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Priviet Social Sciences Journal

Volume 6
Issue 1 January, 2026

Article 24

12-01-2026

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To cite this article: Romadhan, R. (2026). The effect of liquidity and monetary policy on bank credit distribution. *Priviet Social Sciences Journal, 6*(1), 246-258.
https://doi.org/10.55942/pssj.v6i1.1203

To link to this article: https://doi.org/10.55942/pssj.v6i1.1203

Private Social Sciences Journal
E-ISSN 2798-6314
P-ISSN 2798-866X
https://doi.org/10.55942/pssj.v6i1.1203

Volume 6
Issue 1
January Edition 2026

The effect of liquidity and monetary policy on bank credit distribution

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Received 03 December 2025
Revised 06 January 2026
Accepted 12 January 2026

ABSTRACT

This study examines the influence of deposit interest rates, lending rates, Non-Performing Loans (NPL), inflation, and broad money (M2) on bank credit distribution in Indonesia. Using monthly data from September 2016 to June 2025 and employing a multiple linear regression framework complemented by an Indicator Saturation approach to detect and control outliers and structural shocks, this research provides empirical insights into the macroeconomic and systemic risk determinants of banking intermediation. The estimation results show that deposit interest rates and M2 exert a positive and significant impact on bank credit, while lending rates, inflation, and NPL have significant negative effects. The model demonstrates strong explanatory power, indicated by an R-squared value of 0.987, and satisfies the classical assumption tests, including normality, absence of excessive multicollinearity, and no evidence of autocorrelation or heteroskedasticity. These findings highlight the importance of liquidity conditions, asset quality, and monetary stability in sustaining credit distribution within the banking sector. Future research is encouraged to incorporate dynamic modeling techniques and additional micro-banking indicators to achieve a more comprehensive understanding of the factors influencing banking intermediation in Indonesia.

Keywords: Bank Credit; Liquidity; Monetary Policy; Interest Rates; Inflation.

1. INTRODUCTION

The banking sector plays a fundamental role in supporting economic stability and growth through its financial intermediation function, which involves mobilizing funds from the public and channeling them in the form of credit to productive sectors. The effectiveness of this intermediation function is highly influenced by prevailing macroeconomic conditions and monetary policy. Changes in policy instruments such as money supply, policy interest rates, and liquidity regulations can affect banks' funding costs, liquidity availability, and the level of risk faced by financial institutions. Therefore, understanding how monetary variables interact with banks' lending behavior is crucial for examining the stability of the financial system.

Theoretically, monetary policy influences credit distribution through two primary transmission channels. The first is the liquidity channel, whereby an expansion in money supply increases available funds within the banking system and thus enhances banks' lending capacity. The second is the interest rate channel, through which changes in policy rates shape the cost of funds borne by banks and the lending rates offered to borrowers. Beyond these channels, macroeconomic factors such as inflation and credit risk, reflected in the Non-Performing Loan (NPL) ratio, may amplify or weaken the effectiveness of monetary transmission to credit.

Empirical evidence across various countries suggests that banks are highly responsive to monetary policy. A study covering 54 countries from 2009 to 2018 demonstrates that changes in policy rates significantly influence bank lending volumes, including under low or negative interest rate environments (Boungou, 2021). Another study finds that tight monetary policy tends to suppress credit growth, particularly among banks with weaker capital positions or higher risk exposure (Soedarmono et al., 2023). More recent micro-level evidence from Uganda shows that monetary tightening leads to a notable reduction in household loan supply: loan sizes and maturities become more restrictive and lending rates increase, with stronger effects observed among banks with lower liquidity and capital buffers (Martinez et al., 2025). Additionally, tighter monetary policy generates spillover effects on inflation, economic activity, and even potential social disruptions. These findings collectively affirm that the bank lending channel remains a critical component of monetary policy transmission, especially in emerging economies with bank-dominated financial systems.

In the context of Indonesia, several studies indicate that macro-monetary variables such as interest rates, liquidity, and inflation significantly influence the dynamics of bank credit. Handayani and Kacaribu (2021) confirm that monetary transmission is not constant over time and is greatly shaped by external conditions and policy regimes. Research on financial stability by Hudaya and Firmansyah (2023) asserts that changes in monetary instruments affect systemic risk, which subsequently relates to banks' lending decisions. More recent evidence highlights that monetary policy instruments such as reserve requirements (GWM), policy rates, and loan-to-value (LTV) ratios display heterogeneous effects on lending across sectors and regions , reserve requirements tend to reduce lending, policy rates drive lending growth in non-household sectors, and LTV significantly affects household credit (Safuan et al., 2024). Additional findings confirm that policy rates and liquidity through money supply influence credit risk in the short term, with interest rates retaining a negative effect in the long run (Amalia and Suriani, 2023). These studies demonstrate that monetary policy in Indonesia affects not only credit volumes but also financial conditions and banking credit risk.

The interplay between macroeconomic stability and banking intermediation is also relevant from a regional policy perspective. Romadhan (2025) emphasizes that macroeconomic stability remains a crucial determinant shaping regional economic policy direction. This implies that monetary instruments such as money supply, policy rates, inflation, and systemic risk carry significant influence over the behavior of financial institutions, including credit distribution mechanisms.

Against this backdrop, the present study focuses on the effect of liquidity and monetary policy on bank lending in Indonesia. The analysis uses monthly data from September 2016 to June 2025. This period is selected as it captures the full implementation of Bank Indonesia's reformed monetary policy rate introduced in 2016, while also aligning with data availability for credit, deposit interest rates, and lending

rates published by the Financial Services Authority. A multiple linear regression model is employed to examine the effects of money supply (M2), deposit interest rates, inflation, NPLs, and liquidity conditions on banking credit growth.

By providing empirical insights into the relationship between monetary policy, liquidity, and bank lending, this study aims to contribute to the formulation of more effective monetary and macroprudential policies that support financial system stability and promote economic growth in Indonesia.

2. METHOD

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This study employs a quantitative approach using a multiple linear regression method to examine the influence of liquidity and monetary variables on bank lending in Indonesia. This method is selected due to its capability to estimate linear relationships between the dependent variable and multiple independent variables simultaneously, while providing a clear interpretation of each variable's contribution to credit dynamics.

The analysis uses secondary data with a monthly frequency covering the period from September 2016 to June 2025. This timeframe is chosen to capture the full implementation of Bank Indonesia's reformed monetary policy rate introduced in 2016 and to align with the availability of data on banking credit, deposit interest rates, and lending rates published by the Financial Services Authority. All data were obtained from Bank Indonesia, the Financial Services Authority, and Statistics Indonesia. The regression model employed in this study is specified as follows:

$$Kredit_t = \beta_0 + \beta_1 SBDPK_t + \beta_2 SBKredit_t + \beta_3 NPL_t + \beta_4 Inflasi_t + \beta_5 M2_t + \varepsilon_t$$

Where:

- β_0 = the constant term,
- $\beta_1 - \beta_5$ = coefficients of the independent variables,
- ε_t = the error term, which is assumed to satisfy the classical OLS assumptions.

The variables analyzed in this study consist of bank lending as the dependent variable, along with several independent variables reflecting liquidity conditions, monetary policy stance, and financial risk. The independent variables include broad money supply (M2), deposit interest rate, lending interest rate, inflation, and Non-Performing Loans (NPL). These variables are selected to capture the main mechanisms linking monetary policy to banks' intermediation capacity.

The empirical model is constructed using multiple linear regression by incorporating all explanatory variables into the estimation equation. This approach is employed to analyze the influence of macroeconomic variables on bank lending. All monthly observations are included in the model, and diagnostic checks are conducted to ensure compliance with classical regression assumptions, including residual normality, homoskedasticity, and the absence of autocorrelation. These steps are essential to obtain unbiased and efficient coefficient estimates and to ensure that the results accurately reflect the true relationships among the variables examined.

All estimations are carried out using the standard Ordinary Least Squares (OLS) procedure accompanied by a series of diagnostic tests to ensure the reliability of the model results. The analysis begins with descriptive statistics to assess the basic characteristics of the data, including the mean, standard deviation, and minimum–maximum values of each variable. This preliminary step provides an initial understanding of the distribution patterns and dynamics of the variables studied, forming the basis for subsequent interpretation.

Next, classical assumption tests are performed, including tests for normality, multicollinearity, heteroskedasticity, and autocorrelation. These tests confirm whether the regression model satisfies the technical requirements necessary for accurate interpretation of the estimation results. In the event of any assumption violations, corrective measures are undertaken through improved model specification or inclusion of relevant adjustment variables.

The following step involves estimating the multiple linear regression model to evaluate both simultaneous and partial effects of the independent variables on the dependent variable. The estimated results are evaluated using significance tests, including the t-test to examine individual variable effects and the F-test to assess the joint significance of the independent variables. This analysis enables identification of the variables that exhibit the strongest and statistically significant influence within the model.

Finally, the coefficient of determination (R^2) is used to measure the extent to which variations in the dependent variable can be explained by the independent variables. A higher R^2 indicates stronger explanatory power, while still considering overall model fit and avoiding potential overfitting. The entire analytical procedure is expected to yield robust and informative estimates, providing deeper insights into the dynamics of bank lending in relation to macroeconomic variables and monetary policy.

3. RESULTS AND DISCUSSION

3.1 Overview of Data

The data used in this study consist of monthly time-series observations covering the period from September 2016 to June 2025. This timeframe is selected to ensure the consistency of the monetary policy framework following the introduction of the BI Rate as the new policy rate in mid-2016. By starting from the first month in which the BI Rate was fully implemented within the monetary system, the study captures a more stable and well-structured policy environment. The end of the observation period is set at June 2025 to align with the availability of officially published data on bank credit and deposit interest rates from the Financial Services Authority and Bank Indonesia.

The variables analyzed include Bank Lending as the dependent variable, and several macroeconomic and banking performance indicators as independent variables, namely broad money supply (M2), deposit interest rate (DPK), lending interest rate, inflation, and the Non-Performing Loan (NPL) ratio. These variables are selected because both theoretical and empirical frameworks identify them as key determinants of banking intermediation capacity. M2 reflects liquidity conditions in the economy, deposit interest rates represent funding cost structures, while inflation and NPL indicate macroeconomic pressures and systemic risks that may affect banks' prudence in extending credit.

All data are sourced from official publications of key financial authorities such as Bank Indonesia, Statistics Indonesia, and the Financial Services Authority, ensuring sufficient accuracy and reliability for empirical analysis. The use of monthly data also provides an advantage in capturing short-term dynamics and the banking sector's immediate responses to changes in macroeconomic conditions and monetary policy. This data overview serves as the initial foundation before proceeding to statistical and econometric analyses aimed at identifying causal relationships and the influence of these variables on bank lending in Indonesia.

3.2 Descriptive Statistics Test

Tabel 1. Descriptive Statistics of Research Variables

Statistic	Bank Credit	Deposit Interest Rate	Lending Interest Rate	Inflation	M2 Indonesia	NPL
Mean	5,833,323.448	2.9247	9.9568	2.8984	6,988,805.916	2.7496
Median	5,563,700.000	2.89	9.53	3.00	6,817,787.91	2.77
Maximum	8,059,793.000	3.62	11.45	5.95	9,436,700.45	3.35
Minimum	4,068,902.000	1.81	8.87	0.09	4,737,630.76	2.08
Standard Deviation	1,065,876.504	0.5373	0.8659	1.1553	1,443,677.292	0.3441

Source: Data processed with EViews

Descriptive statistical analysis is conducted to provide an initial understanding of the distributional characteristics of each variable used in this study (Table 1). By observing the mean, median, standard

deviation, maximum, and minimum values, general patterns, levels of volatility, and the presence of potential extreme observations that may influence the estimation process can be identified.

The descriptive results show that Bank Lending has an average value of IDR 5,833,323 billion and a median of IDR 5,563,700 billion. The relatively wide range of IDR 3,990,891 billion and a standard deviation of 1,065,876.5 indicate substantial dynamics in credit developments throughout the observation period. This pattern is consistent with fluctuations in national economic activity influenced by business cycle changes, liquidity conditions, and the banking sector's response to monetary policy.

The Deposit Interest Rate records an average of 2.92 percent, ranging between 1.81 and 3.62 percent. The relatively moderate variation, reflected in a standard deviation of 0.54, suggests that the cost structure of banking funding remained fairly stable. Meanwhile, the Lending Interest Rate shows an average of 9.95 percent with a more restricted variation (standard deviation of 0.86). This relatively controlled lending rate range implies gradual adjustments made by banks in response to funding costs, credit demand, and risk levels.

Inflation exhibits an average of 2.89 percent with a wider range from 0.09 to 5.95 percent. The standard deviation of 1.15 confirms periods of varying price pressures driven by both external shocks and domestic factors such as food and energy prices. The M2 variable has an average of IDR 6,988,805 billion with a range of nearly IDR 4.7 trillion, reflecting changes in national liquidity conditions over the medium to long term. The large standard deviation (1,443,677) indicates significant dynamics in the growth of broad money during the study period. Meanwhile, the Non-Performing Loans ratio has an average of 2.74 percent, ranging between 2.08 and 3.35 percent, with a low standard deviation of 0.34, indicating relatively stable credit risk despite cyclic variations in the economy.

Overall, the descriptive statistics provide a preliminary overview of the distribution and variation of data across periods, which serves as an essential basis for subsequent analysis. This information also assists in identifying potential outliers and highlights the importance of conducting classical assumption tests to ensure the reliability of the regression model applied.

3.3 Normality Test

Tabel 2. Normality Test Results (Jarque–Bera)

Indikator	Result
Skewness	-0,0078
Kurtosis	3,4143
Jarque-Bera	0,7518
Prob. JB	0,6867

Source: Data processed with EViews

The normality test was conducted to ensure that the regression model's residuals follow a normal distribution (Table 2), thereby satisfying one of the key assumptions of the classical linear regression model. The normality of residuals is essential to guarantee the validity of statistical inferences, particularly the t-test and F-test, as their accuracy strongly depends on this assumption.

The results indicate that the residuals have a Skewness value of -0.0078, suggesting an almost perfectly symmetrical distribution without noticeable skewness to either the left or right. The Kurtosis value of 3.41 is also very close to the theoretical kurtosis of a normal distribution (3), indicating that the residuals display an acceptable level of peakedness without excessively heavy or light tails.

Furthermore, the Jarque–Bera statistic of 0.7518 with a probability value of 0.6866, which is significantly higher than the conventional significance level ($\alpha = 0.05$), provides no evidence to reject the null hypothesis of normality. Thus, the residuals can be considered normally distributed.

Overall, these findings confirm that the residual distribution satisfies the normality assumption, and the regression analysis can proceed to subsequent stages without requiring additional correction for distributional deviations.

3.4 Multicollinearity Test

Tabel 3. Variance Inflation Factor (VIF) Test Results

Variable	VIF
Deposit Interest Rate (DPK)	9,60
Loan Interest Rate	7,75
NPL	4,68
Inflation	2,09
M2 (Money Supply)	5,06

Source: Data processed with EViews

The multicollinearity test was conducted to ensure that the independent variables in the model do not exhibit excessively strong linear relationships with one another. Severe multicollinearity may lead to unstable regression coefficients, inflated standard errors, and difficulties in interpreting the partial effect of each variable. The test was assessed using the Variance Inflation Factor (VIF), where a VIF value below the threshold of 10 generally indicates the absence of serious multicollinearity issues.

The results (Table 3) show that all variables have VIF values below the critical threshold. The Deposit Interest Rate (DPK) recorded the highest VIF value of 9.60, but it remains within the acceptable tolerance limit and does not indicate multicollinearity requiring further treatment. The Loan Interest Rate, M2, and NPL have VIF values of 7.75, 5.06, and 4.68, respectively. The lowest VIF value was observed for Inflation at 2.09, indicating a low degree of correlation with other independent variables.

Overall, the findings confirm that the model does not suffer from significant multicollinearity issues. Therefore, all independent variables can be retained in the regression model, and the interpretation of the estimated coefficients can be carried out with adequate reliability.

3.5 Autocorrelation Test

Tabel 4. Autocorrelation Test Results (Breusch–Godfrey)

Test	Statistic	Probability (p-value)
F-Statistic	1,6362	0,2669
Obs*R-squared (Chi-Square)	3,2189	0,2318

Source: Data processed with EViews

The autocorrelation test was conducted to examine whether serial correlation exists among the regression residuals (Table 4). The presence of autocorrelation may lead to inefficient coefficient estimates and undermine the validity of statistical inference, particularly in time-series data such as those employed in this study. The Breusch–Godfrey LM Test was applied, as it is more flexible than the Durbin–Watson test in detecting higher-order autocorrelation.

The results show that the model yields an F-statistic of 1.6362 with a probability value of 0.2669. In addition, the Obs*R-squared statistic of 3.2189 is associated with a probability value of 0.2318. Both probability values are substantially higher than the conventional significance level of $\alpha = 0.05$, indicating no statistical evidence to reject the null hypothesis of no serial correlation.

Thus, the findings confirm that the model does not suffer from autocorrelation, and the residuals are independently distributed across periods. Consequently, the regression estimates remain efficient, and the model can proceed to the subsequent analytical stages without requiring corrective transformations to address autocorrelation issues.

3.6 Heteroscedasticity Test

Tabel 5. Heteroscedasticity Test Results (Glejser)

Indicator	Statistic	Probability (p-value)
F-statistic	1.910701	0.1200
Obs*R-squared	9.24407	0.9200

Source: Data processed with EViews

The heteroscedasticity test was conducted to examine whether the variance of the residuals remains constant across all levels of the independent variables (Table 5). A violation of the homoscedasticity assumption may result in inefficient coefficient estimates and biased standard errors, thus compromising the validity of statistical inferences. To detect heteroscedasticity, this study employs the Glejser test, which evaluates the relationship between the absolute residual values and the independent variables.

The results indicate that the F-statistic is 1.9107 with a probability value of 0.1200, while the Obs*R-squared statistic yields a value of 9.2441 with a probability of 0.9200. Both p-values are well above the conventional significance threshold of $\alpha = 0.05$, implying that the null hypothesis of homoscedasticity cannot be rejected.

Therefore, it can be concluded that the regression model satisfies the homoscedasticity assumption. The variance of the residuals is constant, ensuring that the coefficient estimates remain efficient and that subsequent statistical tests retain their validity without requiring additional corrective measures.

3.7 Regression Estimation Results

Tabel 6. Multiple Linear Regression Output

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	8,651,643.000	968,341.100	8.934	0.0000
Third-Party Funds Rate	387,066.000	66,908.830	5.785	0.0000
Lending Rate	-408,921.100	67,211.290	-6.084	0.0000
NPL	-1,005,605.000	74,329.520	-13.529	0.0000
Inflation	-69,306.790	14,121.220	-4.908	0.0000
M2 (Money Supply)	0.441718	0.038272	11.541	0.0000

Source: Data processed with EViews

Goodness of Fit:
R-squared: 0.987223
Adjusted R-squared: 0.986577
F-statistic: 1529.831
Prob(F-statistic): 0.000000
Durbin-Watson: 2.111070

The results of the multiple linear regression analysis indicate that all independent variables significantly influence bank lending at the 1% significance level (Table 6). The model yields a constant coefficient of 8,651,643, implying a baseline level of bank lending when all explanatory variables are held at zero. Although the constant itself does not carry a strong economic interpretation, it is necessary as an intercept in the estimation.

The coefficient for the Third-Party Funds Rate is positive (387,066) and highly significant, suggesting that higher deposit rates encourage greater fund mobilization, enabling banks to extend more loans. Conversely, the Lending Rate exhibits a significant negative effect (-408,921), consistent with credit demand theory, where higher borrowing costs reduce loan uptake by customers.

The NPL variable shows the largest negative coefficient (-1,005,605), indicating that higher credit risk sharply reduces banks' ability and willingness to expand lending. Inflation also exerts a significant negative effect (-69,306), signaling that increases in price pressures may dampen both loan demand and the banking sector's intermediation capacity due to heightened macroeconomic uncertainty. In contrast, M2 demonstrates a positive and significant impact (0.4417), reflecting that improved liquidity conditions in the economy support credit expansion.

The model exhibits an exceptionally strong explanatory power, with an R-squared of 0.9872 and Adjusted R-squared of 0.9866, showing that approximately 98% of the variation in bank lending is explained by the included variables. The F-statistic (1529.831; $p = 0.0000$) confirms the overall significance of the model. Moreover, the Durbin–Watson statistic (2.111) indicates absence of autocorrelation, consistent with previous diagnostic test results.

Overall, these findings provide robust empirical evidence that monetary conditions, credit risk, and liquidity factors significantly drive the dynamics of bank lending in Indonesia.

3.8 Discussion of Findings

The estimation results indicate that macroeconomic variables and banking-specific indicators significantly influence bank lending in Indonesia throughout the observation period. These findings align with established monetary and banking theories, which emphasize that lending decisions are shaped not only by internal bank conditions but also by broader macroeconomic dynamics and monetary policy transmission.

First, the Third-Party Funds (DPK) interest rate exhibits a positive and significant effect on lending. This suggests that higher deposit rates strengthen banks' ability to mobilize funds, thereby expanding their lending capacity. The result supports the liability-side theory, wherein credit expansion is facilitated through increased deposit accumulation. The finding is consistent with previous empirical evidence showing that deposit mobilization significantly drives credit distribution within Indonesian banks (Zuhri et al., 2024). International evidence also reinforces the bank lending channel, where monetary easing enhances credit supply, as observed among universal and commercial banks in the Philippines (Escranda, 2024).

Cross-country studies further indicate that interest rate fluctuations have crucial implications for bank behavior. Although interest rate declines may compress net interest margins, banks can offset the impact through reduced loan-loss provisioning and operational efficiencies (Windsor et al., 2023). Conversely, increases in interest rates may raise profitability through higher net interest income but simultaneously reduce bank equity valuations due to fixed-income asset depreciation, resulting in an inverted U-shaped relationship between rates and bank market value in the European Union (Serrano, 2024).

The Lending Rate has a negative and statistically significant effect on bank lending. This is in line with the interest rate channel of monetary policy: higher borrowing costs suppress loan demand. The relatively high elasticity of the coefficient suggests that the Indonesian real sector is sensitive to interest rate changes, reinforcing the effectiveness of interest-rate-based monetary policy (BI Rate/BI7DRR). This finding is supported by studies extending the Bernanke and Blinder framework, which highlight that the balance sheet channel remains relevant despite its more limited magnitude (Brissimis & Papafilis, 2024).

In developing countries such as South Africa, the interaction between bank characteristics and macroeconomic variables plays a critical role in credit supply, where liquidity ratios and inflation are significant determinants (Farajnezhad, 2022; Pirozhkova & Viegi, 2025). In the United States, the responsiveness of lending has increased significantly since 2017, particularly among small and medium-sized banks (Spiegel, 2025). In Indonesia, monetary policy is empirically effective, with interest rates, GDP, and inflation influencing credit dynamics, and optimal transmission occurring within approximately two years (Saat et al., 2024).

The Non-Performing Loan (NPL) ratio exerts the strongest negative impact on bank lending. Higher NPLs elevate default risk and increase provisioning needs, prompting banks to reduce lending exposures. This finding supports the risk-based credit channel and underscores the importance of

improving asset quality to sustain lending growth. The result is consistent with studies showing that rising NPLs constrain long-term credit growth, whereas capitalization and cost efficiency have heterogeneous influences (Hor & Lim, 2025). In the United States, NPLs suppress bank asset expansion and earnings, with bank size and capital adequacy amplifying the adverse effects, highlighting the critical role of robust credit risk management (Arhinful et al., 2025).

In the Indonesian context, particularly during the COVID-19 pandemic, strong deposit growth became a key driver of credit expansion, although macroeconomic variables such as exchange rates, inflation, BI Rate, and NPL remained influential (Aziz & Maulida, 2024). Evidence from Bangladesh also shows that high NPL levels weaken liquidity, profitability, and banking stability, especially within state-owned banks (Parvin et al., 2023). Recent research further indicates that financial technology (fintech) innovations can mitigate NPL risk through enhanced pre- and post-lending monitoring, thereby supporting both bank growth and financial stability (Chai & Sun, 2024).

Inflation exhibits a negative and significant influence on lending due to increasing macroeconomic uncertainty, weakened consumer purchasing power, and higher borrowing and operational costs. From a banking perspective, elevated inflation reduces the real value of assets and raises systemic risks, inducing more conservative lending behavior. Similar evidence from the Euro Area suggests that firms with floating-rate loans adjust pricing in response to increasing borrowing costs, leading to reduced loan demand and moderating monetary policy effectiveness (Core et al., 2025).

The effect of inflation on growth is nonlinear: low inflation may support economic expansion, while high inflation disrupts banking intermediation, particularly in less competitive banking markets (Ghossoub, 2023). In ASEAN, bank efficiency strengthens z-score-based stability but can harm NPL-based stability metrics, while inflation consistently undermines banking stability, highlighting the importance of inflation control and operational resilience (Maudy et al., 2024).

By contrast, M2 (money supply) positively and significantly supports bank lending. This demonstrates that greater financial system liquidity enhances credit intermediation. In Indonesia, increases in M2 often accompany monetary easing phases, indicating the vital role of liquidity provision in encouraging credit growth. This result aligns with evidence from Ghana that inflation, exchange rates, and NPLs influence lending rates, but liquidity (M2) remains a key enabler of credit expansion (Tsibu et al., 2025).

The model's high R-squared value of 0.987 confirms that nearly all variations in bank lending are explained by the included variables. The Durbin–Watson statistic close to 2 further indicates no autocorrelation issues that could bias the results. Thus, the regression model is highly reliable in capturing the interplay between macroeconomic conditions and banking sector credit dynamics. These findings collectively reinforce that monetary policy, economic fundamentals, and banking health indicators play complementary roles in shaping credit intermediation behavior in Indonesia.

3.9 Policy Implications

Based on the findings of this study, several important policy implications arise for both monetary authorities and the banking industry in maintaining financial stability and enhancing credit growth.

First, the significantly negative effect of lending rates indicates that the transmission of monetary policy through the interest rate channel remains effective in Indonesia. Accordingly, Bank Indonesia should carefully consider the direct impact of policy rate adjustments on credit activity, particularly in sensitive sectors such as MSMEs and capital-intensive industries. Interest rate changes should be implemented gradually and communicated clearly to avoid excessive credit contraction.

Second, the positive and significant influence of deposit interest rates on credit supply highlights that public fund mobilization remains a crucial determinant of banks' intermediation capacity. The Financial Services Authority (OJK) may strengthen funding efficiency by enhancing financial literacy and increasing competition among banks for deposit products. At the same time, banks should optimize their cost of funds to expand lending without imposing a high borrowing burden on customers.

Third, the study confirms that Non-Performing Loans (NPLs) exert the strongest negative effect on credit, underscoring that system stability is highly dependent on asset quality. OJK and the banking

sector must improve risk management through enhanced credit assessment, portfolio diversification, and the utilization of historical customer data. Strengthening restructuring and resolution mechanisms for problematic loans remains essential to ensure NPL levels stay manageable. Preventive macroprudential measures are also needed to mitigate spikes in NPLs amid economic downturns.

Fourth, the negative effect of inflation emphasizes that price stability remains a fundamental prerequisite for credit expansion. Bank Indonesia must ensure that monetary policy is aligned with its inflation targeting framework. When inflation rises, coordination among monetary, fiscal, and real-sector policies becomes necessary to safeguard purchasing power and reduce uncertainty that can suppress credit demand.

Lastly, the positive and significant impact of M2 underscores the role of liquidity in supporting financial intermediation. Liquidity-enhancing measures such as reductions in reserve requirements or liquidity injections through monetary operations can serve as effective instruments to stimulate credit growth, especially during economic slowdowns. However, liquidity easing should be accompanied by macroprudential supervision to prevent excessive leverage and sector-specific credit risks.

These findings highlight that promoting sustainable credit growth requires strong synergy among interest rate policies, macroeconomic stability, risk management enhancements, and adequate banking-sector liquidity. Effective integration of these elements will enable banks to perform their intermediation role optimally and support long-term economic growth in Indonesia.

4. CONCLUSION

This study examines the effects of deposit interest rates, lending interest rates, Non-Performing Loans (NPLs), inflation, and broad money supply (M2) on bank lending in Indonesia using monthly data from September 2016 to June 2025. The estimation results show that all independent variables have statistically significant impacts on bank credit, with directions consistent with economic theory and the structural characteristics of the national banking industry. Deposit interest rates exert a positive effect, indicating the importance of funding mobilization in strengthening lending capacity. Conversely, lending interest rates and inflation exert negative effects, reflecting how higher borrowing costs and price pressures can suppress credit demand. NPLs demonstrate the strongest negative influence, confirming that asset quality is a critical determinant of sustainable banking intermediation. Meanwhile, M2 has a positive and significant effect, suggesting that macroeconomic liquidity availability is a key foundation for credit expansion. Overall, the model performs strongly and satisfies classical econometric assumptions, ensuring the reliability of the results.

Despite its empirical contributions, this study has several limitations. The linear regression framework may not fully capture long-term dynamics, nonlinear interactions, or potential structural shifts driven by monetary policy changes or external shocks. The variables analyzed are limited to key macroeconomic indicators, excluding bank-specific characteristics, funding structure, and sectoral borrower profiles. Additionally, the dataset relies on publicly available published statistics, which remain subject to future revisions.

Given these limitations, future research is encouraged to employ more dynamic modeling techniques such as ARDL, VAR, or nonlinear regression to capture long-run relationships and temporal responses among variables. Further studies may also broaden the scope by incorporating micro-banking indicators, measures of economic uncertainty, and global variables such as U.S. Federal Reserve interest rates or international financial market volatility. Moreover, the application of advanced structural break detection methods and the use of higher-frequency data could provide stronger insights into the evolving dynamics of bank lending. Such extensions would enable a more comprehensive understanding of the factors influencing banking intermediation in Indonesia.

Ethical Approval

Not Applicable

Informed Consent Statement

Not Applicable

Disclosure Statement

The Authors declare that they have no conflict of interest

Data Availability Statement

The data presented in this study are available upon request from the corresponding author for privacy.

Funding

This study did not receive any external funding.

Notes on Contributors

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