creates value across all profitability dimensions, consistent with Nguyễn (2013) and Putra et al. (2022). Banks that intermediate deposits into credit more aggressively, within prudential limits, earn higher returns on assets, equity, and interest margins simultaneously.

The Non-Performing Loan ratio (NPL) carries a robustly negative sign for ROA ( $\beta = -0.035$ ), ROE ( $\beta = -0.673$ ), and NIM ( $\beta = -0.054$ ), confirming that credit quality deterioration is the single largest drag on financial performance in Vietnamese banking. The particularly large ROE coefficient implies that NPL problems disproportionately erode equity returns, a reflection of the provisioning charges that flow directly to the income statement and reduce net profit available to shareholders.

The Liquidity Ratio (LR) presents an interesting asymmetry: it is negatively associated with ROA ( $\beta = -0.076$ ) and NIM ( $\beta = -0.104$ ) but positively associated with ROE ( $\beta = 0.406$ ). The ROA and NIM results indicate that holding excess liquid assets comes at an opportunity cost, liquid assets yield lower returns than loans, compressing both asset returns and interest margins. However, the positive ROE effect suggests that investors associate higher liquidity with lower bankruptcy risk, implying a lower required return on equity that mechanically inflates ROE.

GDP growth (GDPgr) is positively and significantly associated with ROE ( $\beta = 0.185^*$ ) and NIM ( $\beta = 0.046$ ), but insignificant for ROA, suggesting that macroeconomic expansion primarily transmits through loan demand and interest rate dynamics rather than through overall asset quality. Inflation (INF) does not reach statistical significance in any specification, indicating that the Vietnamese banking sector's profitability is relatively well insulated from moderate inflationary fluctuations over the study period.

## **5. Conclusions and managerial implications**

### **5.1. Conclusions**

This study investigates the disaggregated impact of Environmental (E), Social (S), and Governance (G) scores on the financial performance of 27 listed Vietnamese commercial banks over 2015-2023, using manually constructed ESG scores and FGLS estimation robust to heteroscedasticity and serial correlation.

The principal findings can be summarised as follows. First, the Environmental score (Escore) is positively and robustly associated with all three performance dimensions, ROA, ROE, and NIM, at the 1% significance level, making it the dominant ESG performance driver in

this context. Second, the social score (Score) significantly improves ROA but does not exert a statistically meaningful effect on ROE or NIM, suggesting that social practices benefit operational efficiency but have not yet been priced into equity or interest margin channels. Third, the Governance score (Gscore) has a statistically significant negative effect on ROA at the 10% level, indicating that the current configuration of governance investments imposes short-run financial costs that outweigh measurable benefits, though this relationship is insignificant for ROE and NIM.

These findings make three contributions. They provide the first FGLS-based, pillar-decomposed ESG-performance evidence for Vietnamese banking, thereby responding to an identified gap in the emerging market finance literature. They demonstrate that aggregate ESG indices mask important heterogeneity across pillars, reinforcing the importance of disaggregated analysis. And they offer actionable guidance on which ESG dimensions most efficiently convert investment into financial returns in the Vietnamese banking context.

**Table 4.** Summary of hypothesis testing results

| Hypothesis | Predictor            | Expected direction | Result                                        | Decision                      |
|------------|----------------------|--------------------|-----------------------------------------------|-------------------------------|
| H1         | Escore → Performance | Negative           | Positive (ROA, ROE, NIM) <sup>***</sup>       | Rejected (direction reversed) |
| H2         | Sscore → Performance | Positive           | Positive (ROA) <sup>***</sup> ; ns (ROE, NIM) | Partially supported           |
| H3         | Gscore → Performance | Positive           | Negative (ROA)*; ns (ROE, NIM)                | Rejected                      |

**Notes:** ns = not statistically significant; <sup>\*\*\*</sup>, \* denote 1% and 10% significance, respectively.

## 5.2. Managerial implications

For bank executives, the primacy of the Environmental pillar is the most actionable takeaway. Environmental investment, particularly in energy efficiency, green financing products, waste management, and climate risk integration, generates returns across all three profitability dimensions simultaneously. Banks should treat environmental strategy not as a compliance obligation but as a core financial strategy, especially given Vietnam's intensifying regulatory environment and the growing market for green-labelled financial products. Priority actions include publishing annual greenhouse gas inventories, launching green loan portfolios linked to measurable environmental outcomes, and embedding energy cost tracking into operational dashboards.

The Social pillar's ROA benefit warrants sustained investment in employee welfare, training, and community programmes. Banks that invest in human capital quality observe lower operating costs per unit of assets. Social strategy should be connected directly to workforce retention metrics, customer satisfaction scores, and community engagement reporting, all of which are increasingly scrutinised by institutional investors and regulators.

The negative Governance – ROA association calls for a strategic review of governance initiative design rather than governance retrenchment. Banks should pursue a cost-efficiency logic when designing governance structures: ensure that governance disclosures are integrated into existing reporting workflows to minimise administrative duplication

and implement executive compensation frameworks that directly tie remuneration to long-term ESG performance targets rather than creating a separate governance cost layer. Over time, as governance quality becomes standard across the sector, the cost-advantage erosion should reverse.

For banking regulators, the findings reinforce the case for integrating ESG performance metrics into supervisory frameworks and credit guidance, as the empirical evidence confirms that ESG, particularly the Environmental dimension, is not at odds with financial soundness. Mandatory sustainability disclosure requirements should be expanded, accompanied by technical guidance to help smaller listed banks develop structured reporting at manageable cost.

For investors, the results indicate that Environmental scores offer the clearest signal of forward-looking financial performance in Vietnamese bank equities, while Social scores provide complementary information about operational quality. Governance scores should be evaluated with awareness of the stage of governance development, using trend direction rather than absolute level as the more informative signal.

### **5.3. Limitations of the study**

This study has several limitations that open avenues for future research. *First*, the ESG scoring methodology, while carefully designed, involves binary coding of disclosure items and may not fully capture the depth or quality of ESG implementation. Future research could adopt weighted or continuous scoring approaches that differentiate between substantive and symbolic ESG disclosure.

*Second*, the study covers 27 listed banks, which, while representing the majority of

banking sector assets, excludes unlisted banks and non-bank financial institutions. Extending the analysis to a broader financial sector panel would test the generalisability of the findings.

*Third*, the study period (2015-2023), while substantial, includes significant structural breaks, most notably the COVID-19 pandemic (2020-2021) and the macroeconomic volatility of 2022-2023. Future research could deploy regime-switching or interaction models, as in Bouattour et al. (2024), to examine whether ESG effects on bank performance vary across these structural states.

*Fourth*, potential reverse causality, whereby high-performing banks can afford greater ESG investment, is not formally addressed with instrumental variable techniques in this study. Future work should explore plausible instruments for ESG adoption in Vietnamese banking, potentially leveraging regulatory event windows as natural experiments.

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### **Data availability**

Data supporting the findings of this study are available upon reasonable request to the corresponding author. Raw ESG coding matrices, financial panel data, and Stata do-files are retained in the authors' repository and may be shared subject to data provider restrictions.

### **AI usage statement**

The authors declare that no generative AI tools were used in conducting the research, analysing the data, or writing the manuscript.

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