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Internationalization and geopolitical risk: Impacts on bank profitability and risk

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Abstract
This study examines the impacts of internationalization and geopolitical risk on the profitability and stability of Vietnamese commercial banks using 549 bank-year observations from 2008 to 2023 and a two-step system GMM framework along with robustness checks. Results show that internationalization improves bank stability but reduces profitability, highlighting a trade-off between diversification benefits and return generation. In contrast, geopolitical risk positively affects both profitability and stability, suggesting that bank adopts adaptive responses under uncertainty. Overall, the findings emphasize the complex interplay between international expansion and external risk in emerging economies and provide policy implications for strengthening financial resilience, with relevance to SDG 8 and SDG 9.

Keywords: internationalization, geopolitical risk, bank risk, profitability
JEL Classification Codes: F23, F51, G21, G32

1. Introduction

In an increasingly globalized financial system, bank internationalization has become a key strategy for expanding market presence and enhancing profitability. However, banks also expose to significant geopolitical risks that can affect their return and risk. Consistent with the "high risk, high return" principle, internationalization creates profit opportunities while

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increasing vulnerability to foreign regulatory differences, political instability, and macroeconomic shocks. This situation raises two critical questions:

Does internationalization enhance bank profitability or primarily increase risk exposure, and how does geopolitical risk shape this relationship?

Although research on bank internationalization has expanded, most empirical evidence focuses on developed economies, leaving limited understanding of these dynamics in developing countries (Phan et al., 2022). Few studies examine how geopolitical risk interacts with internationalization, profitability, and risk, particularly in contexts such as Vietnam with evolving legal and risk management frameworks. Thus, this study addresses this gap by examining how Vietnamese banks manage the risk–return trade-off during internationalization under geopolitical uncertainty. The study provides valuable implications for improving bank resilience and guiding policy and managerial decisions.

1.1 Literature review and hypothesis development

This study adopts an integrated framework that combines portfolio diversification theory, institutional theory, and the risk–return trade-off paradigm to examine how internationalization and geopolitical risk affect bank profitability and stability. Internationalization enables geographical diversification, reducing idiosyncratic risk and stabilizing returns (Markowitz, 1952; Buch et al., 2013; Goetz et al., 2016). However, its benefits depend on strong risk management and supportive institutional environments, which may be limited in emerging markets (Berger et al., 2017; Claessens & Van Horen, 2015). Institutional factors and regulatory differences can further influence performance and create liabilities of foreignness (Meyer & Peng, 2016; Zaheer, 1995). Moreover, the risk–return trade-off suggests that although internationalization enhances stability through diversification, it also increases complexity, costs, and information asymmetry, potentially reducing profitability (Diamond, 1984; Gulamhussen et al., 2014; Claessens & Van Horen, 2012). As a result, the overall impact of internationalization depends on the balance between diversification benefits and institutional and geopolitical constraints. Although diversification can improve stability, increased operational complexity and regulatory costs may reduce profitability. Accordingly, we propose the following hypotheses:

- H1a: Internationalization is positively (-) related to bank risk.
- H1b: Internationalization is positively (-) related to bank profitability.

Geopolitical risk, including conflicts, terrorism, and diplomatic tensions, disrupts trade, weakens investment, and increases capital flow volatility, posing significant challenges for banks, particularly in developing economies (Caldara & Iacoviello, 2022). It affects banks indirectly by weakening borrowers' financial conditions and increasing credit risk and directly by raising funding costs, tightening liquidity, and increasing market risk exposure, particularly for internationally active banks (Milani, 2017). These effects are most pronounced in countries with weak institutional frameworks, where shocks transmit rapidly to the banking sector (Chavaz & Rose, 2019). However, empirical evidence remains mixed as diversification and

prudent risk management can mitigate adverse effects, whereas geopolitical uncertainty may encourage conservative lending and strengthen risk controls that support stability and profitability (Topcu & Can, 2025; Wang et al., 2025). Accordingly, we propose the following hypotheses:

- H2a: Geopolitical risk is positively (-) related to bank risk.
- H2b: Geopolitical risk is negatively (+) related to bank profitability.

2. Methods

We estimated the following baseline models to examine the impacts of internationalization and geopolitical risk on bank performance and risk:

$$ROA_{i,t} = \beta_0 + \beta_1 FLR_{i,t} + \beta_2 GPR_{i,t} + \beta_3 Control_{i,t} + \varepsilon_{i,t} \quad (1)$$

$$Z\text{-}Score_{i,t} = \beta_0 + \beta_1 FLR_{i,t} + \beta_2 GPR_{i,t} + \beta_3 Control_{i,t} + \varepsilon_{i,t} \quad (2)$$

This study uses ROA and Z-score to capture profitability and financial stability, respectively. ROA reflects operational efficiency, whereas the Z-score indicates insolvency risk, with higher values implying greater stability (Altman, 1968; Hafeez et al., 2022). The key explanatory variables are the foreign loan ratio (FLR) and geopolitical risk index (GPR). FLR proxies bank internationalization and cross-border diversification (Berger et al., 2017; Buch et al., 2013; Gulamhussen et al., 2014), whereas GPR measures global geopolitical uncertainty and external financial shocks affecting capital flows and financial conditions (Caldara & Iacoviello, 2022; Phan et al., 2022). Control variables include bank size (SIZE), loan-loss provisions (LLP), ETA, and macroeconomic factors, GDP growth (GDP) and inflation (INF). Appendix A reports variable definitions, measurements, and notes.

To examine the profitability–risk nexus directly, we also estimated an augmented specification that includes ROA in the Z-score equation:

$$Z\text{-}Score_{i,t} = \beta_0 + \beta_1 FLR_{i,t} + \beta_2 GPR_{i,t} + \beta_3 ROA_{i,t} + \beta_4 Control_{i,t} + \varepsilon_{i,t} \quad (3)$$

The main analysis employed a two-step system GMM estimator. It is well suited for dynamic panel data and controls for endogeneity, reverse causality, and unobserved bank-specific heterogeneity (Blundell & Bond, 1998; Doytch & Uctum, 2011). Hansen J-tests ($p > 0.10$ in all specifications) and Arellano–Bond tests were used to confirm instrument validity, whereas Windmeijer-corrected standard errors improved reliability (Arellano & Bond, 1991). For robustness check, a pooled 2SLS regression using the industry average FLR, as a proxy for internationalization, isolating exogenous variation, and addressing endogeneity concerns. The 2SLS results are consistent with the SGMM findings, reinforcing the credibility of the main

results.

3. Data

Data on 40 Vietnamese domestic commercial banks were analyzed, including four state-owned banks[1] and 36 private banks, over 2008–2023, resulting in 549 observations. Bank-level data were sourced from audited financial statements, geopolitical risk data from Caldara and Iacoviello (2022), and macroeconomic indicators from the Vietnam General Statistics Office and the World Development Indicators. The sample focuses on domestic banks to ensure data consistency. Foreign banks were excluded owing to differences in disclosure, ownership, governance, and geopolitical risk exposure (Bondarenko et al., 2024).

4. Results

Table 1 highlights substantial heterogeneity in bank risk, solvency, and performance. The average Z-score is 22.25, with high volatility. Therefore, financial stability differs significantly, ranging from insolvency risk to strong stability. The average FLR of 0.189 suggests that banks primarily focus on domestic lending, whereas foreign lending varies considerably. Overall, the GPR reflects that banks operate in environments with elevated geopolitical risk and volatility, highlighting differences in their risk management approaches.

Table 1. Descriptive statistics

Variable	Obs.	Mean	Std. Dev.	Min.	Max.
Z-score	549	22.256	17.219	−0.952	117.806
FLR	549	0.189	0.573	0	4.43
GPR	549	95.571	19.048	77.29	157.58
SIZE	549	13.984	0.594	12.310	15.36
ROA	549	0.990	0.934	−6.36	7.98
LLP	549	1.353	0.673	−1.06	5.14
ETA	549	10.654	6.833	2.45	61.41
GDP	549	5.966	1.422	2.55	8.12
INF	549	6.783	6.232	0.63	23.12

The correlation analysis results in Table 2 illustrates the influence of independent and control variables on the dependent variables. The highest positive correlation observed between ETA and bank risk (Z-score) is 0.464, consistent with the Modigliani–Miller (1958) theorem, which suggests that high equity enhances bank stability and reduces financial risk exposure. Conversely, bank size (SIZE) exhibits the highest negative correlation with Z-score (−0.166),

[1] BIDV, Vietinbank, Vietcombank and Agribank are 70-100% owned by State Bank of Vietnam.

indicating that larger banks tend to assume greater risks to sustain profitability.

Table 2. Correlation of variables

	Z-score	FLR	GPR	SIZE	ROA	LLP	ETA	GDP	INF
Z-score	1.000								
FLR	0.032	1.000							
GPR	−0.068	0.039	1.000						
SIZE	−0.166	0.339	0.308	1.000					
ROA	0.007	−0.008	−0.005	−0.059	1.000				
LLP	−0.041	0.024	0.045	0.355	−0.113	1.000			
ETA	0.464	−0.148	−0.148	−0.589	0.350	−0.200	1.000		
GDP	0.016	0.027	0.537	−0.025	−0.062	−0.060	−0.029	1.000	
INF	0.186	−0.142	−0.357	−0.427	0.126	−0.038	0.305	−0.006	1.000

Preliminary OLS, FEM, and REM estimations were conducted to provide baseline insights (Appendix B). However, diagnostic tests (Appendix C) revealed heteroscedasticity, first-order autocorrelation, and endogeneity, indicating that these estimators may produce biased results. Therefore, the SGMM estimator was adopted as the primary model as it effectively addresses these econometric issues and ensures consistent and reliable inference.

Table 3 shows that internationalization (FLR) reduces profitability but improves bank stability, which is consistent with portfolio diversification theory (Markowitz, 1952). Cross-border expansion helps Vietnamese banks reduce idiosyncratic risk through asset and income diversification, although increased managerial complexity, exchange rate exposure, and regulatory costs may compress profitability (Berger et al., 2017). In contrast, geopolitical risk (GPR) is positively associated with both profitability and stability. This finding may reflect adaptive responses, such as increasing capital buffers, tightening credit standards, and strengthening solvency to enhance resilience and reduce risk exposure (Demirguc-Kunt et al., 2013). Furthermore, heightened uncertainty may trigger a flight-to-quality effect as investors and depositors shift funds toward stronger banks, lowering funding costs and supporting profitability (Caballero & Krishnamurthy, 2008; Gennaioli et al., 2012). Banks may also shift portfolios toward safer markets and benefit from increased pricing power in less competitive conditions, further improving performance (Buch et al., 2013; Gulamhussen et al., 2014; Beck et al., 2013). Overall, the findings highlight a risk–return trade-off and the role of institutional quality and risk management in shaping the effects of internationalization and geopolitical risk.

To ensure robustness, the study applied two additional tests. First, re-estimation using a balanced panel of 25 banks and 400 observations (Appendix D) confirmed the statistical significance of internationalization (FLR) and geopolitical risk (GPR). Second, a pooled 2SLS regression using the FLR_indavg as an instrumental variable (Appendix E). The consistency between 2SLS and SGMM estimates strengthens the robustness and credibility of the main findings.

Table 3. Two-step system GMM estimation results

Independent variable	*ROA*	*Z-score*
FLR	−0.222***	5.165**
	(−5.07)	(2.79)
GPR	0.002***	0.064***
	(4.15)	(4.59)
SIZE	1.195***	8.138***
	(11.41)	(3.85)
ROA	–	−1.817•
		(−1.84)
LLP	−0.229***	−5.816***
	(−5.81)	(−3.43)
ETA	0.090***	2.002***
	(−4.29)	(5.35)
GDP	−0.029***	−0.242•
	(−4.29)	(−1.90)
INF	0.081***	−1.469***
	(13.77)	(−4.25)
_cons	−16.86***	−107.4***
	(−11.16)	(−3.71)
Number of instruments	37	23
Number of groups	40	33
Wald χ^2	11639.01	675.93
Prob > χ^2	0.000	0.000
AR(1)	0.035	0.049
AR(2)	0.160	0.312
Hansen J-tests	0.362	0.640

Note: •, *,**, and *** represent significance levels of 10%, 5%, 1%, and 0.1%, respectively; t-stat values are presented inside parentheses.

5. Conclusions

This study examined the effects of internationalization and geopolitical risk on the profitability and stability of 40 Vietnamese commercial banks from 2008 to 2023 using system GMM with 2SLS robustness checks. The findings show that internationalization enhances bank stability but reduces profitability, reflecting a trade-off between diversification benefits and foreign expansion costs and complexity. Geopolitical risk unexpectedly improves stability and increases profitability, suggesting adaptive risk management responses under uncertainty. By providing evidence from Vietnam, the study highlights the importance of institutional quality and risk management capacity in shaping internationalization outcomes. The results also support SDG 8 (Sustained Economic Growth) and SDG 9 (Resilient Financial Infrastructure) by emphasizing the need for cautious international expansion, stronger legal frameworks, enhanced geopolitical risk monitoring, and adequate capital buffers to promote sustainable and

resilient banking systems.

Despite its contributions, this study has several limitations. It uses the Z-score as the sole proxy for bank risk and focuses only on domestic commercial banks; furthermore, financial statements may not fully capture true risk exposures. The geopolitical risk measure is based on a global index, which may not reflect Vietnam-specific conditions. Future research should include foreign and joint venture banks, adopting multidimensional risk measures, and examine additional global shocks, such as climate-related risks (SDG 13). Further improvements could involve using higher-frequency data to capture short-run dynamics and developing a Vietnam-specific geopolitical risk index based on local language and regional sources to distinguish between global and domestic risk effects on bank performance and stability.

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Appendix

Table 4. Description of variables in the model

	Variables	Symbol	Measure
		Dependent variables	
1	Bank risk	Z-Score	$\frac{\text{ROA} + \text{ETA}}{\sigma(\text{ROA})}$
2	Return on assets	ROA	$\frac{\text{Net income}}{\text{Total assets}}$
		Independent variables	
3	Internationalization	FLR	$\frac{\text{Bank's foreign loans}}{\text{Total loans}}$
4	Geopolitical risk	GPR	GPR average index per year
		Control variables	
5	Bank size	SIZE	Logarithm (Total assets)
6	Loan-loss provision	LLP	$\frac{\text{Loan loss provision}}{\text{Total loans}}$
7	Equity ratio	ETA	$\frac{\text{Total equity}}{\text{Total assets}}$
8	Economic growth	GDP	$\frac{\text{GDP}_t - \text{GDP}_{t-1}}{\text{GDP}_{t-1}}$
9	Inflation	INF	$\frac{\text{CPI}_t - \text{CPI}_{t-1}}{\text{CPI}_{t-1}}$

Table 5. Preliminary panel estimations (OLS, FEM, REM)

Variables	ROA			Z-Score		
	OLS	FEM	REM	OLS	FEM	REM
FLR	-0.041	-0.134	-0.105	1.683	0.225	0.294
	(-0.59)	(-1.41)	(-1.24)	(1.43)	(0.30)	(0.39)
GPR	0.003	0.001	0.002	-0.031	-0.014	-0.018
	(1.21)	(0.58)	(0.87)	(-0.69)	(-0.68)	(-0.91)
SIZE	0.504***	0.727***	0.645***	7.656***	-1.888	-1.210
	(5.44)	(4.43)	(4.92)	(4.66)	(-1.43)	(-0.93)
ROA	–	–	–	-4.181***	0.320	0.245
				(-5.64)	(0.91)	(0.69)
LLP	-0.186**	-0.239***	-0.288***	-0.519	0.887•	0.884•
	(-3.18)	(-4.13)	(-4.07)	(-0.51)	(1.91)	(1.89)
ETA	0.065***	0.082***	0.076***	1.671***	1.328***	1.329***
	(9.77)	(10.11)	(10.31)	(13.43)	(18.93)	(18.94)
GDP	-0.053•	-0.034	-0.041	0.535	0.456•	0.495*
	(-1.66)	(-1.16)	(-1.43)	(0.97)	(1.96)	(2.12)
INF	0.020**	0.018**	0.019***	0.332**	0.109*	0.127*
	(2.88)	(2.69)	(2.95)	(2.79)	(2.01)	(2.34)
_cons	-6.614***	-9.763***	-8.591***	-100.6***	30.79•	20.58
	(-5.08)	(-4.25)	(-4.68)	(-4.37)	(1.67)	(1.13)
N	549					
P-value	0.000					
R-squared	0.187	0.218	0.218	0.291	0.618	0.617

Note: •, *,**,*** represent significance levels of 10%, 5%, 1% and 0.1% respectively; t-stat values are presented inside parentheses.

To provide preliminary insights, the relationships among internationalization (FLR), geopolitical risk (GPR), bank performance (ROA), and bank risk (Z-Score) were initially estimated using ordinary least squares (OLS), fixed-effects (FEM), and random-effects (REM) models. These estimations serve as diagnostic tools before applying the SGMM framework.

Appendix B reports the results from OLS, FEM, and REM (all significant at $p = 0.000$), where the independent variables explain between 18.7% and 61.8% of the variance in the dependent variables. FEM and REM offer notably better explanatory power than OLS. FLR is negatively and GPR is positively associated with both risk and ROA, but these coefficients are not statistically significant. The key result is a highly significant negative relationship between ROA and Z-Score ($\beta = -4.181$ in OLS, $p < 0.1\%$), confirming a clear trade-off between bank profitability and stability. In addition, ETA and INF exert significant effects on both Z-Score and ROA, although the magnitude of their impacts varies across models.

These findings further justify the use of the SGMM estimator as the primary empirical model, as it corrects for heteroskedasticity, autocorrelation, and endogeneity present in these preliminary estimations.

Table 6. Diagnostic and model selection tests

ROA			
Hausman test		**Breusch - Pagan Lagrangian Multiplier test**	
chi2(7)	= 6.27	chibar2(01)	= 296.58
Prob > chi2	= 0.509	Prob > chibar2	= 0.000
Z-Score			
Hausman test		**Breusch - Pagan Lagrangian Multiplier test**	
chi2(8)	= 13.88	chibar2(01)	= 2038.77
Prob > chi2	= 0.085	Prob > chibar2	= 0.000

Autocorrelation phenomenon			
ROA		**Z-Score**	
F(1, 39)	= 35.147	F(1, 39)	= 288.414
Prob > F	= 0.000	Prob > F	= 0.000

Both the Hausman and Breusch-Pagan tests suggest that REM is preferable to pooled OLS and FEM. However, the REM exhibits important issues: heteroskedasticity, first-order autocorrelation ($Prob > F = 0.000 < 5\%$), and endogeneity. Durbin–Wu–Hausman tests indicate that ROA and INF in the Z-Score model, as well as GPR, SIZE, GDP, and INF in the ROA

model, are endogenous (p-value < 5%).

Table 7. Two-step System GMM estimation results with balanced panel data

Independent variable	ROA	Z-score
FLR	-0.148*** (-3.17)	2.992*** (3.72)
GPR	0.002** (2.87)	0.069*** (3.96)
SIZE	0.352** (3.01)	3.852* (2.34)
ROA	–	-6.263*** (-4.74)
LLP	0.057 (0.92)	1.798* (2.00)
ETA	0.108*** (17.38)	1.481*** (7.71)
GDP	-0.008 (-0.74)	-0.272* (-2.27)
INF	-0.067*** (-4.67)	-1.482*** (-6.04)
_cons	-4.849** (-2.86)	-47.89* (-2.00)
Number of instruments	23	25
Number of groups	25	25
Wald chi2	8053.83	7782.58
Prob > chi2	0.000	0.000
AR(1)	0.049	0.027
AR(2)	0.140	0.536
Hansen test	0.376	0.690

Note: •, *,**,*** represent significance levels of 10%, 5%, 1% and 0.1% respectively; t-stat values are presented inside parentheses.

Table 8. Robustness check with pooled 2SLS (IV) regression

Independent variable	ROA	Zscore
FLR	-1.273**	13.950*
	(-2.70)	(2.03)
GPR	0.010**	0.017**
	(2.68)	(2.69)
SIZE	-0.104	-0.038
	(-0.43)	(-0.01)
LLP	-0.060	1.421
	(-0.48)	(0.68)
ETA	0.054***	1.298***
	(3.70)	(5.05)
GDP	-0.119**	0.148
	(-2.62)	(0.23)
INF	0.024**	0.285*
	(2.65)	(2.09)
_cons	1.323	-0.011
	(0.41)	(0.00)
Number of observations	549	549
Instrumented: FLR		
Instruments: GPR, SIZE, LLP, ETA, GDP, INF, FLR_indavg		
First-stage F-statistic	18.703	18.703
Endogeneity test for FLR		
Robust score chi2(1)	13.93	7.03
p-value	0.0002	0.008

Note: •, *,**,*** represent significance levels of 10%, 5%, 1% and 0.1% respectively; z values are presented inside parentheses.

As a robustness check, the study also uses a pooled 2SLS IV model to address potential endogeneity in bank internationalization (FLR). Endogeneity may arise because banks self-select into foreign lending based on unobserved factors such as managerial quality, risk preferences, and growth opportunities, and because expected performance may influence internationalization decisions. FLR is instrumented using the industry average foreign loan ratio (FLR_indavg), constructed as the leave-one-out average of other banks' FLR in the same year. This instrument captures industry-wide influences such as regulatory conditions and competitive pressures while remaining exogenous to individual bank performance shocks. This approach is well established for correcting endogeneity in internationalization studies (von Hinke et al., 2019), with geopolitical risk and other control variables treated as exogenous.

The results in Table 4 confirm that FLR remains statistically significant, and the instrument is valid and relevant, as indicated by a strong first-stage F-statistic of 18.703 and significant endogeneity tests for both ROA and Z-Score models (for the ROA model, the robust score chi^2 is 13.93 ($p = 0.0002$), and for the Z-Score model, chi^2 is 7.03 ($p = 0.008$)). These diagnostics indicate that FLR is endogenous in both models, reinforcing that the pooled 2SLS results

provide a reliable robustness check for the main SGMM estimates. Although coefficient magnitudes differ from SGMM estimates, the consistent direction of effects confirms that the main findings are robust and not driven by endogenous internationalization decisions.