

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

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Appendix 1. ESG criteria and indicators used for score construction

Pillar	Code	Indicator
Environmental (E)	E1	Water use and recycling
	E2	Electricity consumption
	E3	Energy efficiency and consumption
	E4	Greenhouse gas emissions
	E5	Waste production and management
	E6	Biodiversity
	E7	Green financing activities
	E8	Ecosystem stewardship
Social (S)	S1	Prohibition of child labour
	S2	Prohibition of forced labour
	S3	Workplace health, safety, and employee welfare
	S4	Customer health and product safety
	S5	Gender equality
	S6	Career advancement opportunities
	S7	Local community engagement
	S8	Education and employee training
	S9	Customer data protection and privacy
Governance (G)	G1	Business ethics code
	G2	Transparency and information disclosure
	G3	Executive and director compensation disclosure
	G4	Governance structure description
	G5	Anti-corruption and anti-bribery policies
	G6	Stakeholder engagement governance
	G7	Shareholder rights and protections

Source: Authors' framework based on GRI Standards, ISO 26000, and prior literature (Loan et al., 2024; Cantero-Saiz et al., 2024).

Appendix 2. Descriptive statistics

Variable	Obs.	Mean	Std. Dev.	Min.	Max.
Panel A: Dependent Variables					
ROA (%)	243	1.432	2.230	-0.720	18.050
ROE (%)	243	11.690	8.448	-12.330	30.330
NIM (%)	243	3.283	1.598	0.000	9.330
Panel B: ESG Variables					
Escore (points)	243	29.218	33.173	0.000	100.000
Sscore (points)	243	69.595	16.687	11.110	100.000
Gscore (points)	243	85.122	16.680	28.571	100.000
Panel C: Bank-level Controls					
PB	243	1.239	1.150	0.000	11.800
LDR (%)	243	91.532	14.927	43.900	142.820
NPL (%)	243	2.079	2.326	0.470	29.760
LR (%)	243	91.530	3.058	80.895	96.238
Panel D: Macroeconomic Controls					
GDPgr (%)	243	6.003	1.932	2.554	8.124
INF (%)	243	2.746	0.886	0.631	3.540

Appendix 3. Pairwise pearson correlation coefficients and variance inflation factors

Variable	ROA	ROE	NIM	Escore	Sscore	Gscore	VIF
Escore	0.276*	0.415*	0.191*	1.000			1.39
Sscore	0.242*	0.267*	0.101		1.000		1.24
Gscore	0.067	0.287*	0.146*			1.000	1.24
PB	0.103	0.311*	0.095				1.08
LDR	0.327*	0.450*	0.470*				1.18
NPL	-0.102	-0.278*	-0.102				1.03
LR	-0.105	0.008	-0.324*				1.06
GDPgr	-0.051	-0.098	0.005				1.05
INF	0.036	0.178*	0.031				1.07

Notes: * indicates correlation is significant at the 5% level (two-tailed). VIF values are computed from the FGLS model specification., indicates entry not reported for parsimony.

Appendix 4. Full FGLS results for all ESG component models (ROA, ROE, NIM)

Variable	ROA	ROE	NIM
ESG Component Variables			
Escore (Environmental)	0.00455***	0.0482***	0.00408***
<i>z-statistic</i>	(3.17)	(4.21)	(2.63)
Sscore (Social)	0.00756***	0.0275	0.00194
<i>z-statistic</i>	(3.06)	(1.45)	(0.73)
Gscore (Governance)	-0.00344*	-0.00701	-0.00154
<i>z-statistic</i>	(-1.92)	(-0.37)	(-0.80)
Bank-level Control Variables			
PB (Price-to-Book Ratio)	0.0719***	0.0969	0.0461
<i>z-statistic</i>	(2.80)	(0.68)	(1.58)
LDR (Loan-to-Deposit Ratio)	0.0160***	0.146***	0.0121***
<i>z-statistic</i>	(5.03)	(5.10)	(3.32)
NPL (Non-Performing Loan Ratio)	-0.0347***	-0.673***	-0.0540***
<i>z-statistic</i>	(-3.52)	(-4.82)	(-4.94)
LR (Liquidity Ratio)	-0.0755***	0.406***	-0.104***
<i>z-statistic</i>	(-4.05)	(2.81)	(-5.43)
Macroeconomic Control Variables			
GDPgr (GDP Growth Rate)	0.019	0.185*	0.0462***
<i>z-statistic</i>	(1.61)	(1.92)	(3.56)
INF (Inflation Rate)	-0.00586	0.148	-0.0336
<i>z-statistic</i>	(-0.20)	(0.63)	(-1.06)
Constant	6.044***	-43.39***	11.17***
<i>z-statistic</i>	(3.40)	(-3.23)	(6.13)
Observations	243	243	243
Number of banks	27	27	27
Estimation method	FGLS	FGLS	FGLS

Notes: *z*-statistics in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. FGLS estimation corrects for panel heteroscedasticity and serial correlation. All regressions include individual bank-level random effects. Dependent variables are expressed as percentages (ROA, ROE, NIM). ESG pillar scores range from 0 to 100.

Appendix 5. Summary of panel model diagnostics

Test	ROA	ROE	NIM
F-statistic (Pooled OLS)	$F(9,233) = 9.15^{***}$	$F(9,233) = 11.24^{***}$	$F(9,233) = 10.62^{***}$
F-statistic (FEM)	$F(9,207) = 6.78^{***}$	$F(9,207) = 9.32^{***}$	$F(9,207) = 7.94^{***}$
Wald chi ² (REM)	$\chi^2(9) = 61.98^{***}$	$\chi^2(9) = 94.87^{***}$	$\chi^2(9) = 129.50^{***}$
Wald test: FEM vs Pooled	$F(26,207) = 12.27^{***}$	$F(26,207) = 12.74^{***}$	$F(26,207) = 52.33^{***}$
Hausman test: FEM vs REM	$\chi^2(9) = 11.81$ (ns)	$\chi^2(7) = 12.90$ (ns)	$\chi^2(9) = 5.68$ (ns)
Preferred panel model	REM	REM	REM
Modified Wald (Heteroscedasticity)	$\text{chibar}^2(01) = 204.24^{***}$	$\text{chibar}^2(01) = 255.32^{***}$	$\text{chibar}^2(01) = 597.28^{***}$
ALM test (Serial Correlation)	$\text{ALM} = 24.95^{***}$	$\text{ALM} = 34.92^{***}$	$\text{ALM} = 18.48^{***}$
Final estimator	FGLS	FGLS	FGLS

Notes: *** indicates significance at the 1% level; ns = not significant. The Hausman test is conducted between FEM and REM; failure to reject indicates REM is preferred on efficiency grounds. Heteroscedasticity and serial correlation detected via Modified Wald and Arellano-Bond LM tests necessitate FGLS correction.