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The Dynamics of Non-Performing Loan and Liquidity in Driving Bank Profit Growth

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ABSTRACT

Profit growth is one of the key indicators used to assess the financial performance and sustainability of banking institutions. Maintaining stable profit growth requires effective credit risk and liquidity management, which are commonly measured by *Non-Performing Loan* (*NPL*) and *Loan to Deposit Ratio* (*LDR*). However, previous studies have reported inconsistent findings regarding the influence of these variables on profit growth. Therefore, this study aims to examine the effect of *NPL* and *LDR* on the profit growth of banking companies listed on the Indonesia Stock Exchange (IDX). This research employed a quantitative approach using secondary data obtained from the annual financial statements of 32 banking companies during the 2021–2025 period, resulting in 160 firm-year observations. The sample was selected using a purposive sampling technique, while the data were analyzed using multiple linear regression with IBM SPSS Statistics version 26. The results indicate that *NPL* has a negative relationship with profit growth, whereas *LDR* has a positive relationship. However, both variables do not have a significant effect on profit growth either individually or simultaneously. Furthermore, the explanatory power of the model is relatively low, indicating that profit growth is influenced by other financial and macroeconomic factors beyond *NPL* and *LDR*. These findings suggest that maintaining credit quality and liquidity remains important, but banking management should also strengthen operational efficiency, capital management, and other financial strategies to achieve sustainable profit growth.

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1. INTRODUCTION

The banking industry plays a strategic role in supporting economic growth through its intermediary function of collecting public funds and channeling them into productive sectors. The sustainability of banking institutions is highly dependent on their ability to generate stable profit growth, as increasing profits indicate better operational efficiency, financial resilience, and competitiveness. Profit growth is therefore considered one of the primary indicators used by stakeholders to assess a bank's financial performance and long-term sustainability. However, profit growth is

strongly influenced by the quality of credit management and liquidity management, which are commonly represented by the *Non-Performing Loan* (*NPL*) and *Loan to Deposit Ratio* (*LDR*) indicators. High *NPL* reflects increasing credit risk due to non-performing loans, whereas *LDR* measures a bank's capability to optimize collected funds into productive lending activities while maintaining adequate liquidity. Consequently, effective management of these financial ratios is essential for improving banking performance and ensuring sustainable profit growth [1], [2].

Previous empirical studies have produced inconsistent findings regarding the influence of *NPL* and *LDR* on profit growth. [1] found that *NPL* did not significantly affect profit growth, while *LDR* had a positive and significant effect on profit growth at PT Bank Negara Indonesia Tbk. Similarly, [3] reported that both *NPL* and *LDR* significantly influenced profit growth. In contrast, [4] concluded that *NPL* negatively affected profit growth, whereas *LDR* had no significant effect. Studies focusing on profitability rather than profit growth also reported varying results. [5] demonstrated that *NPL* negatively affected profitability, while *LDR* was insignificant. Meanwhile, [2], [6], [7], [8] found that *NPL* reduced profitability, whereas *LDR* contributed positively when managed within an optimal range.

The inconsistency of previous findings indicates that the relationship between *NPL*, *LDR*, and profit growth remains inconclusive and deserves further investigation. Differences in research periods, banking classifications, economic conditions, and analytical approaches may contribute to these contradictory results. Moreover, recent developments in the banking industry, including post-pandemic economic recovery, digital banking transformation, and changes in credit risk management, have altered banks' operational environments and may influence the relationship between financial performance indicators and profit growth [2], [9]. Therefore, empirical evidence using more recent data is required to provide updated insights into the determinants of banking profit growth.

Based on these considerations, this study aims to examine the effect of *Non-Performing Loan* (*NPL*) and *Loan to Deposit Ratio* (*LDR*) on profit growth. The study employs multiple linear regression analysis to evaluate both the partial and simultaneous effects of these financial ratios on banking profit growth. By focusing on *NPL* and *LDR*, this research seeks to provide empirical evidence regarding the extent to which credit risk and liquidity management contribute to improving banks' financial performance.

The novelty of this research lies in its focus on profit growth as the dependent variable rather than profitability, which has been more extensively examined in previous studies. Furthermore, this study provides updated empirical evidence by analyzing the influence of *NPL* and *LDR* within a more recent observation period, thereby reflecting current banking conditions following significant structural changes in the financial sector. The findings are expected to enrich the literature on banking financial performance and provide practical implications for bank management in formulating effective credit risk and liquidity management strategies to achieve sustainable profit growth.

2. LITERATURE REVIEW

2.1 Profit Growth

Profit growth is one of the primary indicators used to assess a bank's financial performance and long-term sustainability. It reflects management's ability to increase net income from one period to another through efficient utilization of assets, effective cost control, and sound risk management. In the banking industry, sustainable profit growth is closely associated with the quality of credit distribution and liquidity management because interest income remains the dominant source of operating revenue. Therefore, maintaining healthy financial performance requires banks to manage both credit risk and liquidity effectively [1], [10].

Financial intermediation theory explains that banks create value by transforming deposits into productive loans. The effectiveness of this intermediation process determines banks' ability to generate stable earnings and support long-term business growth [11].

2.2 *Non-Performing Loan (NPL)*

Non-Performing Loan (*NPL*) represents the proportion of non-performing loans to total outstanding loans and is widely used as an indicator of credit risk. A high *NPL* ratio reflects deteriorating asset quality and indicates that a greater proportion of borrowers are unable to meet their repayment obligations. Consequently, banks must establish larger loan-loss provisions, reducing net income and limiting future profit growth [12].

According to credit risk theory, increasing credit risk reduces banks' financial performance because impaired loans decrease interest income while simultaneously increasing provisioning expenses. Czechowska et al. emphasized that maintaining *NPL* at a controlled level is fundamental to preserving banking stability and sustaining profitability [12]. Likewise, Bell and Feng argued that excessive non-performing loans weaken banks' capacity to generate profits because financial resources are diverted toward covering credit losses instead of supporting productive lending activities [13].

Empirical evidence generally supports the negative influence of *NPL* on banking performance. [2], [4], [5], [6], [8] found that increasing *NPL* reduced profitability or profit growth. However, [1] reported that *NPL* did not significantly affect profit growth, suggesting that the impact of credit quality may differ depending on bank characteristics and observation periods.

2.3 *Loan to Deposit Ratio (LDR)*

Loan to Deposit Ratio (*LDR*) measures the proportion of loans disbursed relative to total third-party funds collected by banks. This ratio reflects the effectiveness of banks in performing their financial intermediation function. An optimal *LDR* indicates that available funds are efficiently transformed into productive loans capable of generating interest income while maintaining sufficient liquidity to satisfy customers' withdrawal demands [13].

Financial intermediation theory suggests that banks improve financial performance by efficiently allocating deposits into loans. Nevertheless, excessively high *LDR* may expose banks to liquidity risk, whereas excessively low *LDR* indicates underutilization of available funds, resulting in lower income generation [11].

Previous empirical studies provide inconsistent evidence regarding the influence of *LDR* on banking performance. [1], [2], [6], [8], [10] found that *LDR* positively affected profitability or profit growth. Conversely, [4], [5] reported that *LDR* had no significant effect, while [9] found that *LDR* tended to negatively influence profit growth during the COVID-19 pandemic due to heightened liquidity risk.

2.4 *Relationship between NPL, LDR, and Profit Growth*

The relationship between *NPL*, *LDR*, and profit growth can be explained through the perspectives of credit risk management and financial intermediation. Credit quality, represented by *NPL*, determines banks' ability to maintain earning assets, whereas liquidity management, represented by *LDR*, reflects the efficiency of fund allocation. Banks that successfully maintain low *NPL* while optimizing *LDR* are expected to achieve higher and more sustainable profit growth because they can maximize lending income without significantly increasing credit or liquidity risks [12], [13].

Although numerous studies have investigated the effects of *NPL* and

LDR on banking performance, the findings remain inconclusive. Differences in research periods, banking characteristics, and macroeconomic conditions have produced varying empirical results. Therefore, further investigation is necessary to provide updated empirical evidence regarding the influence of *NPL* and *LDR* on banking profit growth.

3. METHODS

This study employed a quantitative research approach using secondary data to examine the effect of *Non-Performing Loan* (*NPL*) and *Loan to Deposit Ratio* (*LDR*) on profit growth. The research focused on banking companies listed on the Indonesia Stock Exchange (IDX). The observation period covered five years, from 2021 to 2025, allowing the study to capture recent developments in the banking sector.

The population of this study consisted of all banking companies listed on the Indonesia Stock Exchange during the observation period. The sample was selected using a purposive sampling technique based on the following criteria: (1) banking companies consistently listed on the Indonesia Stock Exchange during 2021–2025; (2) companies that published complete annual financial statements for the observation period; (3) companies with complete financial data required to calculate the research variables; and (4) companies that reported positive equity during the observation period. Based on these criteria, 32 banking companies were selected as the research sample, resulting in 160 firm-year observations.

The data used in this study were secondary data obtained from the audited annual reports and financial statements of banking companies published through the official websites of the Indonesia Stock Exchange (www.idx.co.id) and the respective companies. Data collection was conducted using the documentation method by collecting financial information related to *Non-Performing Loan* (*NPL*), *Loan to Deposit Ratio* (*LDR*), and profit growth.

The operational definitions of the research variables are presented as follows.

Profit growth was measured by comparing the current year's net profit with the previous year's net profit using the following formula:

$$\text{Profit Growth} = \frac{Profit\ (t) - Profit\ (t-1)}{Profit\ (t-1)}$$

Non-Performing Loan (*NPL*) was measured as the ratio of non-performing loans to total loans, expressed as:

$$NPL = \frac{Non\ Performing\ Loans}{Total\ Loans} x100$$

Meanwhile, *Loan to Deposit Ratio* (*LDR*) was calculated as:

$$LDR = \frac{Total\ Loans}{Third - Party\ Funds}\ x\ 100\%$$

The collected data were analyzed using IBM SPSS Statistics version 26. The analysis consisted of descriptive statistics to describe the characteristics of each variable, followed by classical assumption tests, including the normality test, multicollinearity test, heteroscedasticity test, and autocorrelation test, to ensure that the regression model satisfied the assumptions of the classical linear regression model. Furthermore, multiple linear regression analysis was employed to examine the effect of *NPL* and *LDR* on profit growth.

The regression model used in this study is expressed as follows:

$$PG = \alpha + \beta_1_NPL + \beta_2_LDR + \varepsilon$$

where *PG* represents profit growth, α denotes the regression constant, β_1 and β_2 are the regression coefficients, and ε represents the error term.

Hypothesis testing was performed using the partial test (*t*-test), simultaneous test (*F*-test), and coefficient of determination (R^2). The *t*-test was used to determine the individual effect of *NPL* and *LDR* on profit growth, whereas the *F*-test was conducted to examine the simultaneous effect of both

independent variables on the dependent variable. The coefficient of determination (Adjusted R^2) was used to measure the proportion of variation in profit growth explained by *NPL* and *LDR*. All statistical tests were conducted at a significance level of 5% ($\alpha = 0.05$).

4. RESULTS AND DISCUSSION

Descriptive statistics were used to provide an overview of the characteristics of the research variables, namely *Non-Performing Loan* (*NPL*), *Loan to Deposit Ratio* (*LDR*), and profit growth (*PL*). The descriptive statistics are presented in Table 1.

Table 1. Descriptive Statistics

Variable	N	Minimum	Maximum	Mean	Std. Deviation
Profit Growth	160	-152.281	27.448	-2.015	15.634
Non-Performing Loan (NPL)	160	0.002	0.141	0.031	0.024
Loan to Deposit Ratio (LDR)	160	0.249	5.279	0.950	0.572

Source: Processed secondary data using IBM SPSS Statustics 26 (2026)

Table 2. Multiple Linear Regression Analysis

Variable	B	t	Sig.
Constant	-1.657	-0.600	0.549
Non-Performing Loan (NPL)	-35.735	-0.673	0.503
Loan to Deposit Ratio (LDR)	0.802	0.364	0.716
Dependent Variable: Profit Growth			

Source: Processed secondary data using IBM SPSS Statustics 26 (2026)

Table 3. Model Summary

R	R Square	Adjusted R Square
0.058	0.003	-0.009

Source: Processed secondary data using IBM SPSS Statustics 26 (2026)

Table 4. ANNOVA Test

F	Sig.
0.261	0.771

Source: Processed secondary data using IBM SPSS Statustics 26 (2026)

Table 1 shows that the average profit growth of banking companies during the 2021–2025 observation period was -2.015%, indicating that, on average, banking profit growth experienced a slight decline. The average *NPL* was 3.13%, which is still within the threshold generally considered manageable by banking regulators. Meanwhile, the average *LDR* was 94.96%, indicating that banks were able to utilize third-party funds relatively efficiently in lending activities.

Multiple linear regression analysis was conducted to examine the effect of *NPL* and *LDR* on profit growth. The regression results are presented in Table 2.

Based on Table 2, the regression equation is formulated as follows:

$$PG = -1.657 - 35.735_NPL + 0.802_LDR + \varepsilon$$

The regression coefficient of *NPL* is negative (-35.735), indicating that an increase in non-performing loans tends to reduce profit growth. Conversely, the regression coefficient of *LDR* is positive (0.802), suggesting that higher lending relative to deposits tends to increase profit growth. However, both variables are statistically insignificant at the 5% significance level.

The coefficient of determination measures the explanatory power of the independent variables in explaining variations in profit growth. The coefficient of determination (Adjusted R^2) is -0.009, while

the R^2 value is only 0.003. This indicates that *NPL* and *LDR* explain approximately 0.3% of the variation in profit growth, whereas the remaining 99.7% is explained by other variables not included in this research model.

The simultaneous test was conducted to determine whether *NPL* and *LDR* jointly affect profit growth. The significance value of 0.771 exceeds the significance level of 0.05, indicating that *NPL* and *LDR* do not simultaneously influence profit growth. Therefore, the proposed regression model is not statistically significant.

The findings of this study reveal that *Non-Performing Loan* (*NPL*) has a negative relationship with profit growth, indicating that an increase in non-performing loans tends to reduce banks' ability to generate higher profits. From the perspective of credit risk management, this result is theoretically reasonable because deteriorating loan quality forces banks to establish higher impairment reserves, thereby reducing net income available for business expansion. Nevertheless, the absence of a significant relationship suggests that Indonesian listed banks have generally maintained *NPL* within a manageable level during the 2021–2025 observation period. Consequently, fluctuations in *NPL* were not substantial enough to directly influence changes in profit growth. This finding supports the study conducted by Arnedy and Noviyana [1], who also reported that *NPL* did not significantly affect profit growth. However, it contradicts the findings of Fatimah and Rahmah [4], Setiawan and Dana [5], Setiadi [6], Kubertein et al. [8], and Anwar et al. [2], who found that higher *NPL* significantly reduced banking profitability or profit growth. These differences may be attributed to variations in observation periods, banking characteristics, and economic conditions. During the post-pandemic recovery period, most listed banks successfully improved credit restructuring, strengthened risk management practices, and enhanced loan monitoring systems, thereby minimizing the adverse impact of non-performing loans on financial performance.

Regarding *Loan to Deposit Ratio* (*LDR*), the results demonstrate a positive relationship with profit growth, indicating that banks with higher lending activities tend to generate greater earnings through increased interest income. This finding is consistent with the financial intermediation theory, which states that banks perform their intermediary function by transforming public deposits into productive loans that generate revenue. However, the insignificant effect implies that increasing lending activities alone is insufficient to improve profit growth. Banks are also required to maintain lending quality, operational efficiency, and adequate liquidity to ensure that credit expansion contributes positively to financial performance. This finding is consistent with [5] as well as [4], who concluded that *LDR* did not significantly influence banking performance. On the other hand, the findings differ from [1], [2], [6], [8], [10], who reported a positive and significant effect of *LDR* on profitability and profit growth. Such inconsistencies indicate that the effectiveness of liquidity management depends not only on the volume of loans but also on the quality of credit distribution, market conditions, and management policies adopted by individual banks.

Furthermore, the simultaneous analysis indicates that *NPL* and *LDR* are unable to comprehensively explain variations in profit growth among banking companies listed on the Indonesia Stock Exchange. This finding suggests that profit growth is a multidimensional financial outcome influenced by numerous internal and external determinants beyond credit quality and liquidity management. Internal factors such as *Capital Adequacy Ratio* (*CAR*), *Net Interest Margin* (*NIM*), *Operating Expenses to Operating Income* (*BOPO*), operational efficiency, firm size, and corporate governance may contribute more substantially to profit growth. Likewise, external factors, including inflation, interest rate fluctuations, exchange rate movements, and national economic growth, may also affect banking performance. Therefore, relying solely on *NPL* and *LDR* provides limited explanatory power in understanding changes in banking profit growth.

From a practical perspective, the findings imply that banking management should continue to maintain prudent credit policies while optimizing liquidity allocation to preserve financial stability. Although the direct influence of *NPL* and *LDR* on profit growth is limited, both indicators remain important components of banking soundness because they reflect credit quality and liquidity risk. Effective management of these ratios should be integrated with broader financial strategies, including improving operational efficiency, strengthening capital adequacy, enhancing digital banking services, and diversifying sources of income. Such comprehensive financial management is expected to improve the resilience and long-term profitability of banking institutions operating in an increasingly competitive financial environment.

5. CONCLUSION

The results of this study indicate that *Non-Performing Loan* (*NPL*) tends to reduce profit growth, while *Loan to Deposit Ratio* (*LDR*) tends to support profit growth in banking companies listed on the Indonesia Stock Exchange during the 2021–2025 period. However, both variables have not been able to explain changes in profit growth comprehensively, indicating that banking profit growth is influenced by various internal and external factors beyond credit quality and liquidity management. These findings imply that although maintaining low credit risk and optimal liquidity remains important, banking management should also pay attention to other aspects such as operational efficiency, capital adequacy, asset quality, net interest margin, and macroeconomic conditions to achieve sustainable profit growth. Therefore, improving overall financial performance requires an integrated management strategy rather than relying solely on the management of *NPL* and *LDR*.

Based on the findings of this study, banking management is encouraged to continuously strengthen credit risk management and optimize liquidity allocation while improving operational efficiency and business innovation to support sustainable profit growth. For future researchers, it is recommended to expand the research model by incorporating additional explanatory variables, such as *Capital Adequacy Ratio* (*CAR*), *Net Interest Margin* (*NIM*), *Return on Assets* (*ROA*), *Operating Expenses to Operating Income* (*BOPO*), firm size, and macroeconomic indicators. Future studies may also employ longer observation periods and broader samples to provide more comprehensive evidence regarding the determinants of profit growth in the banking sector.

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