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THE IMPACT OF ENVIRONMENTAL, SOCIAL AND GOVERNANCE (ESG) DISCLOSURE ON THE FINANCIAL PERFORMANCE OF COMMERCIAL BANKS: EMPIRICAL EVIDENCE IN ASEAN+3

NGUYEN Minh Hieu[a*], LUONG Dac Duc, NGUYEN Tra Giang, NGUYEN Hoang Vinh and PHAM Tuan Anh[b*]

[ab]Thuongmai University

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ABSTRACT

This study investigates the impact of ESG disclosure on the financial performance of commercial banks in the ASEAN+3 regions during 2015–2024. While prior research provides mixed evidence, empirical findings remain limited for emerging markets characterized by heterogeneous institutional environments and bank-dominated financial systems. We construct a unique, endogenous ESG disclosure index through content analysis of annual and sustainability reports following GRI standards. Utilizing Bayesian panel regression to address cross-country heterogeneity and parameter uncertainty, our results indicate that ESG disclosure has a positive and economically significant effect on bank financial performance, specifically ROA and ROE. Posterior probability estimates consistently support the hypothesis that enhanced ESG transparency reduces information asymmetry and strengthens market trust. The findings suggest that ESG disclosure functions as a strategic informational mechanism, signaling long-term value creation in emerging banking systems.

KEYWORDS: ESG disclosure; bank performance; Bayesian regression; ASEAN+3.

1.0 INTRODUCTION

The relationship between Environmental, Social, and Governance (ESG) factors and financial performance remains empirically unsettled, particularly within emerging banking systems characterized by pronounced institutional heterogeneity and information asymmetry. While prior studies document mixed evidence, limited attention has been given to ESG disclosure as an autonomous informational mechanism, as opposed to the more common reliance on third-party ESG performance scores.

This study examines whether ESG disclosure enhances bank financial performance in the ASEAN+3 regions. By employing a hand-collected disclosure index constructed through GRI-aligned content analysis of 61 commercial banks over the 2015–2024 periods, the analysis applies Bayesian panel regression to effectively account for cross-country heterogeneity and parameter uncertainty.

The empirical results demonstrate that ESG disclosure exerts a positive and economically significant effect on profitability metrics, notably ROA and ROE. Posterior probability estimates consistently support the hypothesis that $\beta > 0$, suggesting that enhanced transparency serves to mitigate information asymmetry and strengthen market legitimacy. This study extends Signaling Theory by elucidating how voluntary ESG disclosure functions as a value-relevant mechanism in bank-dominated economies, providing a strategic pathway for long-term value creation in emerging financial markets.

2.0 LITERATURE REVIEW AND THEORETICAL FRAMEWORK

2.1. Theoretical Foundation

The conceptual nexus between Environmental, Social, and Governance (ESG) disclosure and financial performance is primarily anchored in a triad of seminal theories: Stakeholder Theory, Signaling Theory, and Legitimacy Theory. Stakeholder Theory, as advanced by Freeman (1984), posits that a firm's long-term success is contingent upon the effective management of relationships with a broad spectrum of constituents, including customers, employees, and regulators, rather than a narrow focus on shareholder wealth maximization. In the banking sector, where trust and reputation are fundamental institutional assets, ESG disclosure serves as a strategic instrument to balance these multifaceted interests. By proactively addressing non-financial concerns, banks can effectively reduce monitoring costs and mitigate stakeholder conflicts that might otherwise impair financial stability and long-term viability.

Complementary to this perspective, Signaling Theory provides a robust framework for understanding the informational value of ESG transparency. Building on the foundational work of Spence (1973), this theory suggests that in markets characterized by high information asymmetry—such as the heterogeneous banking environments of the ASEAN+3 region—managers are motivated to "signal" their superior quality through voluntary disclosures. By providing detailed, hand-collected ESG information based on international standards, banks can signal a sophisticated risk management capacity and a superior strategic vision. This reduction in information opacity is hypothesized to lower the cost of capital and enhance the bank's ability to attract sustainable, long-term investments.

Furthermore, Legitimacy Theory of Max Weber (1947) suggests that organizations are bound by a "social contract," whereby their continued operation is dependent on the perception that they adhere to the norms and values of society. For banks operating in the ASEAN+3 region, ESG disclosure represents a strategic response to escalating societal and regulatory pressures regarding sustainability. By aligning their reported activities with Environmental, Social, and Governance pillars, these institutions seek to maintain their "license to operate" and protect their reputational capital from potential legitimacy threats. Together, these three theories suggest that ESG disclosure is not merely a compliance burden but a strategic mechanism for value preservation and creation in a bank-dominated financial system.

2.2 Disclosure and Bank Financial Performance: The Empirical Nexus ESG

The research strand supporting the 'value' hypothesis posits that ESG disclosure exerts a positive and economically significant impact on a bank's financial performance through mechanisms of reduced information asymmetry, improved capital access, and enhanced market confidence.

At the global level, Giese et al. (2019) identify three primary transmission channels linking ESG to financial value: (i) improved cash flow due to competitive advantage, (ii) a reduction in idiosyncratic risk, and (iii) a lower cost of capital resulting from improved valuation. This evidence implies that ESG transparency helps banks optimize their capital structure and enhance risk-adjusted profitability. Similarly, Yuen et al. (2022), using System GMM on a sample of 487 banks across 51 countries, demonstrated that once an initial investment threshold is crossed, ESG performance exerts a positive impact on profitability, reflecting long-term economic benefits.

In Europe, Carnini Pulino et al. (2022) confirmed that ESG disclosure scores share a positive relationship with the EBIT of listed companies following the implementation of Directive 2014/95/EU, particularly within the Environmental and Social pillars. Concurrently, Krueger et al. (2024) demonstrated that mandatory disclosure regulations improve stock liquidity and reduce bid-ask spreads, thereby lowering the cost of capital - a core factor in enhancing financial performance.

In Asia and emerging markets, Do Thi Mong Thuong et al. (2023) documented the positive impact of Social and Governance activities on the financial performance of listed banks, especially among large-scale institutions. Nguyen Bich Ngan (2025) further affirmed a causal relationship between ESG and both credit quality and credit loss provisions, contributing to improved ROA and NIM.

Within the Vietnamese context, Duong Thu Phuong et al. (2025) proved that ESG transparency has a positive and statistically significant impact on bank value, after controlling for size, age, leverage, and non-performing loans.

Synthesizing the empirical evidence indicates that ESG disclosure is not merely an ethical or compliance matter, but rather creates substantive economic value for banks through improved market valuation, a reduced cost of capital, enhanced asset quality, and increased sustainable profitability. Therefore, the hypothesis regarding the positive impact of ESG disclosure on bank financial performance rests upon a robust theoretical and empirical foundation within modern financial and banking literature.

3.0 RESEARCH MODEL AND HYPOTHESES

3.1 Research Model

Based on the objective of evaluating the impact of ESG information disclosure on the financial performance of commercial banks in the ASEAN+3 region, the study constructs a basic econometric model in the form of panel data as follows:

$$FP_{it} = \alpha + \beta ESG_{it} + \gamma X_{it} + \delta Z_{ct} + \mu_i + \lambda_t + \varepsilon_{it}$$

Where:

- FP_{it} is the dependent variable measuring the financial performance of banks i at time t, represented by ROA, ROE, and NIM, respectively.
- ESG_{it} is the ESG disclosure index of bank i at time t, including:

  + Composite ESG index
  + Or component indices of Environment (E), Society (S), and Governance (G) in extended models.

- X_{it} is a vector of variables controlling the bank's internal characteristics (size, credit risk, etc.)
- Z_{ct} is a vector of variables controlling the country's macroeconomics (GDP growth, inflation)
- μ_i reflects specific, unobservable factors specific to the bank.
- λ_t is the general time effect
- ε_{it} is the random error.

3.2 Research hypothesis and data

Based on theoretical frameworks and research overview, this study tests the following hypotheses:

H1: ESG disclosure has a positive and economically significant impact on the financial performance of banks (ROA, ROE, and NIM).

H2: Environmental Performance Reporting (EPL) has a positive impact on a bank's financial results.

H3: Social media disclosure (SPL) has a positive impact on a bank's financial performance.

H4: The disclosure of governance information (GPL) has a positive impact on the financial results of banks.

H5: Economic growth (GDP) has a positive impact on the financial performance of banks.

H6: The non-performing loan (NPL) ratio has a negative impact on a bank's financial results.

H7: Bank size (SIZE) has a positive impact on a bank's financial performance.

H8: Inflation (INF) has a negative impact on the financial results of banks.

H9: The impact of ESG disclosures on bank financial performance changed during the COVID-19 pandemic (ESG × COVID interaction variable).

H10: The capital adequacy ratio (CAR) has a positive impact on a bank's financial performance.

H11: The relationship between ESG disclosure and bank financial performance differs between Islamic banks (ISLAMIC = 1) and conventional banks.

The study sample includes both traditional commercial banks and Islamic banks to examine differences in governance structures and the mechanisms by which ESG information disclosure impacts the situation.

The indicators reflecting financial results include:

- ROA (Return on Assets)
- ROE (Return on Equity)
- NIM (Net Interest Margin)

The primary independent variable is the ESG disclosure index, constructed through an analysis of the content of each bank's annual report and sustainability report according to the GRI framework. Then, Principal Component Analysis (PCA) is used to synthesize the three pillars of Environment (E), Society (S), and Governance (G) into a composite ESG index.

Control variables include the bank's intrinsic characteristics (SIZE, CAR, NPL) and macroeconomic factors (GDP, INF). Macroeconomic data is extracted from the World Bank Open Data database to ensure consistency and reliability across countries.

4.0 RESULT AND DISCUSSION

The ROA variable has a mean value of 1.1443, indicating relatively positive profitability on total assets for the banks in the sample. However, the standard deviation is 0.8265, along with a minimum value of -3.08, reflecting significant differences in operational efficiency among banks. Some banks recorded negative ROA, suggesting periods of poor performance or adverse impacts from macroeconomic conditions. The ROE variable has a mean value of 11.3996, reflecting a fairly good return on equity. However, the relatively large standard deviation (5.6115) and minimum value of -40.34 indicate significant variability in the efficiency of equity utilization among banks. This implies that ROE is more sensitive to financial shocks and operational risks than ROA. The NIM variable has a mean value of 2.9647, reflecting the relatively stable interest rate spread in the financial intermediation activities of banks. The standard deviation of 1.5126 indicates that certain differences still exist in business strategies and asset-capital structure among banks. The smallest (0.68) and largest (9.45) values show significant differences in the ability to generate income from lending activities. The ESG variable has a mean value of 13.0598, with a standard deviation of 3.5199, reflecting a fairly average level of implementation of environmental policies in the study sample. The relatively wide range, from 3.4928 to 17.315, shows significant differences in the level of commitment and implementation of environmental policies among banks. This facilitates the analysis of the impact of ESG on financial performance in subsequent regression models.

Furthermore, the results presented in Table 3 reflect several issues that need consideration and clarification. Firstly, there is suspicion of cross-sectional dependence (CD-Test), a problem that always needs to be considered in the context of panel data. Ignoring this aspect will lead to biased estimates, seriously affecting the research results. To properly assess this issue, we used Pesaran's (2021) cross-sectional dependence test. The results show that all variables have strong statistical significance ($p < 0.01$), indicating a notable presence of cross-dependency. Next, for the normality test of the dataset, we applied the Jarque-Bera test. The test results show that the variables do not follow a normal distribution ($p < 0.01$). This suggests that the data may exhibit skewness or kurtosis, meaning the distribution is asymmetric and may have outliers or heavy tails. Therefore, this study requires a robust estimation method to overcome this problem. Thirdly, we suspect multicollinearity among the variables, which could lead to bias and reduce the accuracy of the results. Therefore, we conducted VIF tests for the variables; the results showed an average VIF value of 1.2, below the threshold of 2, indicating the absence of multicollinearity among the variables. From considering these tests, choosing the appropriate model becomes a crucial issue. Using methodologies such as OLS, FEM, or REM would lead to biases in producing accurate results. Therefore, we used a Bayesian regression model, which allows for a probabilistic approach through posterior distributions without necessarily adhering to a strict normal distribution. Furthermore, estimating the model through prior distributions is done using Bayesian inference, thereby improving the accuracy of the research results. In addition, the Bayesian method also eliminates model problems such as endogeneity, heteroskedasticity, or autocorrelation (Thach, 2020).

Table 1 Descriptive Statistics

Variables	Mean	Std. Dev	Minimum	maximum	CD Order - Test	Jarque-Bera Test
LONG	1.1443	.8265	-3.08	4.4	19.70***	119.19***
ROE	11.3996	5.6115	-40.34	31.3	20.41***	125.76***
HIM	2.9647	1.5126	0.68	9.45	9.70***	112.96***
ESG	13.0598	3.5199	3.4928	17.3160	97.90***	44.86***
GDP	3.6831	3.6877	-17.9	9.8	67.56***	250.48***
NPL	2.1934	1.7582	0.02	13.63	1.34***	316.04***
SIZE	18.7705	5.5669	-0.2	35.52	80.02***	60.43***
INF	3.4785	5.3662	-1.6	31.23	39.18***	346.05***
COVID	0.2377	.4260	0.0000	1.0000	119.24***	85.76***
CIR	46.9562	12.9736	19.37	88.19	5.32***	10.59 ***
LTD	82.2901	15.6373	42.41	203.45	8.58***	77.97***
VIF – Test						
Maximun: VIF of variables			1.20			
Maximun: 1/VIF of variables			0.896019			
Mean VIF max			1.39			

(Source: Calculations by the authors)

In addition, we conducted a correlation matrix test to assess the impact of variables in the dataset and evaluate the phenomenon of multicollinearity. The results of the correlation matrix are presented in Table 3.4, summarizing the main findings. The test results show that the coefficients between the independent variables are all at low to medium levels, with no pair of variables correlated exceeding the threshold of 0.8 – a serious level of multicollinearity. This result implies that the dataset does not exhibit serious multicollinearity, and all research variables were included in the subsequent regression model.

Table 2 Correlation Test

	OLD	GDP	NPL	SIZE	INF	COVID	CIR	LTD
OLD	1.0000							
NPL	-0.0823	1.0000						
NPL	-0.0268	-0.1869	1.0000					
SIZE	0.1801	0.1183	-0.2141	1.0000				
INF	0.0405	0.0362	0.2612	0.0092	1.0000			
COVID	0.2000	-0.4454	0.0923	-0.0435	-0.1385	1.0000		
CIR	-0.1128	-0.2255	0.1369	0.0504	0.1279	-0.0149	1.0000	
LTD	0.1114	0.1053	-0.1576	-0.0105	-0.2050	0.0080	-0.2328	1.0000

(Source: Calculations by the authors)

The Bayesian regression results in Table 3 show that ESG information disclosure is closely related to bank performance, measured through ROA, ROE, and NIM. The Bayesian model simulated the regression 12,500 times, each time obtaining a regression coefficient through the Metropolis-Hasting algorithm, from which the results of the coefficients were interpreted as the mean, standard deviation, and Monte Carlo standard error (MCSE). According to Flegal et al. (2008), for the MCMC series to converge well, the MCSE approaching 0 is a prerequisite, ideally less than 5% with Std. Dev, and a minimum acceptable level of 6.5%. The model test results are presented in Table 3.4, summarizing the main findings. The lowest mean acceptance rate is 1.0000, exceeding the minimum requirement of 0.1, and the smallest efficiency is 0.8716, exceeding the threshold of 0.01. Furthermore, the MCSE standard errors of all parameters are very small, reflecting that the model meets the necessary criteria. In addition, Table 3 shows that the maximum value of the model is 1, which is less than the threshold of 1.1, demonstrating good convergence of the MCMC series (Levy & Mislevy, 2017). Therefore, the Bayesian model is stable and reliable.

Regarding the direct impact of ESG disclosure, the results show that the ESG variable has a positive coefficient and is statistically significant for both ROA and ROE, with probabilities of occurrence of 95.07% and 99.99%, respectively (Table 4). Specifically, a higher level of ESG disclosure is associated with improved profitability on total assets as well as on equity of the bank. This finding implies that banks that are more transparent in environmental, social, and governance aspects not only enhance their image and reputation but also translate non-financial benefits into concrete financial results. Within the framework of stakeholder theory and signaling theory, ESG disclosure acts as a positive signal of governance quality and sustainability, thereby helping to reduce information asymmetry, strengthen investor and customer confidence, and contribute to reducing the long-term cost of capital. For NIM, although the ESG coefficient remains positive, the impact is relatively smaller (0.0052) compared to ROA and ROE, with a probability of occurrence of 62.08% (Table 4). This indicates that ESG disclosure does not strongly affect net interest intermediation activities, which depend primarily on interest rate structure and credit policy, but rather has a more pronounced impact through overall efficiency, cost control capabilities, and risk management quality. In other words, ESG seems to play a role as a factor enhancing the overall operational efficiency of banks rather than directly expanding interest margins.

Table 3 Bayesian Regression Results

Variables	Dependent variable: ROA			ROE dependent variable			Dependent variable NIM		
	Mean	Std. Dev.	MCSE	Mean	Std. Dev.	MCSE	Mean	Std. Dev.	MCSE
ESG	0.0147	0.0089	0.0000	0.1427	0.0604	0.0002	0.0052	0.0169	0.0000
ESG_CV	-0.0115	0.0055	0.0000	-0.0473	0.0389	0.0001	-0.0016	0.0106	0.0000
GDP	0.0431	0.0094	0.0000	0.5060	0.0650	0.0002	0.1006	0.0179	0.0000
NPL	0.0090	0.0183	0.0000	0.0384	0.1247	0.0005	0.1557	0.0347	0.0001
SIZE	0.0222	0.0056	0.0000	0.1488	0.0380	0.0001	0.0727	0.0106	0.0000
INF	-0.0089	0.0059	0.0000	0.1207	0.0415	0.0001	0.0117	0.0113	0.0000
CIR	-0.0215	0.0024	0.0000	-0.0770	0.0150	0.0000	-0.0095	0.0045	0.0000
LTD	-0.0016	0.0019	0.0000	0.0455	0.0113	0.0000	0.0113	0.0036	0.0000
CONS	1.5684	0.2595	0.0011	4.1986	0.9022	0.0038	0.4042	0.0020	0.0020
acceptance rate	1.0000			1.0000			1.0000		
efficiency: min	0.9710			0.8716			0.9713		
Max Gelman–Rubin Rc	1.0000			1.0000			1.0000		

(Source: Calculations by the authors)

Table 4 Probability of the impact of the variables

Variables	Y = ROA			Y = ROE			Y = NIM		
	Mean	Std. Dev.	MCSE	Mean	Std. Dev.	MCSE	Mean	Std. Dev.	MCSE
{Y:ESG} > 0	0.9507	0.2164	0.0021	0.9909	0.0948	0.0009	0.6208	0.4851	0.0048
{Y:ESG_CV}< 0	0.9817	0.1339	0.0013	0.8879	0.3153	0.0031	0.5599	0.4963	0.0049
{Y:GDP} > 0	0.9999	0.0015	0.0000	1.0000	0.0000	0.0000	1.0000	0.0000	0.0000
{Y:NPL} > 0	0.6885	0.4630	0.0046	0.6209	0.4851	0.0048	0.9999	0.0019	0.0000
{Y:SIZE} > 0	0.9999	0.0060	0.0000	0.9999	0.0067	0.0000	1.0000	0.0000	0.0000
{Y:INF} < 0	0.9342	0.2477	0.0024						
{Y:INF} > 0				0.9981	0.0425	0.0004	0.8497	0.3573	0.0035
{Y:CIR} < 0	1.0000	0.0000	0.0000	0.9999	0.0003	0.0000	0.9826	0.1306	0.0013
{Y:LTD} > 0				0.9999	0.0053	0.0000	0.9991	0.0291	0.0002
{Y:LTD} < 0	0.8001	0.3998	0.0039						
{Y:CONS} > 0	1.0000	0.0000	0.0000	0.9999	0.0012	0.0000	1.0000	0.0000	0.0000

(Source: Calculations by the authors)

5.0 CONCLUSION

5.1 Summary of research process and results

This study was conducted to analyze the impact of ESG disclosure on the financial performance of commercial banks in the ASEAN+3 region during the period 2015–2024. Panel data included 61 banks with 610 annual observations collected from audited financial statements and sustainability reports of each bank. The ESG disclosure index was constructed using content analysis based on three pillars: Environment (E), Society (S), and Governance (G), and then aggregated using principal component analysis (PCA). A Bayesian regression model was used to estimate the relationship between ESG and financial performance, measured by ROA, ROE, and NIM, while controlling for bank characteristics and macroeconomic variables.

The empirical results show that ESG disclosure has a positive and significant impact on ROA and ROE, with a posterior probability exceeding 95%, while the impact on NIM is positive but with a lower degree of certainty. The posterior distribution of the ESG coefficient is mainly concentrated in the positive region, reinforcing the evidence that ESG transparency is associated with higher bank profitability. Thus, the study confirms that ESG disclosure is not only a matter of compliance but actually creates financial value in the ASEAN+3 banking system.

5.2 Limitations of the study

The study still has some limitations. Firstly, the ESG index is based on published data, so it may be affected by reporting quality and the potential for "green washing." Secondly, the scope of the study is limited to a few countries and a specific time period, thus the generalizability of the results may be limited. Thirdly, the study focuses on financial accounting efficiency and has not extended to market value or long-term efficiency. Furthermore, although the Bayesian model has helped to enhance probabilistic analysis, the study has not explored in depth the mediating mechanisms such as cost of capital or credit risk.

5.3 Future research directions

Given these limitations, future research could develop in several directions. First, expanding the research sample to include more geographical areas and longer time periods to test the stability of the results. Second, incorporating market measures such as Tobin’s Q or stock prices to more comprehensively assess the value of ESG. Third, analyzing mediating and regulating mechanisms in greater depth, such as the role of ownership structure, governance quality, or the level of development of the financial market. Fourth, research could utilize more advanced quantitative methods such as dynamic modeling or causal analysis to strengthen the endogenousity of the results.

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