

## DETERMINANTS OF COMMERCIAL BANK'S NON-PERFORMING LOANS IN VIETNAM

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Received: Dec 10, 2024

Accepted: Jan 27, 2026

### ABSTRACT

Non-performing loans (NPLs) serve as a key indicator of a bank's financial strength, risk management, and operational efficiency. Effective management of NPLs is essential for maintaining long-term sustainability, ensuring regulatory compliance, and preserving customer trust. This study examined the factors influencing NPLs, measured by the NPLs ratio (NPLR), using data from 30 commercial banks in Vietnam over the period of 2017–2023. Descriptive statistics were employed to assess the overall performance of the banks, while the fixed effects model (FEM) was used to identify the key determinants of the NPLs. The findings revealed that factors such as credit growth, customer deposits, and bank assets saw substantial increases, although growth was significantly impacted by the Covid-19 pandemic. It was observed that a higher return on equity (ROE) and operating costs were associated with lower NPLs, while rising NPLs from the previous year, a larger bank size, and higher loan-to-asset ratios contributed to higher NPLs. These results provide important insights for banks on how to manage NPLs effectively. It is recommended that banks conduct thorough credit assessments, better manage operation costs, maintain strong profitability, and carefully manage existing loan portfolios to ensure the NPL ratio is within the permissible threshold.

Keywords: Non-Performing Loans (NPLs), commercial banks, credit growth, ROE

### Các yếu tố ảnh hưởng đến nợ xấu của các ngân hàng thương mại tại Việt Nam

#### TÓM TẮT

Nợ xấu (NPLs) là chỉ tiêu quan trọng phản ánh hiệu quả hoạt động của ngân hàng thương mại. Quản lý nợ xấu hiệu quả giúp ngân hàng hoạt động bền vững và bảo vệ lòng tin khách hàng. Nghiên cứu này khảo sát các yếu tố ảnh hưởng đến nợ xấu, đo lường qua tỷ lệ nợ xấu (NPLR), với dữ liệu từ 30 ngân hàng thương mại tại Việt Nam trong giai đoạn 2017–2023. Thống kê mô tả được sử dụng để đánh giá hiệu quả chung của các ngân hàng và mô hình hiệu ứng cố định (FEM) giúp xác định các yếu tố ảnh hưởng chính. Kết quả cho thấy, mặc dù chịu ảnh hưởng lớn từ đại dịch Covid-19 tuy nhiên tăng trưởng tín dụng, tiền gửi của khách hàng và tài sản của ngân hàng đều tăng đáng kể. Duy trì tỷ suất sinh lời trên vốn chủ sở hữu (ROE) và chi phí hoạt động cao làm giảm nợ xấu; trong khi đó, tỷ lệ nợ xấu từ năm trước, quy mô ngân hàng lớn và tỷ lệ cho vay trên tài sản cao góp phần làm gia tăng nợ xấu. Các ngân hàng cần đánh giá tín dụng kỹ lưỡng, quản lý chi phí, duy trì lợi nhuận và quản lý danh mục cho vay để đảm bảo tỷ lệ nợ xấu trong mức cho phép.

Từ khoá: Nợ xấu, ngân hàng thương mại, tăng trưởng tín dụng, ROE.

#### 1. INTRODUCTION

Non-performing loans (NPLs) have long been a critical issue for banks and financial institutions worldwide, posing significant challenges to their financial stability and

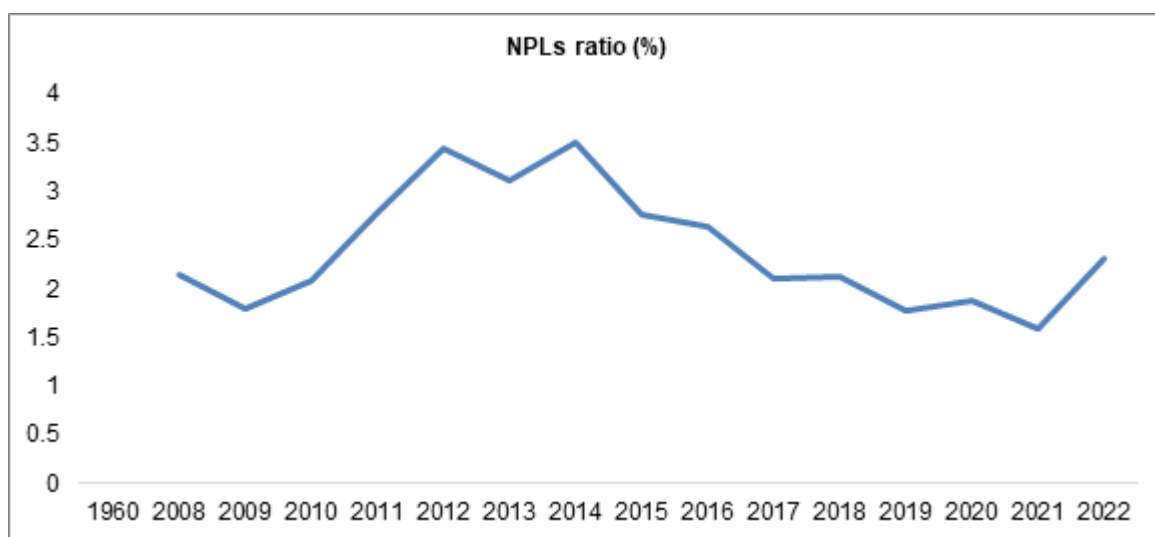
operational efficiency. NPLs are loans for which borrowers are either unable to pay the interest, the principal, or both on time, or they are unable to repay the loan entirely. The existence of NPLs reduces the liquidity of banks, which refers to their ability to convert

assets into cash when needed. Banks with a high NPL ratio face increased financial strain, as a large portion of their assets is tied up in loans that are either unrecoverable or will likely be recovered at a lower value than originally lent. This directly impacts the bank's profitability, as well as its capacity to provide further loans to other borrowers. When a bank's NPL ratio is high, it signals serious concerns regarding the health of its loan portfolio. NPLs can be caused by various factors, including poor loan origination, ineffective credit risk management, economic downturns, or external shocks such as natural disasters or global crises. A prolonged rise in NPLs, especially in the context of a credit crisis, can severely undermine a bank's financial position and potentially lead to its collapse. When banks are unable to recover their loans, they may face insolvency or have to take measures like reducing lending, which can further destabilize the economy.

Previous studies on NPLs have become outdated due to significant changes in economic and financial factors during the Covid-19 pandemic. The pandemic triggered a global economic downturn, which altered consumer spending and saving behaviors,

making these studies no longer accurately reflect the current reality. Additionally, in the 2020-2021 period, the State Bank of Vietnam issued several circulars to support commercial banks, including measures for debt restructuring, debt deferrals, and temporarily not classifying loans as non-performing. These measures helped to temporarily reduce NPL ratios, but also created bad debts that were not fully accounted for in earlier studies. Furthermore, the pandemic led to an increase in the number of financially distressed customers, complicating the classification of loans and the provisioning process. The extension or restructuring of loans without a full assessment of the customers' repayment capacities delayed the recognition of NPLs. In addition, many banks shifted from primarily earning income through interest on loans to non-interest income sources such as digital banking services, insurance, and securities investments. This shift changed the income structure and risk profile of banks, affecting credit quality and their ability to manage NPLs.

In Vietnam, the NPL ratio in the banking system experienced significant fluctuations between 2008-2022 as shown in Figure 1.



Source: World Bank (2022).

**Figure 1. NPLs ratio in banks between 2008-2022**

According to the World Bank (2022), from 2008 to 2011, the NPL rate increased sharply, reaching over 3%, primarily due to the global financial crisis and the subsequent economic downturn. This period marked a high level of financial stress for businesses and households, exacerbating the country's NPL problem. During the period of 2016–2019, the NPL ratio continued to decline gradually and remained below 2%. This reflected the economic recovery following previous challenges, supported by effective macroeconomic policies and improvements in the business environment. However, in 2020, the NPL ratio increased sharply again, reaching around 2.5%. This rise was attributed to the impact of the Covid-19 pandemic, which caused both the global and Vietnamese economies to fall into crisis, making it difficult for many businesses to repay their debts on time. This ratio temporarily slightly decreased in 2021 and 2022 due to the economic support measures and the easing of credit policies. Nevertheless, the long-term impacts of the pandemic led to a significant increase in NPLs. By the end of 2022, the NPL ratio had risen to 2.32%, indicating increasing financial pressure within the banking system. The situation worsened in 2023, as the NPL ratio peaked at 4.93% in September, significantly exceeding the safety threshold of 3% set by the State Bank of Vietnam (AMRO, 2023).

The significant increase in NPLs highlights the critical need for effective management of NPLs, particularly during periods of economic uncertainty. The rise in NPLs not only indicates a weakening financial position of banks but also poses a serious risk to the stability of the entire banking system. Therefore, studying the factors that influenced NPLs during this period is of paramount importance. By understanding these factors, banks and regulators can design targeted strategies to mitigate the risk of NPL accumulation and improve the resilience of the financial system. The findings of such research will provide valuable insights for commercial banks and the State Bank of Vietnam to propose appropriate policies that will enhance the operational efficiency and safety of the

banking sector. Previous studies have examined both the microeconomic and macroeconomic factors that influence the NPLs of commercial banks. Louzis *et al.* (2012) identified that macroeconomic factors such as the GDP growth rate, interest rates, unemployment rate, and public debt, alongside bank-specific characteristics like bank size, risk provisions, and profitability, significantly affect NPLs in European banks. Similarly, Ghosh (2015) highlighted the critical role of bank size, risk provisions, and profitability in the growth of NPLs in American banks. Furthermore, banks with a higher concentration of credit exposure to high-risk sectors, such as real estate or construction, are more prone to higher NPL ratios. Foglia (2022) noted that in Italian banks, the GDP, public debt, unemployment rates, and credit to the private sector are key determinants of NPLs. Khan and Ahmad (2017) found that profitability, the ability to diversify investment portfolios, and the capital adequacy ratio are strong determinants of NPLs in Pakistan. Additionally, studies by Godlewski (2008), Boudriga *et al.* (2010), Ahmad (2015), Rachman *et al.* (2018), and Kumar and Kishore (2019) established a significant relationship between the return on assets and NPLs. Moreover, research by Ekanayake and Azeez (2015) and Benthem (2017) showed a correlation between bank performance and NPLs. Income diversification and the capital adequacy ratio were also found to be crucial in controlling NPLs, as highlighted by Amuakwa and Boakye (2015), Koju *et al.* (2018), and Kumar and Kishore (2019). In terms of bank management, Laeven and Levine (2009) emphasized that poor corporate governance leads to inadequate lending practices, which in turn exacerbate NPL issues. Banks with a weak board of directors or ineffective risk management frameworks are more likely to experience higher levels of NPLs.

Several studies have been conducted on the issue of NPLs in Vietnam. From 2016 to 2021, Nguyen Thanh Huyen (2023) identified the key factors influencing NPLs, including the

previous NPL ratio, credit growth, profitability, economic growth, and exchange rates. In a similar vein, Nguyen Thi Anh Hoa (2021) and Tran Vuong Thinh and Nguyen Ngoc Hong Loan (2021) examined both the micro and macroeconomic factors that affect NPLs. Their analyses highlighted the role of variables such as risk provisions, bank size, return on equity, credit growth, and macroeconomic indicators like inflation rates. Earlier, during the period of 2005–2016, studies by Nguyen Thi Nhu Quynh *et al.* (2018), Pham Duong Phuong Thao and Nguyen Linh Dan (2018), and Nguyen Thanh Dat (2018) emphasized that economic growth, unemployment rates, credit growth, operating profits, operating expenses, and risk provisions had significant effects on NPLs in joint-stock commercial banks. Similarly, Nguyen Thi Hong

Vinh (2015) pointed out that profitability, the previous NPL ratio, bank size, credit growth, GDP, and inflation rates were all important factors influencing the level of NPLs.

The factors influencing the NPLs of commercial banks, as identified in previous studies, are summarized in Table 1.

Based on previous research findings, this study proposed a model to identify the factors influencing NPLs. The suggested factors were a bank's credit growth rate, return on equity (ROE), equity/assets ratio, loans/assets ratio, bank size, operational costs, and previous NPLR. To analyze the data, the most appropriate model among pooled ordinary least squares (OLS), fixed effects model (FEM), or random effects model (REM) was selected.

**Table 1. Summary of factors affecting bank NPLs from previous studies**

Factors affecting bank NPLs	Previous studies
Profitability (ROE/ROA)	Makri <i>et al.</i> (2014) (-) Chaibi and Ftiti (2015) (-) Ghosh (2015) (-) Rachman <i>et al.</i> (2018) (-) Khan and Ahmad (2017) (-) Nguyen Thi Hong Vinh (2015) (-) Nguyen Thanh Dat (2018) (-) Pham Duong Phuong Thao and Nguyen Linh Dan (2018) (-) Nguyen Thi Anh Hoa (2021) (+) Tran Vuong Thinh and Nguyen Ngoc Hong Loan (2021) (+) Nguyen Thanh Huyen (2022) (-)
Credit growth	Nguyen Thi Hong Vinh (2015) (+) Nguyen Thi Nhu Quynh <i>et al.</i> (2018) (+) Tran Vuong Thinh and Nguyen Ngoc Hong Loan (2021) (+) Nguyen Thanh Huyen (2022) (-)
Operational costs	Pham Duong Phuong Thao and Nguyen Linh Dan (2018) (-)
Bank size	Louzis <i>et al.</i> (2012) (+) Ghosh (2015) (+) Chaibi and Ftiti (2015) (+) Nguyen Thi Hong Vinh (2015) (+) Nguyen Thi Anh Hoa (2021) (+) Tran Vuong Thinh and Nguyen Ngoc Hong Loan (2021) (+)
Previous NPLR	Makri <i>et al.</i> (2014) (+) Chaibi and Ftiti (2015) (+) Nguyen Thi Hong Vinh (2015) (+) Pham Duong Phuong Thao and Nguyen Linh Dan (2018) (+) Nguyen Thi Nhu Quynh <i>et al.</i> (2018) (+) Nguyen Thanh Huyen (2022) (+)

Note: (+): Positive impact; (-): Negative impact.

## 2. METHODOLOGY

### 2.1. Data collection

Data for the research period of 2017–2023 were collected from secondary sources, namely the annual audited financial statements published on the official websites of 30 Vietnamese commercial banks, as well as regulations and guidance circulars from the State Bank regarding NPL management in the banking system.

### 2.2. Data analysis

Descriptive statistics were applied to assess the banks' overall performances.

The collected data were panel data, where the behavior of each entity ( $i$ ) was observed over time ( $t$ ):  $(X_{it}, Y_{it})$ ,  $i = 1, \dots, n$ ;  $t = 1, \dots, T$  (Stock & Watson, 2007). To analyze panel data, one of the following three models is typically employed: pooled ordinary least squares (OLS), fixed effects model (FEM), or random effects model (REM).

Pooled OLS is applied to panel data to estimate the relationship between a dependent variable and one or more independent variables, assuming this relationship is consistent across all individuals or entities in the panel. The regression model is expressed as:  $Y_{it} = \alpha + \beta X_{it} + \mu_{it}$ , where,  $Y_{it}$  is the dependent variable of bank  $i$  in year  $t$ ,  $X_{it}$  are the explanatory variables,  $\beta$  are the coefficients for  $X_{it}$ , and  $\mu_{it}$  is the error term.

However, panel data addresses omitted variable bias due to heterogeneity by controlling for unobserved, unavailable, or unmeasurable variables that are correlated with the dependent variables. Therefore, it is often more appropriate to use the fixed effects model (FEM) or random effects model (REM) rather than pooled OLS. FEM assumes a correlation between the entity's error term and predictor variables, and the fixed effects of one entity are not correlated with those of another. In contrast, REM assumes that the variation across entities is random and uncorrelated with

the predictor variables, allowing time-invariant variables to serve as explanatory factors.

To determine the most suitable model for this research, three tests were conducted. First, to choose between pooled OLS and FEM, an F-test was performed; if the p-value (Prob) was less than 0.05, then FEM was preferred over OLS. Second, to decide between pooled OLS and REM, the Breusch-Pagan test was conducted; if  $\text{Prob} < 0.05$ , REM was more appropriate than pooled OLS. Finally, to select between FEM and REM, the Hausman test was conducted; if  $\text{Prob} < 0.05$ , FEM was preferred over REM.

### 2.3. Variables in the proposed models

The independent and dependent variables used in the proposed model (as mentioned in the literature review) are presented in detail below:

#### 2.3.1. Dependent variable

Non-performing loans (NPLR)

In the content of Circular 11/2021/TT-NHNN, the State Bank classified five debt groups, specifically: Group 1 (Qualified debt): Debts with the highest ability of being repaid, even when the debts are not yet due; Group 2 (Debts needing attention): Debts that have been delayed in being paid up to 90 days according to the content of the credit contract; Group 3 (Subprime debt): Debts that have been delayed in being paid from 91 days to 180 days, and the debts have been adjusted by a credit institution or bank branch, but the debt that has been extended for the first time is still outstanding; Group 4 (Doubtful debt): Debt with very low credibility when it is overdue from 181 days to 360 days; and Group 5 (Debts likely to lose): Debts with very low collection ability, which are assessed when the debtor fails to make payments.

NPLs refer to loans classified as bad debts on the balance sheet, and includes loans from Groups 3, 4, and 5. The NPL rate (NPLR) can be calculated with the formula:

$$\text{NPLR} = \frac{\text{NPLs}}{\text{Total Loans}}$$

### 2.3.2. Independent variables

#### (1) Credit growth rate (*CRE\_GROWTH*)

Credit growth refers to the rate of increase in the total outstanding credit over a specific period, typically calculated annually. It reflects the growth in the loans granted by banks to customers or the economy and is an important indicator for assessing the lending activity of the banking system. Higher credit growth typically means that banks are extending more loans to customers, which can increase the potential for higher profits. However, this can also lead to a higher risk of NPLs. However, in some cases, when credit growth is well-managed and aligned with economic growth, the relationship between credit growth and NPLs can be more balanced. The credit growth rate can be calculated with the following formula:

$$\text{Credit Growth Rate (\%)} = \frac{\text{Credit at End} - \text{Credit at Start}}{\text{Credit at Start}} \times 100$$

#### (2) Profitability (*ROE*)

Profitability refers to a bank's ability to generate profit relative to its revenue, assets, or equity. Profitability is typically assessed using various financial ratios, in this study, return on equity (ROE) was used as a measure of a bank's profitability. ROE is a financial indicator that measures a bank's ability to generate profit relative to its equity. ROE shows how much profit is generated from each unit of the shareholders' equity. This ratio helps assess the efficiency of a bank's use of its equity to generate profit for its shareholders. Banks with high ROE are typically able to maintain better credit risk management practices, which can lead to lower levels of NPLs. ROE can be calculated with the formula:

$$\text{ROE} = \frac{\text{Net Income}}{\text{Equity}} \times 100$$

#### (3) Previous NPLR (*i\_NPLR*)

Previous NPLR refers to the NPL ratio from a previous period. The previous NPLR is

important because it compares the level of NPLs across periods, allowing banks to assess changes in the quality of their assets over time and identify trends in increasing or decreasing NPLs. The previous NPLR can be calculated with the formula:

$$\text{Previous NPLR} = \frac{\text{Previous Non-Performing Loans}}{\text{Total Loans in Previous Period}} \times 100.$$

#### (4) Bank size (*SIZE*)

Bank size refers to a measure of a bank's scale, often represented by its total assets. It indicates the size of a bank in the financial system and can affect its competitiveness, risk, and profitability. In statistics models, when bank size is used as an independent variable, the logarithm of total assets is often used instead of the raw value to reduce data dispersion, measure the percentage of change, and maintain consistency in scale.

#### (5) Equity/Assets (*ETA*)

Equity/assets, also known as the equity-to-assets ratio, shows how well a bank or company is capitalized. A higher ratio suggests that the institution relies more on equity (funds from shareholders) to finance its assets, which generally indicates lower financial risk and greater financial stability. Conversely, a lower ratio indicates higher reliance on debt financing, which can increase the risk of insolvency if the company struggles to meet its debt obligation. The equity-to-assets ratio can be calculated with the formula:

$$\text{Equity/Assets Ratio} = \frac{\text{Total Equity}}{\text{Total Assets}} \times 100.$$

#### (6) Loans/Assets (*LTA*)

Loans/assets, also known as the loan-to-assets ratio, reflects a bank's lending activity and its exposure to credit risk. A higher ratio suggests that a larger portion of the bank's assets is being utilized for lending, potentially increasing the bank's profitability but also exposing it to higher credit risk. Conversely, a

lower ratio indicates that the bank is more conservative in its lending practices or is investing more in other assets, such as securities or cash. The loan -to-assets ratio can be calculated with the formula:

$$\text{Loans/Assets Ratio} = \frac{\text{Total Loans}}{\text{Total Assets}} \times 100.$$

*(7) Operational cost/interest income (CTNIR)*

Operational cost/interest income, also known as the operational cost to interest income ratio, shows how much of a bank's interest income is consumed by operational expenses, such as staff salaries, administrative costs, and overhead. A higher ratio suggests that the bank is spending a large portion of its interest income on operational costs, which may indicate inefficiency. A lower ratio, on the other hand, suggests better cost management and higher operational efficiency. The operational cost to interest income ratio can be calculated with the formula:

$$\text{Operational Cost/Interest Income Ratio} = (\text{Operational Costs/Interest Income}) \times 100.$$

### 3. RESULTS AND DISCUSSION

#### 3.1. General business performances of the commercial banks

Commercial banks offer a wide range of products and services, and are deeply involved in all areas of the economy. They play a crucial and important role in Vietnam's economic development. During the study period, 30 out of the 35 banks operated normally; among them, there was one state-owned commercial bank and 29 joint-stock commercial banks.

Credit growth in Vietnam remained high at around 18% in 2017, amounting to 5,236 trillion VND, reflecting a robust recovery of the Vietnamese economy following the global financial crisis. However, from 2018 to 2020, credit growth began to show signs of moderation, decreasing to 14%. The shift was influenced by the banking sector's heightened focus on managing credit risk in the face of

potential economic uncertainties and deteriorating asset quality. The Covid-19 pandemic disrupted global supply chains, reduced business activities, and dampened consumer confidence leading to a significant decline in credit growth, which dropped to 10% in 2020. Furthermore, the pandemic led to more cautious lending practices, as banks prioritized risk management in an uncertain environment. In the years following the pandemic, credit growth rebounded strongly based on a series of government support measures, including monetary easing, lower interest rates, and stimulus packages aimed at supporting businesses and households. By 2023, total credit had more than doubled compared to 2017, reaching 11,734 trillion VND, demonstrating the resilience of the credit market and the broader economy's ability to recover from the pandemic's severe impacts.

Similarly, customer deposits showed substantial growth, more than doubling from approximately 5,781 trillion VND in 2017 to around 11,868 trillion VND in 2023. This growth trend was particularly notable during the Covid-19 pandemic when the economy faced significant disruptions. Amidst economic uncertainty, many customers chose to keep their savings in banks, viewing them as safer than investing in riskier assets such as real estate or the stock market.

The total assets of banks in Vietnam showed significant growth, increasing from approximately 9,700 trillion VND in 2017 to around 16,500 trillion VND in 2023, reflecting an average annual growth rate of about 10%. This growth demonstrated the expanding size and financial strength of the banking sector, as banks were able to increase their assets through higher lending, customer deposits, and investments. However, this growth was not uniform across the banking sector. There was a noticeable disparity in the asset sizes of different banks, particularly between the largest and smallest banks. For instance, the

smallest bank in Vietnam held only about 1.4% to 1.7% of the total assets of the largest bank. This disparity in bank size also has implications for the overall stability and competition within the banking system. Large banks tend to have better financial stability and greater resilience to economic shocks, whereas smaller banks may face higher risks, particularly in times of economic downturn or financial instability.

From 2017 to 2019, bank profits in Vietnam grew rapidly at an annual rate of 36%, driven

by strong economic conditions and rising credit demand. However, in 2020 and 2021, profit growth slowed to 13% per year due to the economic impact of the Covid-19 pandemic, which led to reduced loan demand and higher provisions for NPLs. As the economy began recovering in 2022 and 2023, bank profitability regained momentum, growing at a rate of 30%. By 2023, profits reached approximately 220 trillion VND, reflecting a robust recovery in the banking sector.

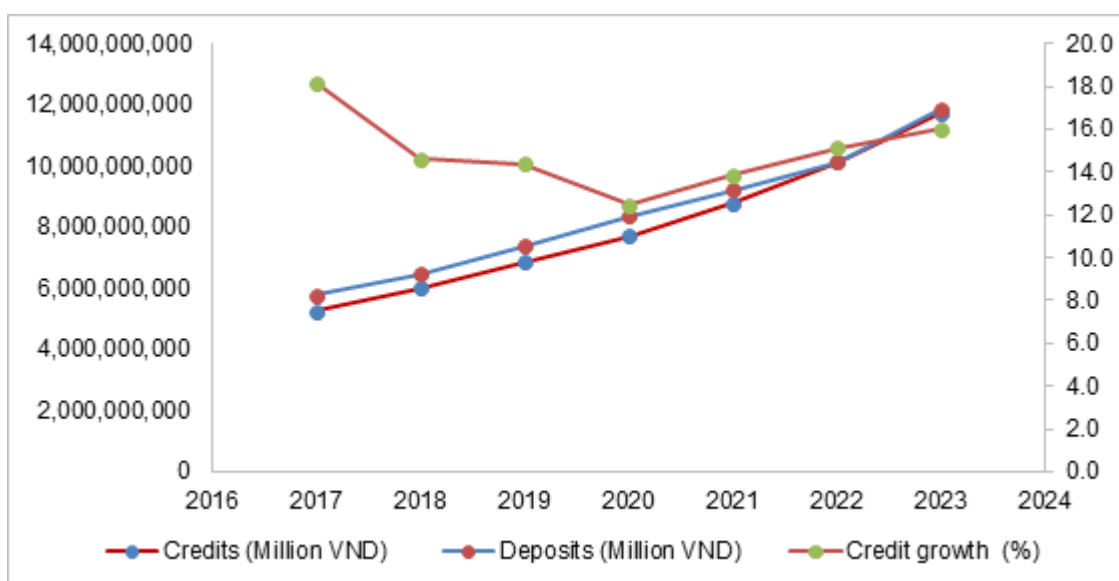


Figure 2. Credits, deposits, and credit growth of the commercial banks

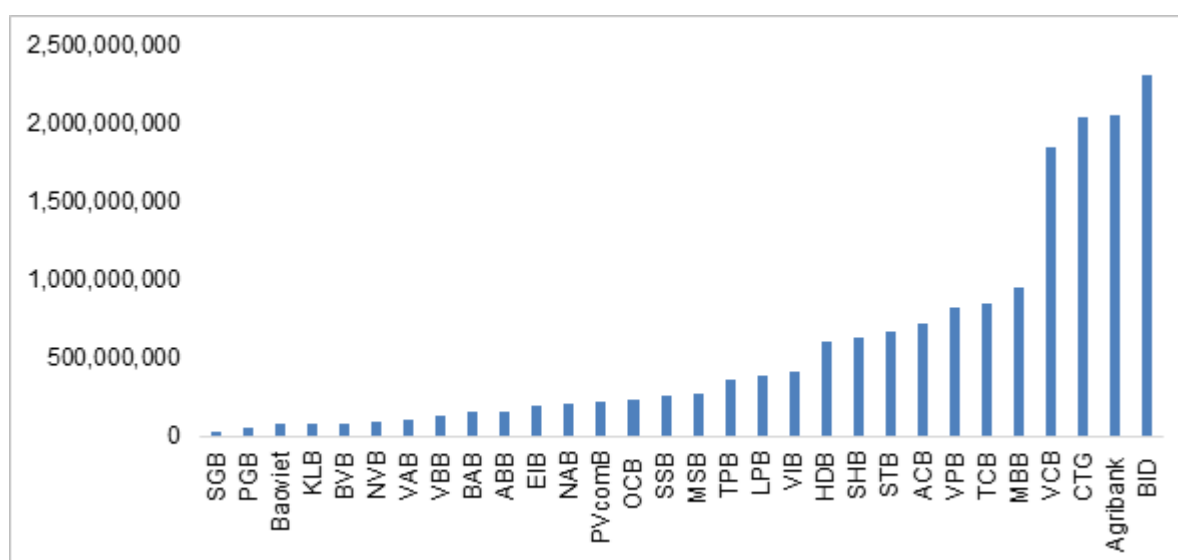


Figure 3. Assets of commercial banks in 2023

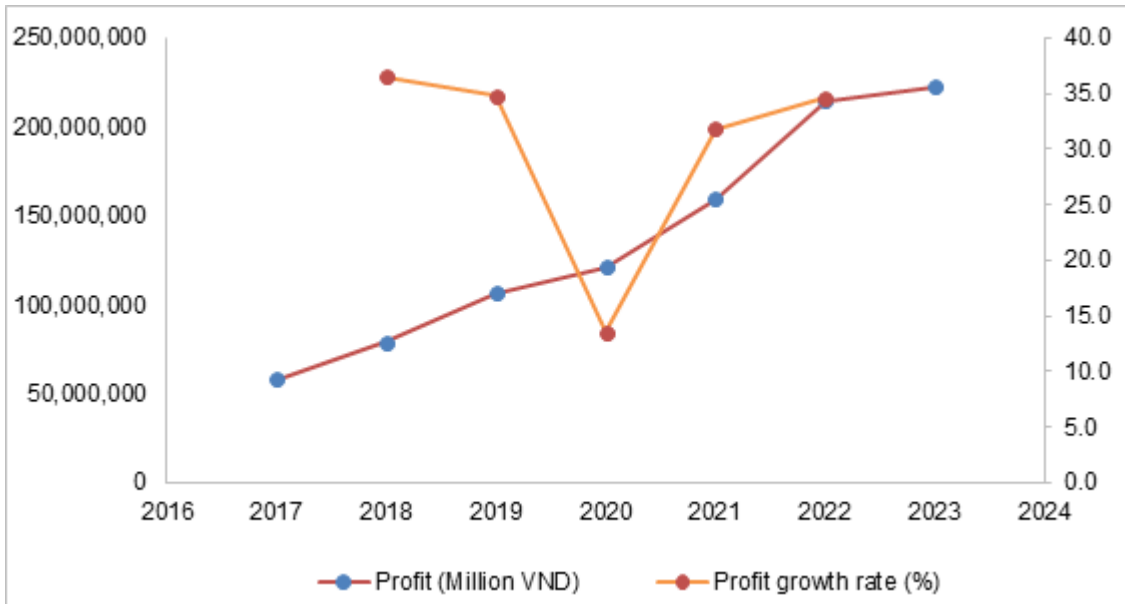


Figure 4. Profits of commercial banks

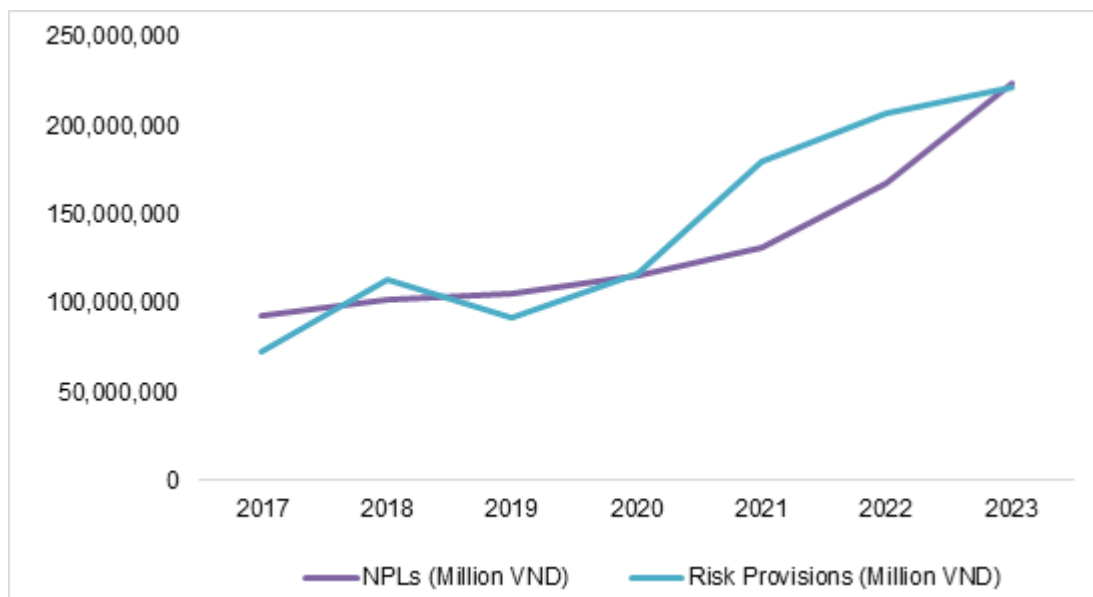


Figure 5. NPLs and risk provisions

Over this period, the total value of NPLs rose substantially, from 93 trillion VND in 2017 to 223 trillion VND in 2023, largely driven by credit expansion and the economic disruptions induced by the Covid-19 pandemic. Risk provisions are an important measure for banks to manage the risks posed by NPLs; however, although increasing provisions helps to reduce the impact of rising NPLs, it also requires banks to allocate substantial financial resources, which can affect their overall performance.

### 3.2. Factors affecting the NPLs of commercial banks in Vietnam

Based on previous research outlined in the methods section, the chosen factors for analysis in the regression model are presented in Table 2. The correlation matrix test showed that there was no multicollinearity among variables (Appendix 1). Table 3 gives the results of the pooled OLS, fixed effects model, and random effects model regression analyses.

**Table 2. Description of variables**

Variables	Description	Variable type	Unit	Average	Min	Max
Dependent variable						
NPLR	NPLs ratio	Continuous	%	1.86	0.00	29.75
Independent variables						
CRE_GROWTH	Credit growth rate	Continuous	%	16.49	-11.03	51.19
ROE	Profitability	Continuous	%	12.76	-12.33	30.33
i_NPLR	Previous NPLR	Continuous	%	2.02	0.00	20.39
SIZE	Bank size (log)	Continuous		19.16	17	21.56
ETA	Equity/Assets	Continuous	%	8.00	4.00	17.00
LTA	Loans/ Assets	Continuous	%	63.00	30.00	82.00
CTNIR	Operational cost/interest income	Continuous	%	136.74	29.38	742.17

**Table 3. Results of the pooled OLS, FEM, and REM analyses**

	Pooled OLS	FEM	REM
CRE_GROWTH	-0.001	-0.311	-0.0087
ROE	-0.054***	-0.104***	-0.0638***
i_NPLR	0.688***	0.630**	0.665***
SIZE	0.010	1.069**	0.718
ETA	-1.497	-18.748	-0.616
LTA	-0.143	9.366***	0.886
CTNIR	-0.142***	-0.125**	-0.1492***
_cons	1.585	1.585	1.585

Note: \*\*\* and \*\* denote significance at the 1% and 5% confidence levels, respectively.

According to the results of the F-test, Breusch-Pagan test, and Hausman test, the FEM was sufficient to explain the factors affecting the NPLs of commercial banks (Appendix 2)

Previous studies have suggested that when credit is carefully expanded and controlled, banks can leverage strong credit growth to restructure debts or convert NPLs into performing ones, thereby improving the NPL situation (Nguyen Thi Nhu Quynh *et al.*, 2018; Nguyen Thanh Huyen, 2022). In contrast, Tran Vuong Thinh and Nguyen Ngoc Hong Loan (2021) presented the opposing view, stating that if banks extend credit without caution of assessing repayment ability, it could lead to an increase in NPLs. However, the findings of this study indicated that there was no clear relationship between credit growth and NPLs

during the research period. This can be explained by the unique and unpredictable nature of the crisis caused by COVID-19. The pandemic caused severe economic disruptions, significantly impacting the repayment ability of both individuals and businesses. However, it is important to note that during this period, government support policies, such as stimulus packages, loan moratoriums, and other financial protection measures, played a crucial role in alleviating the financial burden on borrowers and businesses. For example, in order to continue supporting borrowers affected by the COVID-19 pandemic, the State Bank issued Circular No. 03/2021 on April 2, 2021, amending and supplementing Circular No. 01/2020/TT-NHNN. Accordingly, commercial banks had to extend loan repayment terms, waive or reduce interest, fees, maintain the

same loan classifications, and launch numerous preferential loan programs to assist customers impacted by the pandemic. These policies helped mitigate the adverse effects on repayment capacity, thus reducing the potential rise in NPLs. As a result, despite the disruptions caused by the pandemic, the relationship between credit growth and NPLs did not follow the traditional patterns observed in prior studies, making this period distinct.

It can be observed that a high profitability enhances a bank's financial capacity. A high return on equity (ROE) signals that the bank is generating strong profits, thus providing more financial resources to manage its liabilities effectively. Furthermore, a bank with a high ROE and stable profits is better positioned to build significant risk provisions, which in turn helps mitigate NPLs. Banks with higher profitability are generally less incentivized to engage in high risk activities, as they face less pressure to pursue aggressive profit growth. This aligns with the findings of previous studies, such as Makri *et al.* (2014), Nguyen Thanh Dat (2018), Rachman *et al.* (2018), and Nguyen Thanh Huyen (2022), which suggested that banks with strong financial performance, particularly in terms of profit growth, from 2017 to 2023, were better able to manage their risks. However, it is important to note that high profits can sometimes be achieved at the cost of excessive credit expansion or high-risk lending. In such cases, the bank may face an increase in NPLs as risk exposure grows (Nguyen Thi Anh Hoa, 2021). Therefore, while high profitability and strong risk provisions can help reduce NPLs, an overly aggressive lending strategy can offset these benefits by increasing the likelihood of defaults.

If banks failed to take timely measures to address previous NPLs, such as through debt restructuring, increasing risk provisions, or selling off bad debts, the NPLs are likely to remain high in the following periods. This finding is consistent with previous studies by Makri *et al.* (2014), Chaibi and Ftiti (2015), Pham Duong Phuong Thao and Nguyen Linh

Dan (2018), and Nguyen Thanh Huyen (2022), which emphasized the importance of proactive measures in managing NPLs. Without such interventions, the accumulation of bad loans can lead to prolonged financial instability for banks, further straining their ability to maintain healthy loan portfolios.

Regarding bank size, larger banks generally exhibit greater resilience and better risk diversification capabilities due to their ability to offer a wide range of services to customers. This diversification enables them to better manage and control NPLs. However, most banks in Vietnam are relatively small, which limits their capacity to diversify risks and effectively handle NPLs. This finding aligns with the conclusions of previous studies by Louzis *et al.* (2012), Ghosh (2015), Chaibi and Ftiti (2015), Nguyen Thi Hong Vinh (2015), Nguyen Thi Anh Hoa (2021), and Tran Vuong Thinh and Nguyen Ngoc Hong Loan (2021), which suggested that smaller banks face greater challenges in managing NPLs due to their limited ability to mitigate risks through diversification.

While previous studies have primarily focused on factors such as credit growth, economic conditions, and profitability, this research emphasized that a high loan-to-total-assets ratio may indicate that lending is the primary source of income for the bank. This reliance on lending limits the bank's ability to effectively diversify its risks. The concentration in lending makes the bank more vulnerable to fluctuations in asset quality, especially during times of economic instability, such as the Covid-19 pandemic, which caused severe disruptions to the global economy. Banks with a high loan-to-total-assets ratio face increased credit risk, particularly those from vulnerable sectors, and struggle to meet repayment obligations. If credit management is not conducted prudently, the rising risk of NPLs will further escalate financial stress for the bank.

An increase in operating costs within banks can indirectly lead to a reduction in NPLs. Higher operating costs initially seem to reduce

profitability but this can be explained by several factors. First, higher operating costs, particularly investments in technology, staff training, and risk management systems, enhance the bank's ability to monitor and control loans effectively, improving credit risk management. This allows for early detection of potential defaults and timely interventions to prevent an increase in NPLs. Second, by investing in customer service and providing financial support, such as flexible loan restructuring, banks can assist borrowers in managing debt obligations, reducing the likelihood of defaults. Third, increased operating costs can be allocated to build stronger loan loss provisions, which act as a safeguard against potential NPLs. Lastly, higher operating costs can improve the efficiency of the bank's lending and debt collection processes, preventing problem loans from escalating into NPLs.

#### 4. CONCLUSIONS

From 2017 to 2023, the banking sector in Vietnam experienced substantial growth, as evidenced by key financial indicators. Credit growth was robust at 17–18% during the 2017–2018 period but slowed to 10% during the 2020–2021 period due to the Covid-19 pandemic, before recovering to 14% in the 2022–2023 period. Customer deposits grew annually by 10–17%, reflecting strong public trust in the banking system. Total bank assets also expanded rapidly, although significant disparities in asset sizes were observed among banks. Bank profitability increased at a rate of 30% per year, despite a temporary decline during the pandemic. While NPLs tended to rise due to the expansion of credit, the NPL ratio remained stable at around 2% annually, supported by prudent risk management and provisions by the banks.

The findings revealed that, unlike traditional patterns, there was no clear relationship between credit growth and NPLs during this period, as government support

measures, such as stimulus packages and loan moratoriums, helped alleviate financial pressures on borrowers. Strong profitability, particularly a high return on equity (ROE), enhances a bank's capacity to manage NPLs through effective risk management and sufficient provisions. However, excessive credit expansion and high-risk lending can increase NPLs due to greater exposure to risk. Proactive measures such as debt restructuring and timely provisions are essential to prevent the accumulation of bad loans. Larger banks showed better resilience and risk diversification, while smaller banks struggled with managing NPLs due to limited diversification. Additionally, a high loan-to-total-assets ratio indicates a reliance on lending, which increases exposure to credit risk, especially during times of economic instability. Finally, higher operating costs, when investing in technology, staff, and risk management, can help reduce NPLs by improving loan monitoring and enabling timely interventions.

#### 5. RECOMMENDATIONS AND POLICY IMPLICATIONS

Based on the analysis and findings of the study, the following section presents key conclusions and policy recommendations for both commercial banks and regulatory authorities.

##### 5.1. Commercial bank recommendations

Banks should adopt a cautious approach to credit growth, especially during periods of economic instability. Credit growth should align with the overall economic situation and the bank's risk management capacity. Additionally, banks should implement tiered lending strategies based on borrower risk profiles. This approach helps ensure stable credit growth without disproportionately increasing NPLs.

To enhance profitability, banks should focus on improving profitability through several strategies. They should increase operational efficiency by reducing unnecessary expenses and investing in technologies that streamline

loan processing, customer service, and risk management.

To manage the loan-to-asset ratio effectively, banks should diversify their portfolios to reduce dependence on lending as the primary source of income. This can be achieved by increasing non-loan assets such as investments in securities, bonds, and other financial instruments, which will help mitigate risk, especially during economic downturns. Additionally, banks should set internal policies to limit lending based on their total asset size, ensuring that the loan-to-asset ratio stays within a predefined threshold. This approach helps prevent overexposure to credit risk, particularly in uncertain economic conditions, such as during a crisis or pandemic.

To effectively address previous NPLs, banks should take proactive measures such as restructuring bad debts, offering loan extensions, or providing flexible repayment plans to borrowers facing temporary financial difficulties. Additionally, banks should consider selling off bad debts to asset management companies such as the Vietnam Asset Management Company (VAMC). This approach reduces risk exposure and allows banks to focus on healthier loans, improving financial stability.

To address the impact of bank size on NPLs, especially smaller banks in Vietnam, which struggle with managing NPLs due to limited diversification, banks should receive targeted support. This support could include government-backed guarantees for high-risk loans or facilitating partnerships with larger banks to enhance their risk management capabilities. Additionally, smaller banks should be encouraged to consider mergers or alliances with larger banks to leverage economies of scale and improve risk diversification.

To optimize operating costs while reducing NPLs, banks should focus on strategic investments and efficiency improvements. First, they should invest in advanced technologies like automated loan monitoring systems, AI-driven risk assessment tools, and customer service platforms. These technologies help banks detect

potential defaults early, allowing for timely interventions and proactive risk management. Secondly, banks should prioritize enhancing employee training in the latest risk management practices and customer engagement strategies. Well-trained staff can more effectively identify potential issues in loan portfolios and assist borrowers facing repayment difficulties, preventing small issues from escalating into NPLs. Lastly, banks should allocate a portion of their operating costs to strengthening provisions for NPLs. Increased operating costs should be used to build a stronger safety net, ensuring the bank is better equipped to manage rising credit risks and mitigate the impact of future defaults.

## 5.2. Policy implications

To enhance Vietnam's banking sector stability and effectively manage NPLs, several targeted policy recommendations are crucial. First, the State Bank should monitor credit growth, especially during uncertain economic times, and implement regulations that encourage responsible lending, with tiered approaches based on borrower risk. For smaller banks, the government should encourage mergers to enhance financial strength and risk diversification, providing incentives and facilitating capital increases. Larger banks should focus on reducing concentrations in high-risk sectors and expanding into more resilient sectors like digital finance. Furthermore, policies supporting borrowers, such as loan moratoriums and financial inclusion programs, can prevent defaults from escalating. Lastly, stricter regulatory oversight on risk provisions and enhanced compliance measures will ensure banks maintain adequate risk buffers.

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