2528-9705

Journal of Organizational Behavior Research

Vol.: 11, Is.: 4, Year: 2026, Pages: 16-28

https://doi.org/10.51847/hUXUxgB6BA

Available online

https://odad.org/

ESG and Financial Firms' Operational Performance in ASEAN: Evidence of an Inverted U-shaped Relationship

Le Ba Ngoc Khanh[1], Le Thanh Tam[1]*, Tran Phuong Thao[2], Tran Minh Vu[3]

[1]School of Banking and Finance, National Economics University, Hanoi, Vietnam.
[2]School of Advanced Education Programs, National Economics University, Hanoi, Vietnam.
[3]College of Business, National Economics University, Hanoi, Vietnam.

***Corresponding Author**
E-mail: tamlt@neu.edu.vn

ABSTRACT

This study examines the nonlinear effects of Environmental, Social, and Governance factors on the operational performance of 64 financial firms across five ASEAN countries (Vietnam, Thailand, Malaysia, Indonesia, and the Philippines) over the period 2016-2022. Using feasible generalized least squares, the analysis accounts for key econometric issues, including heteroskedasticity, cross-sectional dependence, slope heterogeneity, and multicollinearity. The results show that ESG has a positive coefficient. At the same time, its squared term is negative and statistically significant in both the ROE and ROA models, confirming an inverted U-shaped relationship between ESG and firm performance. The Lind & Mehlum U-test further validates this nonlinear pattern, with turning points at ESG scores of approximately 10.71 for ROE and 11.00 for ROA. These findings suggest that moderate ESG engagement improves profitability, whereas excessive ESG investment generates diminishing returns and may weaken performance. The study offers managerial and policy implications for the ASEAN financial sector.

Keywords: ASEAN, ESG, Financial firms, Inverted U-shaped, U-test.

Introduction

The integration of Environmental, Social, and Governance criteria into corporate strategy is increasingly viewed as an important means for financial firms to enhance long-term sustainability and strengthen systemic risk management (Linh *et al*., 2024; Almuqbil *et al*., 2025; Asel *et al*., 2025; Krasnoshchekova *et al*., 2025; Mustafayeva *et al*., 2025; Nguyen *et al*., 2025; Rymbekovna *et al*., 2025). However, empirical evidence on the ESG firm performance nexus remains inconclusive. While many studies argue that ESG improves profitability by reducing information asymmetry, attracting responsible investors, and enhancing corporate reputation (Cepni *et al*., 2023; Hu *et al*., 2023; Meral *et al*., 2025), others suggest that ESG compliance may divert resources from core profit-generating activities, increase costs, and weaken short-term financial performance (Di Tommaso & Thornton, 2020; Chacon *et al*., 2022; Erol *et al*., 2023). These mixed findings raise the possibility that the ESG performance relationship is nonlinear rather than strictly linear. Recent studies increasingly point to an inverted U-shaped pattern, in which performance improves at lower levels of ESG engagement but declines once ESG investment exceeds a certain threshold (Azmi *et al*., 2021; Salem *et al*., 2025). This pattern reflects the dual nature of ESG investment. Although ESG activities may generate strategic and reputational benefits in the long run, excessive commitment can also raise operating costs and reduce shareholder returns (Teng *et al*., 2022; El Khoury *et al*., 2023). This suggests the existence of an optimal level of ESG investment. ASEAN is a relevant setting for examining the ESG performance nexus because, despite its strong growth potential and rising role in the global economy, the region faces increasing pressure related to climate change, green transition financing, and financial system sustainability. Recent initiatives by the ASEAN Capital Markets Forum (2023) show

Received: 10.06.2026 –Accepted: 08.10.2026 –Published: 29.11.2026

© 2026 Journal of Organizational Behavior Research. ***Open Access*** *- This article is under the CC BY NC SA license (https://creativecommons.org/licenses/by-nc-sa/4.0/)*

that ESG is becoming more institutionalized. Yet, ASEAN countries still differ considerably in institutional quality, market development, and ESG implementation capacity (World Bank, 2022). Such heterogeneity may shape the costs, benefits, and channels through which ESG affects firm performance. This issue is particularly important for financial institutions, given their dependence on market confidence, capital costs, risk management, and regulatory oversight, as well as their central role in capital allocation within the economy (UN Environment Programme, 2021). Therefore, examining the ESG performance nexus in ASEAN financial firms is important not only for individual firms but also for the sustainability of the regional financial system.

This study contributes to the literature in three ways. First, it provides additional empirical evidence from ASEAN, where research on ESG and financial firm performance remains limited. Second, it examines the ESG performance nexus from a nonlinear perspective, clarifying how ESG may shift from a short-term cost burden to a long-term source of competitive advantage. Third, it improves on studies that rely on binary ESG disclosure measures by using a standardized ESG score dataset from Bloomberg Terminal.

Literature Review

Environmental, Social, and Governance (ESG)

ESG refers to a set of criteria used to assess an organization's sustainability through specific and measurable objectives, plans, and actions, making it more quantifiable than the generally qualitative concept of CSR. According to the Global Reporting Initiative (2024), ESG includes three pillars: Environmental, covering climate change, emissions, natural resource use, and waste management; Social, concerning privacy protection, gender equality, information security, and community relations; and Governance, relating to management structure, transparency, and intellectual property protection (Al-Sunbul *et al*., 2024; Prada *et al*., 2024; AlShehri *et al*., 2025; Anazi *et al*., 2025; Peñafiel *et al*., 2025; van Dijk *et al*., 2025).

Operational Performance of a Financial Firm

Given their inherently high leverage, complex risk profiles, and stringent regulatory environment, empirical research in this sector requires a multidimensional and comprehensive measurement framework (My & Tam, 2026). From an accounting perspective, return on assets (ROA) and return on equity (ROE) are among the most widely used indicators for evaluating financial soundness through operating efficiency and financial performance (Linh *et al*., 2025). ROA reflects how efficiently total assets are utilized to generate net income (Agarwala *et al*., 2024), particularly in terms of cost optimization across core business segments such as lending and investment activities. By contrast, ROE captures the return generated on shareholders' equity (Agarwala *et al*., 2024). The use of ROA and ROE not only helps mitigate limitations arising from industry-specific measurement bias (Galant & Cadez, 2017) but also provides an appropriate analytical framework for a comprehensive assessment of the financial health and internal operating performance of financial institutions.

Hypothesis Development

The Relationship between ESG and the Operational Performance of a Financial Firm in the Short-Term

From a theoretical perspective, stakeholder theory posits that firms are not solely driven by the objective of maximizing shareholder value but are also required to balance the expectations of multiple stakeholder groups, including customers, employees, regulators, and the broader community (Freeman, 1984). Within this framework, the integration of ESG criteria can be viewed as a strategic orientation that strengthens relationships with stakeholders, thereby reducing transaction costs and enhancing long-term competitive advantage (Salem *et al*., 2025). Complementing this view, signaling theory emphasizes that in the presence of information asymmetry, the voluntary and high-quality disclosure of ESG information serves as a credible signal of a firm's risk management capability and long-term commitment (Spence, 1978). Such signaling can improve a firm's reputation in capital markets, attract responsible investors, and lower the cost of capital, ultimately supporting improved financial performance (Nguyen, 2025). At the same time, legitimacy theory suggests that firms operate under an implicit social contract with the institutional environment and the communities in which they are embedded (Deegan, 2002). In this context, ESG

practices function as an important mechanism through which firms maintain legitimacy, mitigate regulatory risks, and sustain their market position over time.

Empirical evidence from ASEAN generally points to a positive association between ESG engagement and firm performance. Studies on financial institutions in Southeast Asia, including Vietnam, Malaysia, and Thailand, show that stronger ESG commitment and greater disclosure transparency are linked to higher profitability, market valuation, and operational efficiency (Suttipun & Yordudom, 2022; Nguyen & La, 2025; Tru, 2025; My & Tam, 2026). Similar findings are reported beyond the financial sector. In Malaysia, higher ESG scores are associated with stronger financial performance among listed real estate firms, while sustained ESG practices also enhance the market valuation of financial companies (Ming *et al*., 2024; Husain *et al*., 2025). Evidence from Indonesia further supports this view by documenting a positive link between ESG practices and stock portfolio returns (Sugiarto *et al*., 2023).

However, alternative theoretical perspectives offer a more critical view. Agency theory highlights that the separation between ownership and control may give rise to conflicts of interest, where managers could exploit ESG initiatives to enhance their personal reputation rather than maximize shareholder value. Such behavior may lead to inefficient allocation of internal resources and ultimately harm firm performance. By contrast, a growing strand of ASEAN-based evidence reports an adverse effect of ESG on firm performance. Several studies show that stronger ESG engagement is associated with lower profitability, weaker business performance, and reduced market valuation among financial institutions in Southeast Asia (Indrasuci & Rokhim, 2023; Marasigan, 2024). Similar evidence is found at the country level. In Indonesia, higher ESG engagement appears to increase opportunity costs and reduce accounting-based profitability by diverting resources from traditional high-return activities (Nareswari *et al*., 2023; Hermansyah *et al*., 2025). A comparable pattern is also observed in Vietnam, where improvements in ESG disclosure are linked to declines in return on assets and market valuation among firms included in the Vietnam Sustainability Index (Nguyen, 2026).

H1a. ESG has a positive impact on ROE

H1b. ESG has a positive impact on ROA

The Relationship between ESG and the Operational Performance of a Financial Firm in the Long-Term

From the perspective of stakeholder theory and the resource-based view, the initial integration of Environmental, Social, and Governance practices can enhance corporate legitimacy, strengthen stakeholder trust, and reduce information asymmetry (Barney, 1991; Freeman, 1984). For financial institutions in particular, early-stage ESG engagement may contribute to the formation of valuable intangible assets, thereby improving access to external financing at lower cost and supporting higher profitability (Azmi *et al*., 2021; Salem *et al*., 2025). However, insights from trade-off theory and agency theory suggest that excessive ESG engagement may generate adverse consequences. In this context, the expansion of ESG commitments beyond an optimal level may lead to a phenomenon in which marginal costs begin to exceed marginal benefits (Kraus & Litzenberger, 1973; Jensen & Meckling, 1976; Pierce & Aguinis, 2013). When financial firms allocate substantial resources to complex sustainability initiatives, such as large-scale restructuring of asset portfolios to comply with strict environmental standards, costly implementation of green credit screening systems, or social programs that are weakly aligned with strategic objectives, limited organizational resources may be diverted away from core value-creating activities (Teng *et al*., 2022; El Khoury *et al*., 2023). Such misallocation not only increases compliance costs but may also reduce shareholder value (Azmi *et al*., 2021; Nekhili *et al*., 2021). As a result, the relationship between ESG and firm performance in the financial sector is unlikely to be adequately captured by a simple linear specification. Instead, a nonlinear pattern, particularly an inverted U-shaped relationship, provides a more appropriate explanation. Under this framework, firm performance improves with increasing ESG engagement up to an optimal threshold, beyond which further expansion of sustainability commitments may reduce profitability due to rising costs that outweigh the associated benefits (Lee & Li, 2022; Teng *et al*., 2022).

Recent evidence from developing and emerging markets increasingly suggests that the ESG-performance nexus is nonlinear rather than purely linear. In the financial sector, studies document an inverted U-shaped relationship in which ESG initially enhances firm value and financial performance, but its benefits decline once engagement exceeds an optimal threshold (El Khoury *et al*., 2023; Salem *et al*., 2025). This pattern indicates that, beyond moderate levels,

the rising costs of compliance, monitoring, and technology investment may outweigh the gains associated with stronger ESG commitment. Similar nonlinear evidence is also found outside banking. Research on firms in Taiwan shows that ESG improves performance at early stages, but excessive ESG investment eventually weakens profitability, financial structure, and operational efficiency (Teng *et al*., 2022).

H2a. ESG has an inverted U-shaped relationship with ROE

H2b. ESG has an inverted U-shaped relationship with ROA

Materials and Methods

Research Data

The data used in this study were collected from Bloomberg Terminal and LSEG Refinitiv for the period from 2016 to 2022. The sample begins in 2016 mainly because ESG data remain limited in ASEAN, where sustainability reporting is still not fully mandatory and the regulatory framework continues to develop. As a result, only large financial firms with strong financial capacity, sound governance structures, and high transparency tend to have ESG reporting systems that satisfy international standards and are therefore covered by Bloomberg Terminal. ESG data for 64 financial firms in the real estate, investment funds, commercial banking, insurance, financial services, and investment advisory services sectors were obtained from Bloomberg Terminal. The sample covers five ASEAN countries, namely Vietnam, Thailand, Malaysia, Indonesia, and the Philippines, where ESG information is relatively more available and consistent. Singapore was excluded in order to maintain sample homogeneity because its level of economic development differs substantially from that of the other countries in the region. Firm-level data on profitability, valuation, solvency, and market value, together with macroeconomic indicators such as GDP growth and inflation, were collected from LSEG Refinitiv.

Control Variables

At the firm level, BVPS is expected to be positively associated with performance because it reflects underlying financial strength and investor appeal (Lee & Suh, 2022). The current ratio may have a negative effect when excessive liquidity creates opportunity costs and weakens capital efficiency (Agarwala *et al*., 2024). The debt-to-equity ratio captures leverage and financial risk and is often linked to lower performance when financial distress costs exceed the benefits of debt financing (Brahma *et al*., 2021). By contrast, net profit margin is generally expected to improve performance because it reflects cost control and operating efficiency (Reverte *et al*., 2016). Market value is included to control for firm size and market position and is typically positively related to performance. At the macro level, GDP growth is expected to support firm performance, whereas inflation may reduce it by increasing capital costs and compressing profit margins (Sain & Kashiramka, 2024; Nguyen *et al*., 2026).

Research Model

This study examines the impact of ESG on the performance of financial firms from a nonlinear perspective. To this end, the squared ESG term is incorporated into the model to test for the possible existence of a nonlinear relationship. From a theoretical standpoint, establishing nonlinearity requires regressing y on both x and x^2(Wooldridge, 2012). In this setting, the effect of x on y is no longer constant, but varies with the level of x, as indicated by the first derivative $\frac{dy}{dx} = b_1 + 2b_2x$ (Wooldridge, 2012). When $b_1 > 0$ and $b_2 < 0$, the relationship takes an inverted U-shape; conversely, when $b_1 < 0$ and $b_2 > 0$, it follows a U-shaped pattern. This approach has been widely adopted in prior studies to identify nonlinear relationships between ESG and firm performance, particularly U-shaped or inverted U-shaped effects (Yuen *et al*., 2022). The empirical model is specified as follows:

$$Model\ 1.\ ROE_{it} = \beta_0 + \beta_1 ESG_{it} + \beta_2 (ESG_{it})^2 + \beta_3 BVPS_{it} + \beta_4 NPF_{it} + \beta_5 CR_{it} + \beta_6 DE_{it} + \beta_7 MV_{it} + \beta_8 INF_{it} + \beta_9 GDPG_{it} + \varepsilon_{it} \quad (1)$$

$$Model\ 2.\ ROA_{it} = \beta_0 + \beta_1 ESG_{it} + \beta_2 (ESG_{it})^2 + \beta_3 BVPS_{it} + \beta_4 NPF_{it} + \beta_5 CR_{it} + \beta_6 DE_{it} + \beta_7 MV_{it} + \beta_8 INF_{it} + \beta_9 GDPG_{it} + \varepsilon_{it} \quad (2)$$

where i denotes individual firms and t represents the year of observation. The dependent variables are measured by ROE and ROA. The main explanatory variables are ESG and its squared term (ESG^2). At the macroeconomic level, INF and GDPG are included as control variables, while BVPS, NPF, CR, DE and MV are introduced to capture firm-specific characteristics.

Table 1. Symbol, measurement, expected result and data source of variables in the model

Variable	Symbol	Measurement	Expected Result	Data source
		Dependent variables		
Return on equity	ROE	$\frac{\text{Net income}}{\text{Average equity}} \times 100\%$		Refinitiv
Return on assets	ROA	$\frac{\text{Net income}}{\text{Average total assets}} \times 100\%$		Refinitiv
		Independent variables		
ESG score	ESG	Natural logarithm of the ESG score	+	Bloomberg Terminal
Squared ESG score	ESG^2	Squared natural logarithm of the ESG score	-	Bloomberg Terminal
		Macroeconomic control variables		
Inflation rate	INF	Inflation rate	-	Refinitiv
GDP growth	GDPG	GDP growth rate	+	Refinitiv
		Firm control variables		
Book value per share	BVPS	$\frac{\text{Total equity}}{\text{Total number of outstanding shares}}$	+	Refinitiv
Net profit margin	NPF	$\frac{\text{Net income}}{\text{Total revenue}}$	+	Refinitiv
Current ratio	CR	$\frac{\text{Current asset}}{\text{Current liability}}$	+	Refinitiv
Debt to equity	DE	$\frac{\text{Total debt}}{\text{Total equity}}$	-	Refinitiv
Market value	MV	Natural logarithm of market value	+	Refinitiv

Source: compiled by the authors based on prior studies.

Results and Discussion

Descriptive Statistics

Table 2 reports the descriptive statistics of the variables included in the research model, highlighting a certain degree of heterogeneity among 64 financial enterprises distributed across five ASEAN nations (Vietnam, Thailand, Malaysia, Indonesia, and the Philippines) over the period extending from 2016 to 2022. Due to missing data for three years for one firm, the final unbalanced panel consists of 445 firm-year observations. The mean values of ROE and ROA are 0.0633743 and 0.0318796, respectively, with considerable variation across observations. The ESG variable has an average of 3.578082, ranging from 1.007958 to 4.121798, indicating heterogeneity in ESG engagement. Among control variables, BVPS, NPF, CR, and DE exhibit notable dispersion, reflecting differences in firm valuation, risk, liquidity, and leverage. The market value of firms also varies substantially across the sample. Finally, macroeconomic variables (GDPG and INF) show fluctuations over time, capturing changing economic conditions.

Table 2. Descriptive statistics

Variable	Obs	Mean	Std. dev.	Min	Max
ROE	445	.0633743	.0730757	.001628	.52548
ROA	445	.0318796	.028648	.001	.152
ESG	445	3.578082	.3400779	1.007958	4.121798
ESG²	445	12.91807	2.304177	1.015979	16.98922
BVPS	445	.6919844	.678628	.005	3.71
NPF	445	.2598409	.1343649	.001	.769
CR	445	1.5402	1.485324	.1	12.77
DE	445	.9697727	1.061216	.0055	5.77
MV	445	7.770474	1.428397	2.711378	11.47337
GDPG	445	.0414906	.0404203	-.0951829	.087
INF	445	.0276165	.0162241	-.011	.0589

Source: Data processing results derived from Stata 17.

Correlation Matrix

To further assess multicollinearity among the explanatory variables, the study employs the Pearson correlation coefficient, with 0.8 used as the threshold indicating serious multicollinearity. The results reported in **Table 3** show that all pairwise correlation coefficients are below this threshold, implying the absence of strong linear relationships among the independent variables. Accordingly, the preliminary evidence suggests that multicollinearity is not a serious concern in the model.

Table 3. Correlation matrix

	ROE	ROA	ESG	ESG²	BVPS	NPF	CR	DE	MV	GDPG	INF
ROE	1.0000										
ROA	0.7336	1.0000									
ESG	-0.3615	-0.2321	1.0000								
ESG²	-0.3707	-0.2421	0.9917	1.0000							
BVPS	-0.0612	-0.1043	0.1810	0.1972	1.0000						
NPF	0.2219	0.2292	-0.0862	-0.0880	0.0400	1.0000					
CR	0.1041	0.1592	-0.0355	-0.0433	0.0032	-0.1269	1.0000				
DE	0.5751	0.0191	-0.2420	-0.2509	0.0285	0.0860	0.0757	1.0000			
MV	0.0700	-0.1358	0.2314	0.2407	0.1482	0.2500	-0.2872	0.2505	1.0000		
GDPG	0.1526	0.1548	-0.2396	-0.2480	-0.0530	0.1399	-0.0031	0.0547	-0.0240	1.0000	
INF	0.1028	0.0839	-0.1397	-0.1465	-0.0980	0.0992	-0.0284	0.0406	0.0118	0.4991	1.0000

Source: Data processing results derived from Stata 17.

Variance Inflation Factor (VIF) Test

Table 4 indicates that most variables in the model have VIF values below 5, suggesting that multicollinearity is not a serious concern. The main exceptions are ESG and its squared term (ESG^2). This result is expected because the squared terms are deliberately included to test for possible nonlinear relationships between the ESG and firm performance. Since the squared term is constructed directly from its original variable, the high correlation between them reflects a technical form of structural multicollinearity rather than model misspecification. Therefore, the relatively high VIF values for these variables are not sufficient grounds for excluding the nonlinear specification from the analysis.

Table 4. Variance inflation factor (VIF) test

Variable	VIF	1/VIF
ESG	63.97	0.015631
ESG²	62.36	0.016035

MV	1.44	0.696127
GDPG	1.41	0.711456
INF	1.35	0.743235
DE	1.25	0.800452
CR	1.13	0.882493
NPF	1.12	0.896309
BVPS	1.08	0.926418
Mean VIF	15.01	

Source: Data processing results derived from Stata 17.

Regression Result

Following the preliminary diagnostic procedures, the pooled OLS estimator was deemed inappropriate because the data exhibited both heteroskedasticity and serial correlation. To identify the most suitable panel-data specification, the Hausman test was conducted to compare the fixed-effects model (FEM) and the random-effects model (REM), with the results strongly supporting the FEM. In addition, the Pesaran CD and Pesaran-Yamagata tests indicate that cross-sectional dependence and slope heterogeneity are not statistically significant across the sampled firms. However, despite being preferred over the REM, the FEM still violates key error-term assumptions, as the White and Wooldridge tests confirm the presence of heteroskedasticity and autocorrelation. Given these econometric concerns, the study ultimately relies on the feasible generalized least squares (FGLS) estimator to obtain more efficient and reliable parameter estimates.

The regression results reported in **Table 5** indicate that ESG exerts a positive and statistically significant impact on both ROE and ROA, with coefficients of 0.0320 ($p < 0.01$) and 0.0197 ($p < 0.05$), respectively. In contrast, the squared term (ESG^2) is negative and highly significant in both specifications, thereby confirming the presence of an inverted U-shaped relationship between ESG engagement and firm performance. This finding suggests that ESG activities initially enhance profitability; however, beyond a certain threshold, further ESG engagement may generate diminishing returns and reduce performance. Among the control variables, NPF and GDPG are positively associated with firm performance, while BVPS shows a negative effect. DE is significant only in the ROE model, whereas CR, INF, and MV are generally insignificant, except for MV in the ROE specification. Overall, the results remain broadly consistent across the two profitability measures, supporting the robustness of the main findings.

Table 5. Regression result

Variable	(1) ROE	(2) ROA
ESG	0.0320*** (0.0103336)	0.0197** (0.0085465)
ESG^2	-0.0068*** (0.0019571)	-0.0041*** (0.0014432)
CR	0.0006 (0.0008526)	0.0007 (0.0004991)
DE	0.0301*** (0.0029876)	0.0007 (0.0008278)
BVPS	-0.0041158* (0.0022709)	-0.0022174* (0.0011424)
NPF	0.0651*** (0.0095247)	0.0340*** (0.005693)
MV	-0.0025** (0.0011052)	-0.0009 (0.000717)
GDPG	0.0593*** (0.0142796)	0.0381*** (0.0084162)
INF	0.0205 (0.0384195)	0.0131 (0.0239348)
_cons	-0.0047 (0.0160505)	0.0037 (0.0143232)

F Test (p-value)	0.0000	0.0000
Hausman test (p-value)	0.0395	0.0266
Pesaran CD test (p-value)	0.4300	0.1387
Pesaran-Yamagata test (p-value)	0.0000	0.0000
White test (p-value)	0.0000	0.0000
Wooldridge test (p-value)	0.0008	0.0001

Note: Robust standard errors are shown in parentheses. Statistical significance is denoted by ***, **, and * at the 1%, 5%, and 10% levels, respectively.
Source: Data processing results derived from Stata 17.

To further verify whether the nonlinear relationship between ESG and firm performance genuinely follows a U-shaped pattern rather than another form of nonlinearity, this study applies the Lind and Mehlum U test as a more rigorous validation method (Lind & Mehlum, 2010). The presence of significant linear and squared ESG terms alone is not sufficient to confirm a U-shaped or inverted U-shaped relationship within the observed sample range. The U-test addresses this issue by examining whether the slope of the estimated function changes sign over the actual interval of ESG values, thereby providing stronger evidence on the functional form of the ESG performance nexus.

The results in **Table 6** provide strong support for an inverted U-shaped relationship between ESG and both ROE and ROA. The estimated turning points are 2.371281 for ROE and 2.397845 for ROA, both of which fall within the observed ESG range from 1.007958 to 4.121798. In line with the inverted U shape, the slope is positive at the lower bound and negative at the upper bound, and both are statistically significant. In addition, the overall U test yields p-values of 0.00258 for ROE and 0.0239 for ROA, confirming the statistical significance of the nonlinear relationship. Because ESG is measured in natural logarithmic form, these turning points correspond to original ESG scores of approximately 10.71 for ROE and 11.00 for ROA. This suggests that ESG engagement improves firm performance up to a certain threshold, beyond which additional ESG activity leads to diminishing returns and may eventually reduce performance.

Table 6. Lind-Mehlum U-test

Model	**(1) ROE**		**(2) ROA**	
	Lower Bound	**Upper Bound**	**Lower Bound**	**Upper Bound**
Interval	1.007958	4.121798	1.007958	4.121798
Slope	.0184094	-.0236378	.0114237	-.0141694
t-value	2.811104	-3.64178	1.985151	-3.466696
P > t	.0025776	.0001513	.0238706	.000289
t-value	2.81		1.99	
P > |t|	.00258		.0239	
Extreme point	2.371281		2.397845	

Source: Data processing results derived from Stata 17.

ESG and the Financial Firm's Performance in the Short-Term

The regression results show that ESG has a positive and statistically significant effect in both the ROE and ROA models, thus supporting hypotheses H1a and H1b. This suggests that improvements in ESG are associated with better firm performance. For financial firms in ASEAN, such benefits may arise because ESG adoption strengthens corporate legitimacy, enhances stakeholder confidence, and reduces information asymmetry in capital markets. In line with stakeholder theory, signaling theory, and legitimacy theory, firms with stronger ESG profiles are more likely to attract responsible investors, improve reputation, and access financing under more favorable conditions, thereby increasing profitability. This finding is consistent with previous evidence from ASEAN and other emerging markets, including Nguyen and La (2025) and Tru (2025).

ESG and the Financial Firm's Performance in the Long-Term

The negative and statistically significant coefficient on ESG squared, together with the Lind and Mehlum U test, provides strong evidence of an inverted U-shaped relationship between ESG and both performance measures,

supporting hypotheses H2a and H2b**.** The estimated turning points of 10.71 for ROE and 11.00 for ROA fall within the observed range of ESG, confirming that the inverted U shape is meaningful within the sample. This implies that ESG improves firm performance only up to a moderate threshold, beyond which further ESG engagement reduces profitability. This nonlinear pattern can be understood through the resource-based view, trade-off theory, and agency theory. At lower levels, ESG helps firms build intangible assets such as reputational capital, stakeholder trust, monitoring capacity, and risk management quality, all of which strengthen profitability and competitiveness. However, once ESG exceeds the optimal threshold, its marginal benefits diminish and may be outweighed by higher compliance, monitoring, disclosure, and implementation costs. For financial firms, excessive ESG engagement may also divert managerial attention and financial resources away from core activities such as lending, asset allocation, and financial intermediation. This interpretation is consistent with prior nonlinear evidence reported by Azmi *et al*. (2021), El Khoury *et al*. (2023), Salem *et al*. (2025) and Teng *et al*. (2022).

Control Variables

Among the control variables, NPF and GDPG are positively and significantly associated with both ROE and ROA, indicating that internal profit efficiency and favorable macroeconomic conditions improve firm performance. BVPS shows a weak negative association in both models, while DE is positively related only to ROE. CR and INF are statistically insignificant, whereas MV is significant only in the ROE model. Overall, the consistency of the ESG results across ROE and ROA reinforces the robustness of the study's main conclusion regarding the inverted U-shaped effect of ESG on financial performance.

Conclusion

This study examines the relationship between ESG engagement and the operational performance of financial firms in ASEAN. The results reveal an inverted U-shaped effect of ESG on both ROE and ROA, suggesting that moderate ESG engagement improves firm performance. In contrast, excessive ESG investment leads to diminishing returns and may weaken profitability. This implies that the economic value of ESG depends not only on whether firms adopt ESG practices, but also on the level of engagement. The study makes several contributions. First, it adds new empirical evidence from ASEAN, where ESG research in the financial sector remains limited. Second, it shows that the ESG performance nexus is better explained by a nonlinear rather than a purely linear framework. Third, applying the Lind and Mehlum U test provides more rigorous evidence of an inverted U-shaped relationship. Fourth, it extends stakeholder theory, signaling theory, legitimacy theory, the resource-based view, trade-off theory, and agency theory by showing that ESG creates value at moderate levels but may become cost-inducing once engagement exceeds the optimal threshold.

Implications for Financial Firms and Policymakers

First, the findings show that ESG should not be expanded indiscriminately, since its positive effect on firm performance exists only up to an optimal threshold, beyond which additional ESG engagement may generate diminishing returns. Financial firms in ASEAN should therefore adopt a balanced and well-calibrated ESG strategy by prioritizing initiatives that are closely linked to core business activities and capable of creating measurable economic value. A selective and phased approach can help firms capture ESG benefits while avoiding excessive implementation costs. Second, although moderate ESG engagement can improve profitability by strengthening stakeholder trust, reputation, and access to capital, excessive ESG investment may reduce performance once marginal costs exceed marginal benefits. ESG should therefore be treated as a strategic tool for medium and long-term value creation rather than as a symbolic commitment or a target to be maximized unconditionally. For financial firms, this means integrating sustainability into risk management, capital allocation, and business strategy while emphasizing the quality and effectiveness of ESG practices rather than simply pursuing higher ESG scores. Third, the results suggest that policymakers in ASEAN should adopt a proportionate and context-sensitive regulatory approach. Rather than imposing uniform and overly burdensome ESG requirements, regulators should introduce phased disclosure rules, align domestic frameworks with international standards, and provide practical guidance to reduce compliance costs.

This would enable financial firms to benefit from ESG without being pushed beyond the point where sustainability commitments begin to weaken performance.

Limited and Future Research

First, the sample comprises only 64 financial firms from five ASEAN countries over the period 2016-2022, which may limit the generalizability of the findings to the broader ASEAN financial sector. Second, the use of traditional accounting-based performance indicators, such as return on equity and return on assets may not comprehensively reflect firms' financial standing or growth potential. Future research could address these limitations by: (i) expanding the sample size in terms of both the number of firms and the length of the study period; (ii) applying more advanced econometric techniques to better control for exogenous and endogeneity-related factors; and (iii) conducting comparative analyses of ESG impacts across different economic cycles and among developing countries with characteristics similar to those of ASEAN economies.

Acknowledgments: The authors would like to express their sincere gratitude to the National Economics University for its valuable academic support and conducive research environment, which greatly contributed to the completion of this study.

Conflict of Interest: None

Financial Support: None

Ethics Statement: This study used secondary data obtained from publicly available sources. No human participants were directly involved, and no personally identifiable information was collected or used. Therefore, formal ethical approval and informed consent were not required.

References

Agarwala, N., Jana, S., & Sahu, T. N. (2024). ESG disclosures and corporate performance: A non-linear and disaggregated approach. *Journal of Cleaner Production, 437*, 140517. doi:10.1016/j.jclepro.2023.140517

Almuqbil, R., Aldabayan, Y., Mazroaa, H., & Aljindan, I. (2025). Predictors of psychotropic, pain treatment attitudes and factors associated with the medication stigma among Saudi adults. *Journal of Biochemical Technology, 16*(3), 135–142. doi:10.51847/f1XIVtcOF6

AlShehri, O. M., Almutairi, S. M., Alhajlah, Y. M., Jali, N. M., & Aljrais, M. M. (2025). Efficacy of various management modalities in treating endo perio lesions: A systematic review. *Annals of Dental Specialty, 13*(3), 43–52. doi:10.51847/z06Vl75nrF

Al-Sunbul, A. A., Aldhalaan, R., AlHaddab, M., AlRushoud, S. S., & Alharbi, M. (2024). An interdisciplinary means to the management of complex dental conditions. *Annals of Dental Specialty, 12*(2), 15–19. doi:10.51847/IU5xnhE6aA

Anazi, W. M. A., Habeeb, K. A., Alahmadi, A. F., Alajaj, I. Y., Alahmari, S. M., AlHammad, A. A., Alshahrani, H. S., Shalabi, G. M., Khalefa, R. S., Alzaher, A. Z., et al. (2025). Sarcopenic obesity evaluation and management in primary care: A narrative review. *World Journal of Environmental Biosciences, 14*(1), 59–66. doi:10.51847/9YZnkZJp81

ASEAN Capital Markets Forum. (2023). Sustainable finance. https://www.theacmf.org/initiatives/sustainable-finance

Asel, Z. K., Nurlanovna, O. A., Maratbekovna, M. A., Rysbekovna, A. A., Abduhalilovich, Q. Q., & Nasirdinovna, B. E. (2025). Medical and social aspects of metabolic syndrome: Narrative review and case study. *Journal of Biochemical Technology, 16*(2), 16–24. doi:10.51847/nktalEL9vH

Azmi, W., Hassan, M. K., Houston, R., & Karim, M. S. (2021). ESG activities and banking performance: International evidence from emerging economies. *Journal of International Financial Markets, Institutions and Money, 70*, 101277. doi:10.1016/j.intfin.2020.101277

Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management, 17*(1), 99–120. doi:10.1177/014920639101700108

Brahma, S., Nwafor, C., & Boateng, A. (2021). Board gender diversity and firm performance: The UK evidence. *International Journal of Finance & Economics, 26*(4), 5704–5719. doi:10.1002/ijfe.2089

Cepni, O., Demirer, R., Pham, L., & Rognone, L. (2023). Climate uncertainty and information transmissions across the conventional and ESG assets. *Journal of International Financial Markets, Institutions and Money, 83*, 101730. doi:10.1016/j.intfin.2022.101730

Chacon, R., Feng, Z., & Wu, Z. (2022). Does investing in ESG pay off? Evidence from REITs around the COVID-19 pandemic. *SSRN Electronic Journal*. doi:10.2139/ssrn.4147749

Deegan, C. (2002). Introduction: The legitimising effect of social and environmental disclosures–a theoretical foundation. *Accounting, Auditing & Accountability Journal, 15*(3), 282–311.

Di Tommaso, C., & Thornton, J. (2020). Do ESG scores effect bank risk taking and value? Evidence from European banks. *Corporate Social Responsibility and Environmental Management, 27*(5), 2286–2298. doi:10.1002/csr.1964

El Khoury, R., Nasrallah, N., & Alareeni, B. (2023). ESG and financial performance of banks in the MENAT region: concavity–convexity patterns. *Journal of Sustainable Finance & Investment, 13*(1), 406–430.

Erol, I., Unal, U., & Coskun, Y. (2023). ESG investing and the financial performance: A panel data analysis of developed REIT markets. *Environmental Science and Pollution Research, 30*(36), 85154–85169. doi:10.1007/s11356-023-28376-1

Freeman, R. E. (1984). *Strategic management: A stakeholder approach*. Pitman.

Galant, A., & Cadez, S. (2017). Corporate social responsibility and financial performance relationship: A review of measurement approaches. *Economic Research-Ekonomska Istraživanja, 30*(1), 676–693. doi:10.1080/1331677X.2017.1313122

Global Reporting Initiative. (2024). The GRI standards. https://www.globalreporting.org/how-to-use-the-gri-standards/gri-standards-english-language/

Hermansyah, F. I., Anwar, A. I., Aksah, N. M., Jannah, R. T., Amaliah, N. R., & Arifin, A. H. (2025). Does poor ESG performance still drive profitability? New evidence from Indonesia's SRI-KEHATI listed firms. *Investment Management and Financial Innovations, 22*(3), 14–26. doi:10.21511/imfi.22(3).2025.02

Hu, J., Zou, Q., & Yin, Q. (2023). Research on the effect of ESG performance on stock price synchronicity: Empirical evidence from China's capital markets. *Finance Research Letters, 55*, 103847. doi:10.1016/j.frl.2023.103847

Huang, D. Z. (2021). Environmental, social and governance (ESG) activity and firm performance: A review and consolidation. *Accounting & Finance, 61*(1), 335–360. doi:10.1111/acfi.12569

Husain, M. F., Razali, M. N., Jasimin, T. H., & Abdul Hamid, M. Y. (2025). Assessing the impact of Environmental, Social and Governance (ESG) framework on the performance of listed real estate companies in Malaysia. *Journal of Property Investment & Finance, 43*(6), 649–671. doi:10.1108/JPIF-01-2025-0014

Indrasuci, A. W., & Rokhim, R. (2023). Exploring the effects of environmental, social and governance (ESG) on banking performance: A case study of Far East Asia. *Indonesian Journal of Economics and Management, 3*(3), 522–534. doi:10.35313/ijem.v3i3.4915

Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics, 3*(4), 305–360. doi:10.1016/0304-405X(76)90026-X

Krasnoshchekova, A. R., Kalenkina, A. A., Kozlenko, A. A., Gagieva, K. K., Eldarova, K. I., Ulkhaev, Y. K., Khazhaeva, M. V., Bakasheva, A. S., Dachaeva, A. L., & Dzeitova, L. A. (2025). Diagnosis of neonatal brain pathologies: Analysis of the effectiveness of deep learning algorithms and expert evaluation. *Journal of Biochemical Technology, 16*(4), 1–9. doi:10.51847/ubDcGLiTuc

Kraus, A., & Litzenberger, R. H. (1973). A state-preference model of optimal financial leverage. *The Journal of Finance, 28*(4), 911–922.

Lee, E. T., & Li, X. (2022). Too much of a good thing? Exploring the curvilinear relationship between environmental, social, and governance and corporate financial performance. *Asian Journal of Business Ethics, 11*(2), 399–421. doi:10.1007/s13520-022-00157-y

Lee, M. T., & Suh, I. (2022). Understanding the effects of environment, social, and governance conduct on financial performance: Arguments for a process and integrated modelling approach. *Sustainable Technology and Entrepreneurship, 1*(1), 100004. doi:10.1016/j.stae.2022.100004

Lind, J. T., & Mehlum, H. (2010). With or without U? The appropriate test for a U-shaped relationship. *Oxford Bulletin of Economics and Statistics, 72*(1), 109–118. doi:10.1111/j.1468-0084.2009.00569.x

Linh, D. H., Chau, L. P., Huong, N. M., Huyen, P. T. N., Khue, T. M., Mai, N. T. T., & Yen, N. T. H. (2025). Digital transformation in Vietnam commercial banks: Moderating effect of COVID-19 pandemic. *Journal of Organizational Behavior Research, 10*(1), 83–96. doi:10.51847/7zp2D0z0iJ

Linh, V. N., Duc, H. N. C., Yen, N. V. N., Thanh, H. N. T., & Thu, T. N. T. (2024). Building a forecast model for costs in treating type 2 diabetes based on social insurance data in Vietnam. *Journal of Advanced Pharmacy Education & Research, 14*(4), 131–138. doi:10.51847/tsW1aBTPdk

Marasigan, L. G. (2024). The impact of ESG scores on financial performance of publicly listed banks in the ASEAN region. *SEISENSE Business Review, 4*(1), 149–162. doi:10.33215/50da8p25

Meral, H., Ersoy, B., & Dogan, M. (2025). Enhancing sustainability: The impact of ESG factors in global insurance performance. *Borsa Istanbul Review, 26*(1). doi:10.1016/j.bir.2025.10.030

Ming, K. L. Y., Vaicondam, Y., & Mustafa, A. M. A. A. (2024). ESG integration and financial performance: Evidence from Malaysia's leading companies. *International Journal of Energy Economics and Policy, 14*(1), 1–10. doi:10.32479/ijeep.16706

Mustafayeva, A. M., Mustafayeva, A. M., Omargadjieva, F. S., Balaeva, M. V., Kobiz, A. S., Mironenko, K. V., Chinchiev, R. T., Budunova, F. M., & Girimova, B. U. (2025). Development of sedative chewing lozenges based on a complex of herbal extracts and glycine for children. *Journal of Biochemical Technology, 16*(2), 124–131. doi:10.51847/ZEj8PNyKPw

My, N. T. T., & Tam, L. T. (2026). The impact of ESG disclosure on performance of financial institutions in Vietnam. *Journal of Organizational Behavior Research, 11*(1), 71. doi:10.51847/z8ZCW9tjPq

Nareswari, N., Tarczyńska-Łuniewska, M., & Al Hashfi, R. U. (2023). Analysis of environmental, social, and governance performance in Indonesia: Role of ESG on corporate performance. *Procedia Computer Science, 225*, 1748–1756. doi:10.1016/j.procs.2023.10.164

Nekhili, M., Boukadhaba, A., Nagati, H., & Chtioui, T. (2021). ESG performance and market value: The moderating role of employee board representation. *The International Journal of Human Resource Management, 32*(14), 3061–3087. doi:10.1080/09585192.2019.1629989

Nguyen, H. T. T. (2026). ESG disclosure and firm performance: Evidence from the Vietnam Sustainability Index. *International Journal of Knowledge and Systems Science, 17*(1), 1–17. doi:10.4018/IJKSS.402013

Nguyen, T. L. A., & La, T. T. T. (2025). ESG and firm value in Vietnam: The moderating role of profitability. *International Journal of Analysis and Applications, 23*, 234–234. doi:10.28924/2291-8639-23-2025-234

Nguyen, T. M. T., Le, T. T., & Nguyen, M. N. (2026). Funding diversification, income diversification and bank liquidity creation: Evidence from Vietnamese commercial banks. *International Journal of Analysis and Applications, 24*, 74–74. doi:10.28924/2291-8639-24-2026-74

Nguyen, T. V., Doan, H. K., Pham, P. T., & Quang, M. T. (2025). Key predictors of emotion regulation in Vietnamese undergraduates: Life orientation, social support, and self-esteem. *Journal of Advanced Pharmacy Education & Research, 15*(2), 131–137. doi:10.51847/UdjZhqYAGj

Nguyen, V. H. (2025). Corporate social responsibility disclosure and firm value: A signaling theory perspective. *Journal of Economics and Development, 27*(2), 114–128. doi:10.1108/JED-02-2024-0067

Peñafiel, P., Mendoza, M., Jiménez, M., & Masaquiza, D. (2025). Assessment of urban solid waste management in the Ecuadorian Amazon region. *World Journal of Environmental Biosciences, 14*(3), 32–42. doi:10.51847/tUzRvNgOdi

Pierce, J. R., & Aguinis, H. (2013). The too-much-of-a-good-thing effect in management. *Journal of Management, 39*(2), 313–338. doi:10.1177/0149206311410060

Prada, A. M., Cicalău, G. I. P., & Ciavoi, G. (2024). Resin infiltration for white-spot lesion management after orthodontic treatment. *Asian Journal of Periodontics & Orthodontics, 4*, 19–23. doi:10.51847/ZTuGEanCSV

Reverte, C., Gomez-Melero, E., & Cegarra-Navarro, J. G. (2016). The influence of corporate social responsibility practices on organizational performance: Evidence from eco-responsible Spanish firms. *Journal of Cleaner Production, 112*, 2870–2884. doi:10.1016/j.jclepro.2015.09.128

Rymbekovna, R. A., Zhamanbaevna, T. K., Muratovna, R. A., Yaroslavovna, O. Z., Valeryevna, Y. I., & Dostiarovna, Z. Z. (2025). Socialization of children with autism spectrum disorder complicated by concomitant disorders. *Journal of Advanced Pharmacy Education & Research, 15*(3), 61–68. doi:10.51847/8cQnTPYjYg

Sain, A., & Kashiramka, S. (2024). Do corporate governance mechanisms and ESG disclosures improve bank performance and stability in an emerging economy? *Journal of Advances in Management Research, 21*(4), 530–555. doi:10.1108/JAMR-12-2022-0253

Salem, M. R., Shahimi, S., Alma'amun, S., Hafizh Mohd Azam, A., & Ghazali, M. F. (2025). ESG and banking performance in ASEAN-5: Disaggregated analysis using system GMM and LSDVC. *Sage Open, 15*(4), 21582440251382564.

Spence, M. (1978). Job market signaling. In *Uncertainty in economics* (pp. 281–306). Elsevier.

Sugiarto, A., Puspani, N. N., & Fathia, F. (2023). ESG leverage towards stock performance in Indonesia Stock Exchange. *International Journal of Energy Economics and Policy, 13*(5), 593–606. doi:10.32479/ijeep.14384

Suttipun, M., & Yordudom, T. (2022). Impact of environmental, social and governance reporting on market reaction: An evidence of Top50 companies listed from Thailand. *Journal of Financial Reporting and Accounting, 20*(3–4), 753–767. doi:10.1108/JFRA-12-2020-0377

Teng, X., Ge, Y., Wu, K. S., Chang, B. G., Kuo, L., & Zhang, X. (2022). Too little or too much? Exploring the inverted U-shaped nexus between voluntary environmental, social and governance and corporate financial performance. *Frontiers in Environmental Science, 10*, 969721. doi:10.3389/fenvs.2022.969721

Tru, T. C. (2025). The impact of ESG practice on firm performance in ASEAN countries. *International Journal of Progressive Research in Engineering Management and Science, 5*(9), 457–463. doi:10.58257/IJPREMS43786

United Nations Environment Programme. (2021). Finance initiative. https://www.unep.org/topics/finance-and-economic-transformations/transforming-finance/finance-initiative

van Dijk, P. J., Alvarez, C. M., & Desta, H. T. (2025). Interdisciplinary orthodontic–periodontal management in adult patients: Timing, sequencing, and risk control. *Asian Journal of Periodontics & Orthodontics, 5*, 246–256. doi:10.51847/GrVLqrok4r

Wooldridge, J. (2012). Multiple regression analysis: Further issues. In *Introductory econometrics: A modern approach* (pp. 196–198).

World Bank. (2022). Unleashing sustainable finance in Southeast Asia. https://documents1.worldbank.org/curated/en/099310011232220307/pdf/P177802011f7760130bc49083a7beb1ef43.pdf

Yuen, M. K., Ngo, T., Le, T. D., & Ho, T. H. (2022). The environment, social and governance (ESG) activities and profitability under COVID-19: Evidence from the global banking sector. *Journal of Economics and Development, 24*(4), 345–364. doi:10.1108/JED-08-2022-0136