

## *Credit Dynamics and Macroeconomic Stability in Indonesia: Evidence from ARDL–ECM*

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### Abstract

This study examines the effects of money supply, exchange rate, inflation, and interest rate on bank credit in Indonesia using monthly time-series data from January 2004 to December 2024. The study applies the Autoregressive Distributed Lag approach and the Error Correction Model to distinguish short-run dynamics from long-run relationships. The selected ARDL model shows that money supply has a positive and significant short-run effect on bank credit, highlighting the role of liquidity in banking intermediation. Exchange rate movements exert significant lagged effects, suggesting that external monetary pressures influence credit gradually. Inflation negatively affects bank credit with a lag, indicating that price instability may weaken credit expansion. Conversely, the interest rate is not retained in the optimal model, implying a weaker direct transmission effect. The Bounds Test does not confirm cointegration, suggesting no stable long-run equilibrium. Overall, Indonesian bank credit is more responsive to short-run macroeconomic fluctuations than to persistent long-run relationships during the period.

Keywords: Bank Credit, Money Supply, Exchange Rate, Inflation, Interest Rate, ARDL.

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### 1. Introduction

Bank credit is a key indicator of financial intermediation because it reflects the banking sector's capacity to channel funds to the real economy. In developing economies such as Indonesia, a healthy expansion of bank credit can support consumption, investment, production, and economic growth. However, credit expansion also entails financial stability risks when it is not supported by sound borrower quality, adequate bank capital, and stable macroeconomic fundamentals. Therefore, credit dynamics should not be understood merely as a measure of financial sector growth, but also as a reflection of how banks respond to monetary conditions, macroeconomic uncertainty, external shocks, and changes in borrower risk.

The theoretical foundation of this study is grounded in the credit channel and bank lending channel of monetary transmission. The credit channel argues that monetary and macroeconomic shocks affect the real economy not only through interest rates, but also through the availability of credit. Show that bank loans are distinct from other financial assets because many borrowers, particularly firms without direct access to capital markets, depend heavily on bank financing [1]. In this framework, banks are not passive intermediaries; they actively transmit monetary shocks through changes in lending supply. The bank lending channel further explains that monetary policy affects credit by changing banks' liquidity and balance-sheet capacity. When liquidity becomes tighter or risk perception increases, banks may reduce loan supply,

tighten credit standards, or reallocate portfolios toward safer assets. This mechanism is particularly relevant in bank-based financial systems such as Indonesia, where banking institutions remain the dominant source of external financing.

Credit market frictions also explain why bank credit may respond asymmetrically to macroeconomic shocks. Argue that asymmetric information can generate credit rationing, meaning that banks may restrict lending even when borrowers are willing to pay higher interest rates [2]. Similarly, Emphasize that monetary shocks can increase the external finance premium when borrower balance sheets weaken [1]. Under such conditions, exchange-rate depreciation, inflationary pressure, or increases in interest rates may reduce bank credit not only by increasing borrowing costs, but also by worsening borrower risk and banks' perception of repayment capacity. Further show that banks with weaker liquidity positions are more sensitive to monetary tightening, indicating that the effect of macroeconomic shocks on credit depends on bank liquidity and balance-sheet strength [3].

In Indonesia, this theoretical mechanism is highly relevant because the financial system continues to be dominated by the banking sector. Bank Indonesia reported that Indonesia's financial system stability remained well maintained in 2023 amid global uncertainty, supported by resilient banking intermediation. Similarly, the IMF 2024 emphasized that Indonesia's financial system remained broadly resilient, underpinned by strong bank capital and liquidity, although the system remains strongly bank-based. This structure implies that changes in money

supply, exchange rates, inflation, and interest rates may be transmitted to the real economy through banks' lending behavior. Thus, understanding bank credit dynamics is essential for evaluating the effectiveness of monetary policy, macroprudential policy, and financial stability management in Indonesia.

The development of bank credit in Indonesia during 2004–2024 shows a long-term upward trend, but the pattern has not been linear. Data from Indonesian Banking Statistics indicate that this period covered several major economic episodes, including pre-global financial crisis credit expansion, the slowdown following the 2008–2009 global financial crisis, exchange-rate and global liquidity pressures after the taper tantrum, the contraction during the COVID-19 pandemic, and the recovery phase in 2022–2024. The Financial Services Authority also reported that banking intermediation remained strong in 2024, as reflected in the annual growth of commercial bank credit by 10.92% in October 2024, higher than 8.99% in the same period of the previous year. These developments suggest that bank credit in Indonesia is shaped by a combination of domestic and external macroeconomic factors, particularly money supply, exchange rates, inflation, and interest rates.

Empirical studies have shown that the relationship between macroeconomic variables and bank credit remains inconclusive. Found that monetary policy and credit risk significantly influence bank lending behavior in Indonesia, particularly through interest rates, credit risk, and broader macroeconomic conditions [4]. Showed that during the COVID-19 pandemic, third-party funds became the most important determinant of bank credit growth in Indonesia, whereas other macroeconomic variables did not always show consistent effects [5]. Provides evidence that the bank lending channel operates in Indonesia, but its effectiveness is moderated by bank liquidity and capital buffers [12]. Further show that monetary tightening affects credit growth with a lag and that the strength of this effect depends on bank liquidity, capitalization, and credit-market conditions [6]. More recent evidence by [7] also suggests that monetary-policy transmission through bank lending varies across regions, indicating that the credit response to monetary shocks is not homogeneous within Indonesia.

Evidence from other emerging economies also shows that the macroeconomic determinants of credit are not uniform across countries. Found that inflation, exchange rate, and interest rate affect private-sector credit in Pakistan, although the magnitude and direction of the effects vary across time horizons [8]. Shows that inflation volatility is closely related to private-sector credit dynamics, suggesting that price instability can weaken financial intermediation [9]. Meanwhile, [10] emphasize that bank credit supply in Tanzania is shaped not only by macroeconomic variables but also by bank-specific characteristics such as liquidity, capitalization, funding structure, and non-performing loans. These mixed findings suggest that

the effects of money supply, exchange rate, inflation, and interest rate on bank credit are country-specific and may depend on financial structure, monetary credibility, banking-sector resilience, and external exposure.

The main problem addressed in this study is that the increase in Indonesia's bank credit cannot be explained solely by economic growth trends or liquidity expansion. In some periods, credit growth slowed despite relatively accommodative monetary policy, while in other periods credit continued to expand despite exchange-rate pressures, inflationary shocks, or increases in policy interest rates. This condition suggests the presence of a more complex adjustment mechanism involving changes in banks' risk perception, credit standard tightening, borrower balance-sheet conditions, and shifts in intermediation capacity. Therefore, an empirical investigation of the macroeconomic determinants of bank credit needs to distinguish between short-run and long-run effects in order to determine whether macroeconomic shocks have temporary, persistent, or adjustment-based impacts on bank lending.

This study addresses three research gaps. First, previous studies have often focused on specific episodes, such as the pandemic or post-crisis periods, and therefore have not fully captured Indonesia's bank credit dynamics over a longer horizon covering 2004–2024. Second, many studies examine credit determinants partially, even though money supply, exchange rates, inflation, and interest rates are interrelated within the monetary transmission and banking intermediation mechanisms. Third, limited empirical evidence has explicitly distinguished the short-run and long-run effects of these macroeconomic variables on Indonesian bank credit over a period that includes the global financial crisis, the COVID-19 pandemic, and the post-pandemic recovery. Addressing these gaps is important for understanding how macroeconomic conditions affect bank credit in an emerging economy exposed to repeated external shocks and policy regime changes.

## **2. Research Method**

This study employs a quantitative time-series approach to examine the effects of money supply, exchange rate, inflation, and interest rate on bank credit in Indonesia. The dataset consists of monthly observations covering the period from January 2004 to December 2024, yielding 252 observations. The dependent variable is bank credit, measured as the natural logarithm of total bank credit (CRLN). The explanatory variables include money supply, measured in natural logarithmic form (MSLN), exchange rate, measured as the natural logarithm of the rupiah exchange rate (ERLN), inflation rate (INF), and interest rate (IR). Next Operational Definition of Variables on Table 1.

Table 1. Operational Definition of Variables

Variable	Symbol	Operational Definition	Expected Sign
Bank Credit	CR	Total credit distributed by the banking sector in Indonesia, representing the level of banking intermediation.	Dependent variable
Money Supply	MS	The amount of money circulating in the economy, reflecting liquidity conditions that may influence banks' lending capacity.	Positive
Exchange Rate	ER	The rupiah exchange rate against foreign currency, reflecting external monetary conditions and currency pressure that may affect credit risk and lending behavior.	Negative
Inflation	INF	The rate of increase in the general price level, reflecting price stability and macroeconomic uncertainty.	Negative
Interest Rate	IR	The interest rate that represents borrowing costs and the monetary policy stance.	Negative

The logarithmic transformation is applied to bank credit, money supply, and exchange rate to reduce scale differences and allow elasticity-based interpretation, while inflation and interest rate are retained in percentage form. The empirical model is specified to capture both the dynamic adjustment of bank credit and the lagged effects of macroeconomic variables. The baseline relationship is expressed as follows:

$$\Delta \ln CR_t = \alpha + \sum_{i=1}^p \phi_i \Delta \ln CR_{t-i} + \sum_{j=0}^{q_1} \beta_j \Delta \ln EX_{t-j} + \sum_{k=0}^{q_2} \gamma_k \Delta \ln INF_{t-k} + \sum_{m=0}^{q_3} \theta_m \Delta \ln MS_{t-m} + \sum_{n=0}^{q_4} \theta_n \Delta \ln MS_{t-n} + \beta_1 \ln EX_t + \beta_2 \ln INF_t + \beta_3 \ln IR_t + \beta_4 \ln MS_t + \varepsilon_t$$

Before estimating the dynamic model, the stationarity properties of all variables are examined using the Augmented Dickey-Fuller (ADF) test and the KPSS stationarity test. The use of both tests provides a more robust assessment because the ADF test treats the presence of a unit root as the null hypothesis, whereas the KPSS test assumes stationarity as the null hypothesis. This procedure ensures that no variable is integrated at order two, which is a key requirement for the subsequent ARDL estimation. Next Stationarity Test Results and Order of Integration on Table 2.

Table 2. Stationarity Test Results and Order of Integration

Variable	ADF Level p-value	ADF First Difference p-value	KPSS Level p-value	KPSS First Difference p-value	Result
CRLN	0,1661	<0.0001	0,01	0,0795	I(1)
MSLN	0,0002	0,004	0,01	0,01	I(1)
ERLN	0,6717	<0.0001	0,01	0,1	I(1)
INF	<0.0001	<0.0001	0,01	0,1	I(0)
IR	0,1897	<0.0001	0,01	0,1	I(1)

The Autoregressive Distributed Lag (ARDL) model is

employed because it is suitable for variables with mixed integration orders, namely I(0) and I(1). The optimal lag structure is selected using the Akaike Information Criterion (AIC), which allows the model to capture delayed responses among the variables while avoiding unnecessary over-parameterization. The ARDL bounds testing procedure is then applied to examine whether a long-run equilibrium relationship exists among bank credit, money supply, exchange rate, inflation, and interest rate. If cointegration is supported, the Error Correction Model (ECM) is used to estimate the speed at which short-run deviations adjust toward the long-run equilibrium.

The short-run model is estimated by incorporating first-differenced variables and the error correction term. The coefficient of the error correction term is expected to be negative and statistically significant, indicating convergence toward equilibrium after short-run disequilibrium. A negative and significant coefficient implies that deviations from the equilibrium path are gradually corrected over time. In addition, the short-run coefficients capture the immediate and lagged effects of changes in money supply, exchange rate, inflation, and interest rate on bank credit. The ECM Model expressed as follows:

$$\Delta \ln CR_t = \alpha + \sum_{i=1}^p \phi_i \Delta \ln CR_{t-i} + \sum_{j=0}^{q_1} \beta_j \Delta \ln EX_{t-j} + \sum_{k=0}^{q_2} \gamma_k \Delta \ln INF_{t-k} + \sum_{l=0}^{q_3} \delta_l \Delta \ln IR_{t-l} + \sum_{m=0}^{q_4} \theta_m \Delta \ln MS_{t-m} + \psi ECM_{t-1} + \varepsilon_t$$

Several diagnostic tests are conducted to ensure the reliability of the estimated model. Serial correlation is assessed using the Breusch-Godfrey LM test and the Ljung-Box Q test. Heteroskedasticity is evaluated using the Breusch-Pagan and White tests, while residual normality is examined using the Jarque-Bera test. Model specification is checked using the Ramsey RESET test, and parameter stability is assessed using the CUSUM stability test. These diagnostic procedures are necessary to verify whether the estimated ARDL-ECM model satisfies the basic assumptions of time-series regression and produces valid statistical inference.

### 3. Result and Discussion

The ARDL estimation results indicate that bank credit dynamics in Indonesia are more strongly driven by short-run mechanisms than by a stable long-run equilibrium relationship. Methodologically, the use of the ARDL approach is appropriate because the variables exhibit a mixed order of integration, namely I(0) and I(1), with no strong evidence of I(2) variables. Next ARDL Estimation Results on Table 3.

Table 3. ARDL Estimation Results

Variable / Lag	Coefficient	Std. Error	t-statistic	p-value	
Constant	0,1603	0,1444	1,1102	0,268	
CRLN(-1)	1,0886	0,0635	17,1377	<0.0001	***
CRLN(-2)	-0,1186	0,0635	-1,8689	0,0629	*
MSLN	0,1925	0,0841	2,2876	0,023	**
MSLN(-1)	-0,1546	0,084	-1,8402	0,067	*
ERLN	-0,0342	0,045	-0,7603	0,4478	
ERLN(-1)	-0,1333	0,0505	-2,6425	0,0088	***
ERLN(-2)	0,3928	0,053	7,4078	<0.0001	***
ERLN(-3)	-0,1731	0,0552	-3,1374	0,0019	***
ERLN(-4)	-0,0816	0,0462	-1,7666	0,0786	*
INF	0,0036	0,0033	1,0843	0,2793	
INF(-1)	-0,0083	0,0033	-2,5228	0,0123	**

Note: \*\*\*, \*\*, and \* indicate significance at the 1%, 5%, and 10% levels, respectively.

The ARDL estimation results indicate that bank credit dynamics in Indonesia are more strongly driven by short-run macroeconomic adjustments than by a stable long-run equilibrium relationship. The selected model shows that money supply, exchange rate movements, and inflation are the main macroeconomic variables explaining short-run variations in bank credit, while the interest rate is not retained in the optimal specification. This finding suggests that Indonesian bank credit is not merely a mechanical response to the policy rate, but is shaped by broader liquidity conditions, exchange-rate pressures, inflationary dynamics, and banking-sector risk perceptions. This interpretation is consistent with the bank lending channel literature, which emphasizes that monetary and macroeconomic shocks affect credit supply through banks' liquidity, balance-sheet capacity, and risk-taking behavior [1] [2] [3]. Next ARDL Bounds Test for Cointegration on Table 4.

Table 4. ARDL Bounds Test for Cointegration

Test	F-statistic	Lower Bound p-value I(0)	Upper Bound p-value I(1)
ARDL Bounds Test	2,3756	0,1138	0,3819

Note: Since the upper-bound p-value exceeds 0.05, the long-run equilibrium relationship is not statistically supported.

The Bounds Test does not confirm cointegration at the 5% significance level. Therefore, the long-run coefficients should not be interpreted as evidence of a stable long-run equilibrium relationship. Rather, the results indicate that the relationship between bank credit and macroeconomic variables in Indonesia is more temporary, lagged, and adjustment-based. This finding is plausible because the 2004–2024 period covers several major macro-financial episodes, including the global financial crisis, exchange-rate pressures following the taper tantrum, the COVID-19 shock, and the post-pandemic recovery. Such episodes may weaken the stability of long-run macro-financial relationships and increase the importance of short-run adjustment mechanisms. In this respect, the absence of cointegration should not be viewed as a weak result, but as evidence that bank credit in Indonesia is more responsive to changing macroeconomic conditions than to a persistent equilibrium path.

Money supply has a positive and significant contemporaneous effect on bank credit. This result

confirms the importance of liquidity conditions in supporting banking intermediation. An increase in money supply can expand deposit funding, strengthen banks' liquidity positions, and improve their capacity to extend credit. This finding is consistent with [11] who show that domestic deposits and monetary conditions are important determinants of bank credit in emerging market economies. It is also in line with Indonesian evidence from [12], who finds that the bank lending channel operates in Indonesia and that bank liquidity moderates the response of lending to monetary policy. Similarly, [6] show that the effect of monetary policy on lending in Indonesia occurs with a time lag and depends on banks' liquidity, undisbursed loans, and capitalization. More recent evidence by [7] further indicates that the bank lending channel in Indonesia varies across regions, implying that liquidity-driven credit transmission is heterogeneous across financial markets.

However, the negative and marginally significant coefficient of lagged money supply suggests that the effect of liquidity expansion is not fully persistent. This may reflect banks' portfolio adjustment, prudential lending behavior, or the possibility that additional liquidity is not automatically converted into credit when banks perceive higher borrower risk. This interpretation is supported by [4], who show that credit risk and monetary policy jointly affect bank credit behavior in Indonesia. It also aligns with [5], who find that during the COVID-19 pandemic, third-party funds became a significant determinant of credit growth, while other macroeconomic variables did not always exert consistent effects. Similarly, [13] show that interest-rate policy and liquidity are related to banking credit risk in Indonesia, confirming that liquidity affects the credit channel not only through lending capacity but also through the risk profile of banks. Next Error Correction Model Results on Table 5.

Table 5. Error Correction Model Results

Term	Coefficient	Std. Error	t-statistic	p-value	
ECT/					
CRLN(-1)	-0,03	0,0151	-1,9924	0,0475	**
MSLN(-1)	0,0379	0,0205	1,8517	0,0653	*
ERLN(-1)	-0,0295	0,0244	-1,2063	0,2289	
INF(-1)	-0,0047	0,0042	-1,1154	0,2658	
ΔCRLN(-1)	0,1186	0,0635	1,8689	0,0629	*
ΔMSLN	0,1925	0,0841	2,2876	0,023	**
ΔERLN	-0,0342	0,045	-0,7603	0,4478	
ΔERLN(-1)	-0,1381	0,0498	-2,7733	0,006	***
ΔERLN(-2)	0,2547	0,0501	5,0851	<0.0001	***
ΔERLN(-3)	0,0816	0,0462	1,7666	0,0786	*
ΔINF	0,0036	0,0033	1,0843	0,2793	

The exchange rate exhibits a significant lagged effect on bank credit, with several lags showing different coefficient signs. This pattern indicates that exchange-rate movements do not immediately affect bank credit within the same month, but operate through gradual and non-monotonic adjustment mechanisms. In the Indonesian context, rupiah depreciation may increase import costs, raise inflation expectations, worsen foreign-currency exposure, and reduce borrowers'

repayment capacity. These factors may encourage banks to tighten credit standards. At the same time, exchange-rate movements may increase working-capital financing needs among firms involved in international trade or import-dependent production. Therefore, the alternating signs of exchange-rate coefficients should be interpreted as evidence of state-dependent adjustment rather than model inconsistency.

This result is consistent with the view that exchange-rate stability is a key component of monetary and financial stability in emerging economies. Argue that the exchange rate is an important part of Indonesia's central-bank policy mix because exchange-rate movements can affect inflation, liquidity, capital flows, and financial stability [14]. Empirical evidence from [15] also shows that monetary policy tightening in Indonesia affects the rupiah exchange rate, confirming the close interaction between interest-rate policy, inflation, and exchange-rate dynamics. Further demonstrate that exchange-rate shocks in Indonesia influence monetary and real-sector variables with different adjustment horizons [16]. Cross-country evidence is also mixed. Find that exchange rate, inflation, and interest rate affect private-sector credit in Pakistan, while [17] show that exchange rates and monetary conditions are among the determinants of bank credit in Pakistan [8]. These findings indicate that the exchange-rate effect on credit is country-specific and depends on foreign-currency exposure, financial openness, and banks' balance-sheet resilience.

Inflation has a negative and significant effect on bank credit at the first lag. This finding suggests that price instability weakens credit expansion with a short delay. Economically, inflation may reduce credit through both demand-side and supply-side channels. On the demand side, inflation reduces real purchasing power and increases production costs, thereby weakening households' and firms' ability to borrow. On the supply side, inflation increases uncertainty and credit risk, leading banks to become more cautious in lending. This finding is consistent with [18], who show that inflation negatively affects private credit and financial development in Mexico. Also find that inflation can weaken bank credit, particularly when price instability distorts credit allocation and financial-sector performance [18]. In a broader emerging-market context, [9] shows that inflation volatility is related to private-sector credit dynamics, while [10] argue that inflation, interest rates, and bank-specific factors jointly influence credit supply in Tanzania.

Nevertheless, the inflation-credit relationship is not uniform across countries. In Pakistan, [8] find that inflation may affect private-sector credit differently across time horizons, indicating that the effect of inflation can depend on whether credit is measured in nominal or real terms and whether inflation reflects demand pressure or macroeconomic instability [19] [20]. This helps explain why the present study finds a negative lagged inflation effect rather than a contemporaneous effect. In Indonesia, inflation may

not immediately reduce credit in the same month because loan decisions, credit contracts, and repayment schedules are sticky. However, once inflationary pressures are transmitted into borrower risk and banks' expectations, credit growth may weaken in the following period.

The exclusion of the interest rate from the optimal ARDL specification is an important finding. Theoretically, higher interest rates should reduce credit demand by increasing borrowing costs and reduce credit supply by worsening borrower risk and adverse selection. However, the present model suggests that the direct interest-rate effect is weaker than the effects of money supply, exchange rate, and inflation. This does not imply that interest rates are irrelevant. Rather, it indicates that interest-rate transmission to bank credit in Indonesia may operate indirectly, with delay, or through bank-specific conditions such as liquidity, capitalization, credit risk, and undisbursed loans. This interpretation is consistent with [6], who find that monetary tightening in Indonesia affects bank lending after approximately two quarters. Also shows that the strength of the lending channel depends on bank liquidity and capital buffers [12]. In contrast, [8] find that interest rates significantly affect private-sector credit in Pakistan, suggesting that the effectiveness of the interest-rate channel differs across countries.

The negative and significant Error Correction Term indicates some short-run adjustment mechanism. However, because the Bounds Test does not support cointegration, the ECT should be interpreted cautiously. The coefficient of approximately -0.030 suggests that deviations in bank credit are corrected slowly, at around 3% per month. This slow adjustment is consistent with the nature of bank credit as a sticky variable involving loan contracts, credit screening, borrower relationships, and regulatory considerations. Therefore, the ECT result should be described as an indication of short-run correction rather than conclusive evidence of a long-run equilibrium mechanism.

The diagnostic results also provide important implications for inference. Although the model does not show serious autocorrelation and the stability test supports parameter stability, the presence of heteroskedasticity indicates that the statistical inference should be treated carefully. Therefore, future revisions should consider reporting heteroskedasticity-robust or HAC standard errors as an additional robustness check. This would strengthen the reliability of the coefficient significance and make the empirical strategy more consistent with reputable time-series research standards.

Overall, the findings suggest that bank credit in Indonesia is more responsive to short-run liquidity, exchange-rate, and inflation shocks than to a stable long-run macroeconomic equilibrium. The positive effect of money supply confirms the importance of liquidity in supporting banking intermediation. The lagged exchange-rate effects indicate that external

monetary pressures influence lending behavior gradually. The negative lagged effect of inflation highlights the importance of price stability for credit sustainability. Meanwhile, the weak direct role of the interest rate suggests that credit transmission in Indonesia is more complex than the simple interest-rate channel. These findings support the relevance of a policy-mix framework in Indonesia, in which monetary policy, liquidity management, exchange-rate stabilization, and macroprudential policy should be coordinated to sustain banking intermediation while maintaining financial stability.

#### 4. Conclusion

The findings indicate that bank credit dynamics in Indonesia are primarily driven by short-run macroeconomic adjustments rather than by a stable long-run equilibrium relationship. The ARDL results show that money supply has a positive and significant contemporaneous effect on bank credit, confirming the importance of liquidity conditions in supporting banking intermediation. This suggests that liquidity expansion can strengthen banks' capacity to extend credit, although the marginally negative lagged effect of money supply indicates that liquidity does not automatically translate into sustained credit growth. Exchange-rate movements are found to have significant lagged effects on bank credit, with coefficients that vary across lags. This finding implies that exchange-rate pressures affect lending behavior gradually and through non-monotonic adjustment mechanisms. In the Indonesian context, rupiah depreciation may increase borrower risk, import costs, and foreign-currency exposure, but it may also raise working-capital financing needs in certain sectors. Inflation also has a negative and significant lagged effect on bank credit, indicating that price instability weakens credit expansion after a short delay through declining real purchasing power, higher uncertainty, and increased credit risk. The interest rate is not retained in the optimal ARDL specification, suggesting that its direct effect on bank credit is weaker than the effects of liquidity, exchange-rate movements, and inflation during the observed period. This does not imply that interest rates are irrelevant, but rather that interest-rate transmission to bank credit in Indonesia may operate indirectly, with delay, or through banking-sector conditions such as liquidity, capitalization, risk perception, and credit-market tightness. Therefore, the credit transmission mechanism in Indonesia appears to be more complex than the conventional interest-rate channel. Overall, the findings highlight that bank credit in Indonesia is more responsive to short-run liquidity, exchange-rate, and inflation shocks than to persistent long-run macroeconomic equilibrium. The policy implication is that efforts to sustain bank credit growth should not rely solely on interest-rate instruments. Instead, monetary authorities and financial regulators should coordinate liquidity management, exchange-rate stabilization, inflation control, and macroprudential policy to support banking intermediation while maintaining financial stability. Future studies may

extend this research by incorporating bank-specific variables, such as capital adequacy, liquidity ratios, non-performing loans, bank size, and funding structure, or by examining sectoral credit and structural-break effects to capture more heterogeneous credit transmission mechanisms in Indonesia.

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