# EVALUATING THE EFFECT OF RISK MANAGEMENT ON THE PERFORMANCE OF COMMERCIAL BANKS IN VIETNAM THROUGH A PANEL REGRESSION APPROACH

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**Abstract**: *This paper investigates the impact of risk management on the performance of commercial banks in Vietnam over the period 2014–2024. Using panel data from 31 Vietnamese commercial banks, the study examines how credit risk, operational risk, liquidity risk, and market risk affect key performance indicators. After conducting various diagnostic tests to determine the most suitable estimation method, the study ultimately applies the Generalized Least Squares (GLS) regression technique. The findings reveal that all four types of risk are significantly associated with lower bank performance. Specifically, increases in credit and operational risk as measured by higher non-performing loan ratio (NPL) and cost-to-income ratio (CIR) reduce profitability, while declines in liquid assets to total assets and net interest margins (NIM) (indicating lower liquidity and market risk) are also linked to poorer performance. These results emphasize that robust risk management across all dimensions is essential for maintaining profitability and financial stability. This study provides valuable recommendations for bank managers and policymakers, emphasizing the need to strengthen credit monitoring, improve operational efficiency, maintain adequate liquidity, and optimize interest margins to enhance the sustainable performance of Vietnam's banking sector.*

**Keywords**: *Bank's performance; Panel data regression; Commercial banks; Risk management; Vietnam.*

## 1. Introduction

The banking sector is a fundamental component of the financial system, playing a vital role in fostering economic development and financial stability across nations. Commercial banks serve as key intermediaries, channeling savings into productive investments, ensuring liquidity, managing cash flows, and facilitating the implementation of monetary policies. Scholars such as McKinnon (1973) and Tursoy (2018) have emphasized the strong connection between the stability of the financial system and the sustainable growth of an economy. According to Bessis (2011), efficient risk management is central to ensuring that banks can navigate uncertainties while maintaining profitability and resilience. In developing economies like Vietnam, the importance of robust risk management frameworks has become even more pronounced, particularly in light of increasing global financial integration and local market complexities.

Despite significant regulatory efforts and advancements, commercial banks worldwide continue to face various risk challenges, including credit risk, operational risk, liquidity risk, and market risk. In Vietnam, the banking sector has navigated several notable shocks during the study period. The outbreak of COVID-19 in late 2019 disrupted global and domestic financial flows, sharply affecting banks' asset quality and earnings. Furthermore, high-profile corporate scandals, such as the arrest of Ms. Truong My Lan in 2022 related to the An Dong bond fraud, triggered widespread withdrawals from Saigon Commercial Bank (SCB), underscoring the critical role of effective risk management in safeguarding customer confidence and institutional stability. These events highlight the necessity of evaluating how risk management practices influence the performance of Vietnamese banks over time.

This research focuses on 31 commercial banks in Vietnam, covering the period from 2014 to 2024. By employing panel regression methods, the

study examines the impact of risk management, specifically across four key dimensions: credit risk (measured by the non-performing loan ratio, CR), operational risk (measured by cost-to-income ratio, OR), liquidity risk (measured by the negative value of liquid assets to total assets, LR), and market risk (measured by the negative value of net interest margin, MR), on the banks' financial performance, measured by return on assets (ROA) and return on equity (ROE). The study aims to provide empirical insights that not only deepen the understanding of these relationships but also inform the strategic and regulatory approaches necessary to enhance the resilience of the Vietnamese banking sector.

To highlight the uniqueness of this study, it incorporates recent data up to 2024, capturing post-COVID recovery and recent scandals, and uses GLS to address panel data issues, offering fresh practical insights for Vietnam's evolving banking landscape compared to prior studies.

This paper is structured as follows: Section 1 provides the introduction, outlining the research background and motivation; section 2 presents the literature review and hypothesis development, synthesizing key theoretical and empirical contributions; section 3 describes the data and methodology, detailing the data sources, variables, and panel regression techniques applied; section 4 presents the results; section 5 discusses the findings; section 6 concludes the study, summarizing the main findings and offering policy and managerial implications; and section 7 acknowledges any contributions or support.

## 2. Research overview

### *2.1 Bank Performance and Risk Management*

For companies to stay on course, performance must be measured and analyzed, providing stakeholders with information for decision-making. Managers can benchmark, find strengths, weaknesses, and strategize. This also boosts transparency and accountability, motivating staff. It helps set achievable goals and KPIs fitting the organization's resources. In banking, ROA and ROE are key performance indicators (Kumar & Skhar, 2016; Anggono, 2017). ROA shows asset profitability, while ROE reflects shareholder returns. Despite some concerns during crises (Moussu, 2018), ROA and ROE are still widely used in research due to their simplicity and link to bank results, including under various economic conditions (Boyd et al., 2001).

Risk management has become an indispensable function in banking due to the increasing complexity of financial markets, regulatory pressures, and competition (Basel Committee, 2000). Effective risk management ensures that banks can mitigate adverse events, safeguard profitability, and maintain customer confidence. The four principal types of risk that threaten the viability of banks are credit risk, operational risk, liquidity risk, and market risk (Puspitasari et al., 2021). These risk types, their origins, and their management approaches form the backbone of research examining bank performance, particularly in emerging economies like Vietnam.

Stakeholder theory provides a relevant lens to understand this relationship, as it emphasizes that effective risk management contributes to maximizing shareholder value and maintaining the equilibrium of stakeholder interests. Moreover, capital management risk has been proposed in related studies (Wijewardana & Wimalasiri, 2017) as a critical determinant of performance, especially in turbulent environments.

Recent studies in Vietnam have further explored these dynamics. For instance, Nguyen Duc Hien & Nguyen Bich Ngan (2024) examined the impact of digital transformation and Basel III implementation on credit risk levels in Vietnamese banks from 2017–2023, finding that digital tools reduce credit risk but require strong regulatory compliance. Similarly, Ngo Khanh Huyen & Trinh Thi Thu Hang (2025) used Bayesian analysis to show negative effects of financial risks (credit, liquidity, operational) on ROE in Vietnam's top 10 banks from 2015–2023, emphasizing risk management in post-pandemic recovery. Additionally, Dat et al. (2024) investigated competition's role in enhancing bank stability efficiency using Tobit regression on data from 2007–2020, suggesting that competitive environments improve risk mitigation.

### *2.2 Key Risk Factors and Their Impact on Performance*

*2.2.1 Credit Risk*

Credit risk refers to the potential loss a bank faces when borrowers fail to meet their contractual obligations (Ghosh, 2014). Non-performing loans (NPLs) are widely used as a proxy for credit risk, representing loans that have not yielded principal or interest payments for at least 90 days. High levels of NPLs can erode bank profitability by reducing interest income and increasing provisioning requirements (Takang & Ntui, 2008). Studies have shown that credit risk negatively impacts bank performance by increasing potential losses and damaging asset quality (Ekinci, 2016; Abbas et al., 2014).

*H1: Credit risk (measured by NPL ratio) has a negative impact on ROA and ROE.*

*2.2.2 Operational Risk*

Operational risk arises from internal failures in processes, people, or systems, as well as external events that disrupt operations. Cost-to-income ratio (CIR) is a common measure of operational risk, reflecting a bank's efficiency in managing expenses relative to income (Berger & DeYoung, 1997). High CIR values indicate inefficiency, which negatively affects profitability (Ilhomovich, 2009). Prior research highlights that operational risks can significantly influence bank performance, sometimes more than other risk types (Hussain et al., 2016).

*H2: Operational risk (measured by CIR) has a negative impact on ROA and ROE.*

*2.2.3 Liquidity Risk*

Liquidity risk refers to the danger that a bank will be unable to meet its short-term financial obligations due to insufficient liquid assets (Babar & Zeb, 2011). Liquid assets (including cash in hand, balances with Central Bank, treasury bills and bonds, balances with other banks, minus balances due to other banks) to total assets ratio (LR) is often used to assess a bank's liquidity position. A higher LR indicates better ability to withstand liquidity shocks and maintain operations, positively contributing to performance (Uyen, 2024). While some studies (Arif & Anees, 2012) argue that liquidity constraints reduce profitability, others suggest that strong liquidity buffers enhance resilience and earnings.

*H3: Liquidity risk (measured by the negative value of liquid assets to total assets) has a negative impact on ROA and ROE.*

*2.2.4 Market Risk*

Market risk arises from fluctuations in market variables such as interest rates, exchange rates, and asset prices (Bessis, 2011). Net interest margin (NIM) serves as a proxy for market risk management by capturing the spread between interest income and expenses relative to interest-earning assets (Heid, 2007). A higher NIM typically signals better pricing strategies and stronger profitability, although it may also reflect higher exposure to risky assets (Khrawish, 2011). Prior studies have shown a positive relationship between effective market risk management and financial performance (Mohammed & Knapkova, 2016).

*H4: Market risk (measured by the negative value of net interest margin, NIM) has a negative impact on ROA and ROE.*

## 3. Data and methods

### *3.1 Data collection*

This study uses secondary data sourced from FiinPro, supplemented by audited annual reports from each bank, publications from the State Bank of Vietnam (SBV), and other reputable financial databases. The research focuses on an unbalanced panel of 31 commercial banks in Vietnam, covering the period from 2014 to 2024.

The dataset captures annual observations of bank-specific data over this 11-year period. The selection of banks includes both state-owned and joint-stock commercial banks operating in Vietnam, ensuring representativeness and robustness of the analysis.

### *3.2 Research model*

This paper adopts a quantitative research approach using econometric modeling to investigate the relationship between risk management and the performance of commercial banks in Vietnam. The analysis initially employs the Pooled Ordinary Least Squares (Pooled OLS), Fixed Effects Model (FEM), and Random Effects Model (REM) to estimate the baseline relationships and identify the most appropriate model. Based on the Hausman test, the REM is selected for further analysis. Subsequently, the Modified Wald test for heteroskedasticity and the Wooldridge test for autocorrelation reveal the presence of both issues in the panel data. To address these problems and ensure the efficiency

and robustness of the parameter estimates, the study employs the Generalized Least Squares (GLS) method.

While methods like Generalized Method of Moments (GMM) could further address potential endogeneity issues, GLS was chosen here due to the sample's characteristics and focus on heteroskedasticity and autocorrelation correction. GMM is recommended for future extensions with larger datasets or dynamic panels.

The general form of the regression model is specified as:

$$PERFORMANCE_{i,t} = \beta_0 + \beta_1 CR_{i,t} + \beta_2 OR_{i,t} + \beta_3 LR_{i,t} + \beta_4 MR_{i,t} + \varepsilon_{i,t}$$

Where:

- $PERFORMANCE_{i,t}$ = ROA or ROE of bank i at time t
- $CR_{i,t}$ = Non-performing loan ratio (credit risk)
- $OR_{i,t}$ = Cost-to-income ratio (operational risk)
- $LR_{i,t}$ = - Liquid assets to total assets (liquidity risk)
- $MR_{i,t}$ = - Net interest margin (market risk)

It is important to note that the liquidity risk (LR) and market risk (MR) variables are transformed into negative values to ensure that higher risk corresponds to more negative values, thus maintaining consistency in the interpretation of regression coefficients. This transformation aids in clearly capturing the inverse relationship between these risks and bank performance.

### *3.3 Research variables*

*3.3.1 Dependent variables*

**Table 1. Dependent variable measurement**

| Variable | Notation | Definition |
|---|---|---|
| Return on Assets | ROA | Net profit / Total assets |
| Return on Equity | ROE | Net profit / Shareholders' equity |

These metrics capture the profitability and performance efficiency of banks

*3.3.2 Independent Variables*

**Table 2. Independent variable measurement**

| Variable | Notation | Definition |
|---|---|---|
| Credit risk | CR | Non-performing loans / Total loans |
| Operational risk | OR | Operating expenses/ Operating income |
| Liquidity risk | LR | - (Cash in hand + Balances with Central Bank + Treasury bills and bonds + Balances with other banks - Balances due to other banks)/ Total assets |
| Market risk | MR | - (Interest income - Interest expenses)/ Earning assets |

These variables represent core aspects of risk management within commercial banks.

## 4. Research results

### *4.1 Descriptive statistics*

**Table 3. Descriptive statistics**

| Variables | Mean | SD | Min | Max |
|---|---|---|---|---|
| **ROA** | 0.009 | 0.007 | 0.000 | 0.032 |
| **ROE** | 0.108 | 0.078 | 0.000 | 0.303 |
| **CR** | 0.019 | 0.011 | 0.000 | 0.073 |
| **OR** | 0.514 | 0.152 | 0.227 | 0.958 |
| **LR** | -0.160 | 0.059 | -0.339 | -0.043 |
| **MR** | -0.028 | 0.010 | -0.062 | 0.007 |

Table 3 presents the descriptive statistics of the variables used in this study, based on 316 observations covering 31 commercial banks in Vietnam over the period 2014–2024. The mean value of ROA is 0.009 (0.9%), with a minimum of 0 and a maximum of 0.032, indicating that Vietnamese banks generate an average profit of 0.9% relative to their total assets. The ROE has a mean of 0.108 (10.8%), suggesting moderate efficiency in utilizing shareholders' equity, with values ranging from 0 to 0.303.

For the risk indicators, the CR averages 1.9%, showing that Vietnamese banks maintain relatively healthy loan portfolios, though some banks face challenges with maximum NPL levels reaching 7.3%. The OR has a mean of 51.4%, reflecting moderate operational efficiency across the sector, while LR averages -16%, indicating the banks' capacity to meet short-term obligations.

Finally, the MR averages -2.8%, reflecting the difference between interest income and interest expenses relative to earning assets.

***4.2 Correlation analysis***

**Table 4. Correlation coefficient between variables**

| | ROA | ROE | NPL | CIR | LR | NIM |
|---|---|---|---|---|---|---|
| **ROA** | 1 | | | | | |
| **ROE** | 0.888*** | 1 | | | | |
| **CR** | -0.190*** | -0.236*** | 1 | | | |
| **OR** | -0.697*** | -0.721*** | 0.053 | 1 | | |
| **LR** | -0.093* | -0.066 | -0.126** | 0.098* | 1 | |
| **MR** | -0.761*** | -0.676*** | 0.04 | 0.596*** | -0.053 | 1 |
| *Note: * p < 0.1; ** p < 0.05; *** p < 0.01* | | | | | | |

Table 4 shows the correlation matrix between the dependent variables (ROA, ROE) and independent variables (CR, OR, LR, MR). Notably, ROA and ROE are highly correlated (0.888, significant at 1%), confirming that both profitability indicators move closely together.

Regarding the risk management variables:

- CR is negatively correlated with ROA (-0.190) and ROE (-0.236), both significant at 1%, indicating that higher credit risk reduces profitability.

- OR has a strong negative correlation with ROA (-0.697) and ROE (-0.721), significant at 1%, highlighting that poor cost management harms financial performance.

- LR shows a weak and negative correlation with ROA (-0.093, significant at 10%) and an insignificant correlation with ROE, suggesting that liquidity plays a minor role in profitability.

- MR is strongly and negatively correlated with ROA (-0.761) and ROE (-0.676), both significant at 1%, confirming that better management of interest spreads enhances bank performance.

These correlations align with prior studies that emphasize the importance of credit quality, operational efficiency, and market risk management for bank profitability.

***4.3 Regression results***

**Table 5. Regression output of Bank Specific Factors (GLS method)**

| | | ROA | ROE |
|---|---|---|---|
| **Independent variables** | **CR** | -0.058*** (0.000) | -0.708*** (0.000) |
| | **OR** | -0.011*** (0.000) | -0.177*** (0.000) |
| | **LR** | -0.010*** (0.000) | -0.077** (0.044) |
| | **MR** | -0.270*** (0.000) | -2.436*** (0.000) |
| **Constant** | | 0.006*** (0.000) | 0.129*** (0.000) |
| **Observations: 316** | | | |
| *Note: * p < 0.1; ** p < 0.05; *** p < 0.01* | | | |

Table 5 presents the GLS regression results, examining the impact of risk management variables on ROA and ROE.

- CR has a significant negative effect on both ROA (-0.058, $p < 0.01$) and ROE (-0.708, $p < 0.01$), supporting the hypothesis that higher credit risk reduces profitability.

- OR also negatively influences ROA (-0.011, $p < 0.01$) and ROE (-0.177, $p < 0.01$), confirming that inefficient cost structures harm bank performance.

- LR negatively impacts ROA (-0.010, $p < 0.01$) and ROE (-0.077, $p < 0.05$), suggesting that maintaining adequate liquidity enhances profitability and resilience.

- MR shows the strongest negative effect on both ROA (-0.270, $p < 0.01$) and ROE (-2.436, $p < 0.01$), highlighting that effective pricing and interest spread management are key profitability drivers.

These findings are consistent with global evidence (e.g., Abbas et al., 2014; Ghosh, 2014) and studies in emerging markets, emphasizing that internal bank factors—particularly credit risk, operational efficiency, liquidity management, and market risk control - play a critical role in

determining bank performance, often more than external macroeconomic factors.

**5. Discussions**

This study aimed to examine the effect of risk management on the performance of commercial banks in Vietnam from 2014 to 2024. Specifically, the study analyzed four main types of risk: credit risk, operational risk, liquidity risk, market risk, and their respective impacts on two performance measures: ROA and ROE.

Firstly, regarding credit risk, the analysis identifies a statistically significant and negative relationship between the non-performing loan (NPL) ratio and both ROA and ROE. This finding reinforces the notion that elevated credit risk undermines profitability and shareholder value. Consistent with Ekinci (2016) and Abbas et al. (2014), the result underscores how deteriorating loan quality not only reduces interest income but also necessitates greater loan loss provisions, ultimately impairing bank performance.

To enhance credit risk management, banks should implement advanced credit scoring models, leverage digital tools for real-time borrower monitoring, and strengthen collateral valuation processes. In Vietnam's context, integrating fintech for early warning systems can mitigate NPLs, especially post-COVID and amid economic shocks.

Secondly, in terms of operational risk, the study reveals that a higher cost-to-income ratio (CIR) is significantly associated with lower ROA and ROE. This suggests that inefficiencies in managing operating expenses, whether arising from ineffective internal processes, excessive costs, or organizational flaws, can severely erode a bank's earnings. The result echoes the findings of Hussain et al. (2016), highlighting the central role of robust operational practices in driving financial sustainability and performance.

For operational risk management, banks can adopt automation and AI-driven processes to reduce costs, conduct regular audits of internal systems, and invest in staff training to prevent human errors. In Vietnam, aligning with Basel III standards can further standardize operational resilience, reducing CIR through efficient resource allocation.

Thirdly, the analysis of liquidity risk shows a statistically significant and negative link between the negative value of the liquid assets to total assets ratio and the performance indicators. In essence, this implies that banks with stronger liquidity positions tend to achieve better profitability. The result aligns with Dang Uyen (2024), who emphasized that maintaining ample liquidity reserves is crucial for banks to absorb financial shocks and operate smoothly, especially in the context of emerging economies.

Liquidity risk management strategies include diversifying funding sources, maintaining high-quality liquid assets buffers as per Basel III liquidity coverage ratios, and using stress testing scenarios. Vietnamese banks should prioritize interbank market access and central bank facilities to avoid liquidity crunches during crises like the 2022 SCB event.

Lastly, market risk, captured by the negative value of the net interest margin, also demonstrates a significant and adverse effect on both ROA and ROE. This suggests that banks with narrower interest spreads, or those more vulnerable to unfavorable market fluctuations, face diminished profitability. The result supports earlier research by Mohammed & Knapkova (2016) and Khrawish (2011), reinforcing the view that optimizing interest margin management is vital to enhance financial outcomes and mitigate market-driven volatility.

To manage market risk, banks should employ hedging instruments like interest rate swaps, monitor exchange rate exposures, and optimize asset-liability matching. In Vietnam's volatile market, adopting advanced analytics for NIM forecasting can help banks adjust pricing strategies amid global integration and rate fluctuations.

These findings are broadly consistent with studies in emerging markets such as Ghana (Abbas et al., 2014) and Turkey (Ekinci, 2016), where risk management variables also showed significant impacts on profitability. However, the stronger magnitude of market risk in this study suggests that Vietnamese banks may rely more heavily on interest spreads, underlining the importance of pricing strategies in a developing financial system.

In summary, this study provides robust evidence that all four categories of risk, when

properly managed, have a statistically significant influence on the performance of Vietnamese commercial banks. The findings underscore the necessity for an integrated and proactive risk management framework tailored to the specific challenges of Vietnam's banking sector.

## 6. Conclusion and recommendations

### *6.1 Limitations and future research*

This study has several limitations. First, it focuses solely on internal bank-specific risks and omits macroeconomic variables such as GDP growth or inflation, which may also influence bank performance. Second, the analysis uses secondary data, which may not fully capture qualitative aspects of risk management practices. Future studies may incorporate macro-financial indicators, explore the impact of regulatory reforms (e.g., Basel III implementation), or apply alternative methodologies such as dynamic panel GMM to address endogeneity issues.

### *6.2 Conclusion*

This study explores the relationship between risk management and the financial performance of Vietnamese commercial banks, using data from 31 banks over the period 2014–2024. By employing panel regression models and addressing econometric challenges through GLS estimation, the research provides robust evidence on how different types of risk-credit, operational, liquidity, and market - shape bank profitability.

The key findings indicate that all four types of risk have statistically significant and negative effects on both ROA and ROE, highlighting the detrimental impact of weak risk management across all dimensions. Among these, market risk management, as reflected by the net interest margin, emerges as the most influential factor affecting profitability. These results reinforce the importance of internal bank practices over external macroeconomic conditions in driving financial success. For bank managers, the study underscores the need to prioritize credit assessment, cost control, and interest rate management. For policymakers, the findings highlight the value of supportive regulatory frameworks that encourage prudent risk-taking and foster financial stability.

By addressing the gaps in empirical research on Vietnam's banking sector, this study contributes to the global literature on risk management and offers practical insights for improving the resilience and competitiveness of banks in emerging markets.

### *6.3 Recommendations*

Based on the findings, the following recommendations are proposed for enhancing risk management activities in Vietnamese banks:

- Credit Risk: Strengthen credit monitoring through digital platforms and AI-based predictive analytics to identify potential NPLs early. Banks should also enforce stricter loan approval processes and collaborate with credit bureaus for better borrower assessment.

- Operational Risk: Invest in process automation and cybersecurity measures to lower CIR. Regular training programs and internal audits can minimize human and system errors, aligning with international standards like Basel III.

- Liquidity Risk: Maintain optimal liquidity buffers by diversifying funding and conducting frequent stress tests. Policymakers should support liquidity facilities via the SBV to aid banks during shocks.

- Market Risk: Optimize NIM through dynamic pricing models and hedging against interest rate volatility. Banks should monitor global market trends and adjust portfolios accordingly to sustain profitability.

Overall, banks should adopt an enterprise-wide risk management framework, integrating these practices with digital transformation initiatives for long-term stability.

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# ĐÁNH GIÁ ẢNH HƯỞNG CỦA QUẢN LÝ RỦI RO ĐẾN HIỆU QUẢ HOẠT ĐỘNG CỦA CÁC NGÂN HÀNG THƯƠNG MẠI TẠI VIỆT NAM, THÔNG QUA PHƯƠNG PHÁP HỒI QUY BẢNG

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**Tóm tắt:** *Bài báo nghiên cứu ảnh hưởng của quản lý rủi ro đến hiệu quả hoạt động của các ngân hàng thương mại tại Việt Nam trong giai đoạn 2014–2024. Sử dụng dữ liệu bảng từ 31 ngân hàng thương mại Việt Nam, nghiên cứu xem xét cách rủi ro tín dụng, rủi ro hoạt động, rủi ro thanh khoản và rủi ro thị trường ảnh hưởng như thế nào đến các chỉ số hiệu quả chính. Sau khi tiến hành các kiểm tra chẩn đoán để xác định phương pháp ước lượng phù hợp nhất, nghiên cứu cuối cùng áp dụng kỹ thuật hồi quy Bình phương nhỏ nhất khái quát hóa (GLS). Kết quả cho thấy cả bốn loại rủi ro đều có liên quan đáng kể đến việc giảm hiệu quả ngân hàng. Cụ thể, sự gia tăng rủi ro tín dụng và rủi ro hoạt động, được đo lường bởi tỷ lệ nợ xấu (NPL) cao hơn và tỷ lệ chi phí trên thu nhập (CIR), làm giảm lợi nhuận, trong khi sự suy giảm tỷ lệ tài sản thanh khoản trên tổng tài sản và biên lãi ròng (NIM) (cho thấy rủi ro thanh khoản và rủi ro thị trường thấp hơn) cũng liên quan đến hiệu quả kém hơn. Những kết quả này nhấn mạnh rằng quản lý rủi ro toàn diện trên tất cả các khía cạnh là cần thiết để duy trì lợi nhuận và sự ổn định tài chính. Nghiên cứu cung cấp các đề xuất giá trị cho các nhà quản lý ngân hàng và nhà hoạch định chính sách, nhấn mạnh sự cần thiết phải tăng cường giám sát tín dụng, cải thiện hiệu quả hoạt động, duy trì thanh khoản đầy đủ và tối ưu hóa biên lãi để nâng cao hiệu quả bền vững của ngành ngân hàng Việt Nam.*

**Từ khóa:** *Hiệu quả ngân hàng; Hồi quy dữ liệu bảng; Ngân hàng thương mại; Quản lý rủi ro; Việt Nam.*