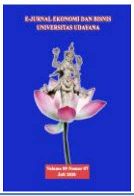

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ENERGY PRICE SHOCKS AND BANKING LIQUIDITY: EVIDENCE FROM MONETARY TRANSMISSION DYNAMICS IN INDONESIA

Agni Prajna Yadi[1] Alif Dewantara[2] Arif Dwi Hartanto[3] Nova Velinda Fitri[4]

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Corresponding:
Economic Development Department, Faculty of Economics and Business, Universitas Merdeka Malang, East Java, Indonesia
Email:
agni.yadi@unmer.ac.id

Abstract

This study investigates the integrated monetary transmission mechanism in Indonesia by linking external shocks, inflation dynamics, monetary policy instruments, and banking liquidity within a unified (VECM) Vector Error Correction Model framework. Using monthly data as of 2018 to 2024, the analysis incorporates exchange rate movements, money supply, and fuel prices as determinants of inflation, while examining the role of inflation in shaping policy responses through Minimum Reserve Requirements (GWM) and the BI 7-Day Repo Rate (BI7DRR), and their subsequent impact on the Loan-to-Deposit Ratio (LDR). The results indicate that fuel price shocks exert a significant and persistent long-run impact on inflation, which subsequently influences monetary tightening. Interest rate adjustments significantly reduce banking liquidity in both the short and long run, while reserve requirements serve as a complementary stabilization instrument. The conclusion emphasizes the prominence of energy-driven inflation in transmitting macroeconomic shocks to banking intermediation and financial stability in emerging economies.

Economic Development Department, Universitas Merdeka Malang, East Java, Indonesia[2,3,4]
Email: alif.dewantara@unmer.ac.id[2]
Email: arif.hartanto@unmer.ac.id[3]
Email: novafitri@gmail.com[4]

INTRODUCTION

Macroeconomic stability in emerging economies is increasingly shaped by the interaction between external shocks, inflation dynamics, monetary policy responses, and banking sector liquidity. In Indonesia, the 2018–2024 period was marked by substantial economic interruptions, involving the COVID-19 pandemic, global energy price volatility, and monetary tightening in advanced economies. These shocks generated fluctuations in inflation, exchange rates, and domestic liquidity, ultimately influencing banking intermediation performance. According to data from Badan Pusat Statistik (BPS), (2021) Indonesia experienced economic contraction of –2.07 percent in 2020, followed by gradual recovery between 2021 and 2024. Despite recovery, inflation pressures persisted, particularly following fuel price adjustments and exchange rate depreciation that reached Rp15,900 per USD in 2022.

Inflation remains a central macroeconomic concern because it affects purchasing power, financial stability, and monetary policy credibility. The Quantity Theory of Money introduced by Irving Fisher through the equation MV = PT explains that excessive growth in money supply may lead to sustained price increases when velocity and output are relatively stable (Ilahi & Purnamasari, 2025). In the Indonesian context, rising liquidity not matched by real output expansion can generate inflationary pressures, particularly when accompanied by fuel price increases. From a cost-push perspective, higher energy prices increase production and distribution costs, accelerating overall price levels (Courtoy et al., 2025). Empirical evidence shows that fuel price adjustments contribute significantly to inflationary movements (Lestari & Asyiqin, 2022; Lal Karn et al., 2022).

Exchange rate dynamics further reinforce inflationary transmission through the (PPP) Purchasing Power Parity mechanism offered by Cassel, where currency depreciation raises imported goods prices and induces imported inflation (Vo & Vo, 2023; Widarjono et al., 2023). Several studies confirm that exchange rate depreciation positively affects inflation in Indonesia (Sumaryoto et al., 2021; Aprilliantoni & Jimale, 2024). However, other findings suggest mixed or insignificant relationships during pandemic periods due to suppressed aggregate demand (Subryanto, 2025).

Monetary authorities respond to inflationary pressures through policy instruments such as the BI 7-Day Reverse Repo Rate (BI7DRR) and Minimum Reserve Requirements (GWM). According to Courtoy et al., (2025), monetary policy affects financial institutions through interest rate and liquidity channels. An expansion in policy rates improves funding fees and may constrain credit expansion, thereby influencing the Loan-to-Deposit Ratio (LDR), a key indicator of banking liquidity. During the pandemic, Bank Indonesia lowered policy rates and reserve requirements to support liquidity (Bank Indonesia, 2020). Subsequently, tightening measures were implemented in 2022–2023 in response to inflationary pressures.

Although numerous studies have examined inflation determinants (Dananjaya & Dewi, 2025; Ridwan, 2022) and others have analyzed banking liquidity determinants (Rahmatullah, 2025; Rokiyanto & Siahaan, 2024), existing literature remains fragmented. Prior research generally investigates monetary variables and banking liquidity separately, without modeling inflation as a mediating channel linking external shocks to banking intermediation. This gap limits understanding of how energy price shocks, exchange rate movements, and money supply expansion transmit through inflation to monetary policy responses and ultimately affect banking liquidity.

Therefore, this study develops an integrated monetary transmission framework that simultaneously examines exchange rates, fuel prices, and money supply as determinants of inflation, and evaluates how inflation influences policy instruments and banking liquidity in Indonesia. Using a multivariate Vector Error Correction Model (VECM) with monthly data from 2018 to 2024, this research contributes by providing a systemic analysis of macro-financial linkages in an emerging economy context. The findings are expected to provide insights into the structural character of energy-driven inflation in defining monetary transmission and banking stability.

Furthermore, inflation states to a continued and generalized expansion in the price level of goods and services over the period presented. It reflects a decrease in purchasing power and influences consumption, savings, and investment behavior (Faris & Auwalin, 2025; Farizqiyah & Yuliana, 2022). From a classical monetary perspective, the Quantity Theory of Money proposed by Irving Fisher explains inflation through the identity MV = PT, where money supply (M), velocity (V), price level (P), and transaction volume (T) interact. Assuming V and T remain constant in the short run, an increase in M directly raises P (Ilahi & Purnamasari, 2025).

Empirical evidence in Indonesia supports the monetary explanation of inflation. Syafira et al. (2024) find that money supply significantly affects inflation, consistent with Fisher's theory. However, Subryanto, (2025) report that during the COVID-19 pandemic, increases in liquidity did not immediately generate inflationary pressure due to suppressed aggregate demand. These findings suggest that monetary transmission may depend on macroeconomic conditions. From a cost-push perspective, inflation may also originate from rising production costs, particularly energy prices (Courtoy et al., 2025). Studies by Lestari & Asyiqin, (2022), Lal Karn et al., (2022), and (Akhmad et al., 2023) confirm that fuel price adjustments significantly contribute to inflation in Indonesia.

Exchange rate transfers affect national price levels through the imported inflation channel. Corresponding to the Purchasing Power Parity (PPP) theory introduced by Cassel, currency depreciation raises domestic prices by increasing the cost of imported goods (Vo & Vo, 2023; Widarjono et al., 2023). Empirical studies largely confirm this transmission mechanism. Sumaryoto et al., (2021), and Aprilliantoni & Jimale, (2024) document a positive and significant effect of exchange rate depreciation on inflation in Indonesia. However, contrasting evidence from Subryanto, (2025) and Taufik, (2024) indicates that exchange rate effects may weaken during periods of subdued demand or strong policy intervention. These mixed conclusions suggest that exchange rate–inflation dynamics are conditional and may interact with other macroeconomic variables such as money supply and energy prices.

Fuel prices (BBM) represent a key production input in Indonesia's economy. According to Lal Karn et al., (2022), national fuel prices are inclined by universal crude oil prices, refining costs, distribution margins, and taxes. The Cost-Push Inflation theory (Courtoy et al., 2025) explains that rising energy prices increase production and transportation costs, which are then passed on to consumers.

Empirical research consistently highlights the importance of fuel price adjustments in shaping inflation. Lestari & Asyiqin, (2022) report a strong relationship between fuel price increases and inflation during 2018–2022. Akhmad et al. (2023) find significant effects of Pertamax and Solar prices on regional inflation. However, Akhmad et al. (2023) observes that global oil prices may exert negative short-run effects on inflation due to policy moderation and exchange rate dynamics. These results imply that energy price shocks constitute a central channel of macroeconomic transmission in emerging economies.

Money supply (JUB), commonly measured through M1, M2, or M3 aggregates, reflects overall liquidity in the economy. The theoretical link between money supply and inflation is rooted in the Quantity Theory of Money. Document a positive and significant relationship between money supply growth and inflation. Chandra & Wahyuningsih, (2021) confirm that this relationship becomes stronger in the long run. Conversely, Romanda (2020) find that short-run effects may be insignificant or even negative, indicating that the inflationary force of money supply hangs on macroeconomic context and policy responses.

Monetary policy instruments, particularly the BI 7-Day Reverse Repo Rate (BI7DRR) and Minimum Reserve Requirements (GWM), serve as key tools in managing inflation and financial stability. According to Courtoy et al., (2025), interest rate changes affect credit supply through the bank lending channel and liquidity channel. The Loan-to-Deposit Ratio (LDR) measures banking intermediation performance and liquidity risk. Rahmatullah, (2025) show that policy rate increases tighten liquidity conditions reflected in LDR adjustments. Rokiyanto & Siahaan, (2024) find that reserve requirement changes significantly affect banking liquidity. Despite these findings, prior studies typically examine inflation determinants and banking liquidity separately. There is limited empirical research modeling inflation as a mediating variable linking external shocks to monetary policy responses and banking liquidity outcomes. From the description presented, the theoretical context of this analysis is depicted in Figure 1 below.

External Variables:

- *Kurs* (Exchange Rate)
- *Harga BBM* (Fuel Prices)

- *Jumlah Uang Beredar* (Money Supply M2)

↓

- *Inflasi* (Inflation)

↓

Monetary Policy Instruments:

- BI7DRR (BI 7-Day Reverse Repo Rate)
- GWM (Reserve Requirement)

↓

Banking Liquidity:

- Loan-toDeposit Ratio (LDR)

Source: Research Data, 2025

Figure 1. Research Framework

Existing literature remains fragmented. Studies on inflation focus on exchange rate, money supply, and fuel prices (Dananjaya & Dewi, 2025; Ridwan, 2022), while research on banking liquidity emphasizes monetary instruments (Rahmatullah, 2025). However, limited studies integrate these variables within a single dynamic macro-financial system.

The selection of variables in this study is grounded in both theoretical and empirical considerations within the monetary transmission framework. Exchange rate, fuel prices, and money supply are included as key determinants of inflation, reflecting external and domestic sources of price pressures. Fuel prices capture energy cost shocks, which are particularly relevant in emerging economies, while exchange rate movements represent imported inflation dynamics. Money supply is incorporated to reflect monetary expansion effects in line with the Quantity Theory of Money.

Inflation is modeled as an intermediate variable that transmits external shocks into the monetary policy framework. The BI 7-Day Reverse Repo Rate (BI7DRR) and Minimum Reserve Requirements (GWM) are included as core monetary policy instruments representing the interest rate channel and macroprudential regulation, respectively. Banking liquidity, measured by the Loan-to-Deposit Ratio (LDR), is used as the final outcome variable to capture the impact of monetary transmission on financial intermediation. This variable structure enables the study to capture a complete macro-financial transmission chain, linking external shocks, inflation dynamics, monetary policy responses, and banking sector behavior. Therefore, this study contributes by developing an integrated VECM framework that captures the transmission from external shocks to inflation, from inflation to monetary policy responses, and ultimately to banking liquidity dynamics in Indonesia.

RESEARCH METHODS

This study employs a quantitative method using time-series econometric analysis to examine the dynamic relationships among exchange rate (Kurs), fuel prices (Harga BBM), money supply (JUB), inflation, monetary policy instruments (BI7DRR and GWM), and banking liquidity (LDR) in Indonesia. The analytical framework adopts the Vector Error Correction Model (VECM), which grants the approximation of both short-run dynamics and long-run equilibrium relationships among integrated variables. According to Pratiwi et al., (2022), VECM is appropriate when variables are non-stationary but cointegrated, as it captures adjustment mechanisms toward long-run equilibrium.

The study uses monthly secondary data covering the period 2018–2024 as shown at Table 1. Data are obtained from official publications of Bank Indonesia (BI), Otoritas Jasa Keuangan (OJK), Badan Pusat Statistik (BPS), and Trading Economics.

Table 1.
The Variables Used in This Study

Variable	Definition	Unit
Inflation	General Increase in Prices of Goods and Services	Percent (%)
Exchange Rate (*Kurs*)	IDR Per USD Exchange Rate	Rupiah (Rp)
Fuel Prices (*Harga BBM*)	Domestic Fuel Price Level	Rupiah (Rp)
Money Supply (JUB)	Total Money Supply (M2)	Rupiah (Rp)
BI7DRR	Policy Interest Rate	Percent (%)
GWM	Minimum Reserve Requirement	Percent (%)
LDR	Loan-to-Deposit Ratio	Percent (%)

Source: Researched Data, 2025

This study employs a Vector Autoregressive (VAR) framework to model the dynamic relationships among the endogenous variables. The general VAR specification can be expressed as:

$$Y_t = A_1 Y_{t-1} + A_2 Y_{t-2} + \cdots + A_p Y_{t-p} + \varepsilon_t \quad \text{......(1)}$$

Where Y_t represents a vector of endogenous variables, A_i denotes the coefficient matrices, and ε_t is a white-noise error term. When the variables are cointegrated, the VAR model is transformed into a Vector Error Correction Model (VECM) specification to capture both long-run equilibrium relationships and short-run dynamics. The VECM model is expressed as:

$$\Delta Y_t = \Pi Y_{t-1} + \sum_{i=1}^{p-1} \Gamma_i \, \Delta Y_{t-i} + \varepsilon_t \quad \text{......(2)}$$

In this formulation, ΠY_{t-1} represents the long-run equilibrium relationship among the variables, while Γ_i captures the short-run dynamic adjustments. The operator Δ denotes the first difference, and the term ΠY_{t-1} contains the Error Correction Term (ECT), which measures the speed of adjustment toward long-run equilibrium after short-term deviations occur.

The estimation procedure follows several stages. First, the stationarity properties of the variables are examined using the Augmented Dickey–Fuller (ADF) unit root test. The decision rule states that if the probability value is less than 0.05, the null hypothesis of a unit root is rejected, indicating that the variable is stationary. Conversely, if the probability value exceeds 0.05, the variable is considered non-stationary. Variables that are non-stationary at level but become stationary at the second difference ($I(2)$) proceed to the cointegration testing stage. Second, the optimal lag length is determined using several information criteria, including the Likelihood Ratio (LR), Final Prediction Error (FPE), Akaike Information Criterion (AIC), Schwarz Criterion (SC), and Hannan–Quinn (HQ). The optimal lag is selected based on the lowest value among these criteria, typically indicated by an asterisk. Third, model stability is evaluated using the Roots of Characteristic Polynomial test. A VAR system is considered stable if all modulus values of the characteristic roots are less than one. Graphical confirmation is also performed through the unit circle test to ensure that the roots lie within the unit circle. Fourth, the Johansen cointegration test is conducted to determine the existence of long-run equilibrium relationships among the variables. This test uses both the Trace Statistic and Maximum Eigenvalue Statistic. Cointegration is confirmed if the Trace Statistic or the Maximum Eigenvalue Statistic exceeds the corresponding critical value at the 5percent significance level. Fifth, the Granger causality test is applied to identify short-run causal relationships among variables. The decision rule states that if the probability value is less than 0.05, the null hypothesis of no causality is rejected, indicating the presence of a causal relationship. Sixth, the Impulse Response Function (IRF) analysis is employed to examine the dynamic response of endogenous variables to a one-standard-deviation shock in another variable over time. The IRF traces the propagation of shocks within the system and helps to illustrate the transmission mechanism among macroeconomic variables.

The variance decomposition results are evaluated over a 10-period horizon to capture both short-term and long-term dynamics. In addition to the contribution of each variable to inflation, the decomposition also reveals how banking liquidity responds to shocks from multiple macroeconomic variables. Fuel prices consistently explain the largest proportion of inflation variance, confirming their dominant role as an external shock variable. Meanwhile, BI7DRR contributes the highest proportion to LDR variance, followed by GWM and inflation, indicating that monetary policy instruments play a central role in determining banking liquidity dynamics. These results provide a more comprehensive understanding of the relative importance of each variable within the macro-financial system. Finally, Forecast Error Variance Decomposition (FEVD) is used to measure the proportion of forecast error variance in each variable that can be attributed to shocks in other variables over different time horizons. All econometric estimations in this study are conducted using EViews 10, consistent with the original research design.

RESULTS AND DISCUSSION

The empirical analysis begins with the stationarity test using the Augmented Dickey–Fuller (ADF) procedure. The stationarity test results indicate that most variables become stationary after first differencing, consistent with standard macroeconomic time-series properties. However, several variables exhibit stationarity at the second difference (I(2)), which may reflect structural instability and heightened volatility during the COVID-19 pandemic and post-pandemic recovery period.

This condition is not uncommon in emerging economies experiencing significant macroeconomic shocks, particularly those associated with energy price fluctuations and policy adjustments. Therefore, the use of the VECM framework remains appropriate, as it allows for capturing both long-run equilibrium relationships and short-run adjustments in the presence of mixed integration orders.

As presented in Table 2, the ADF statistics for all variables exceed the critical values at the 5percent significance level, and the probability values are below 0.05. This confirms that the null hypothesis of a unit root is rejected for all variables after second differencing, indicating that the variables are integrated of order two, denoted as I(2). Consequently, the variables satisfy the necessary conditions for cointegration testing within the Vector Error Correction Model (VECM) framework.

Table 2.
Augmented Dickey-Fuller Test Results (Second Difference)

Variable	ADF Statistic	Critical Value (5%)	Prob.	Order
LDR	-11.701	-2.904	0.001	I (2)
GMW	-9.550	-2.904	0.000	I (2)
BI7DRR	-10.175	-2.904	0.001	I (2)
Inflation	-11.788	-2.904	0.001	I (2)
Exchange Rate	-7.114	-2.904	0.000	I (2)
Fuel Prices	-6.965	-2.904	0.000	I (2)
Money Supply	-6.951	-2.904	0.000	I (2)

Source: Researched Data, 2025

Lag length selection is conducted using multiple information criteria, including the Akaike Information Criterion (AIC), Final Prediction Error (FPE), and Likelihood Ratio (LR). As reported in Table 3, Lag 2 is selected as the optimal lag length because it produces the lowest AIC and FPE values, as indicated by the asterisk symbol. The selection of an appropriate lag length is crucial for capturing the dynamic interactions among variables while avoiding model misspecification.

Table 3.
Lag Length Selection Criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-	NA	-	-7.45	-7.32	-7.39
1	-	56.59	4.49e-09	-7.87	-7.22	-7.61
2	-	40.00*	3.68e-09*	-8.07	-6.90	-7.61

Source: Data Analysis, 2025

The stability test further confirms that the estimated VAR system is stable. All characteristic roots lie inside the unit circle, with the largest modulus value equal to 0.702, which is less than one. This indicates that the model satisfies the stability condition and that the estimated parameters are reliable for dynamic analysis.

The Johansen cointegration test is subsequently applied to determine the existence of long-run equilibrium relationships among the variables. The results presented in Table 4 reveal that both the Trace Statistic and Maximum Eigenvalue Statistic exceed the corresponding critical values at the 5percent significance level. Specifically, the Trace Statistic for the null hypothesis of no cointegration is 133.584, which is substantially higher than the critical value of 54.079. These results confirm the presence of at least three cointegrating relationships within the system, indicating the existence of long-run equilibrium interactions among exchange rates, fuel prices, money supply, inflation, monetary policy instruments, and banking liquidity.

Table 4.
Johansen Cointegration Test (Trace)

Hypothesis	Trace Statistic	Critival Value (5%)	Prob
None	133.584	54.079	0.000
At Most 1	69.362	35.192	0.000
At Most 2	30.977	20.261	0.001

Source: Researched Data, 2025

The long-run VECM estimation provides important insights into the determinants of banking liquidity. The normalized long-run equation is expressed as:

$$LDR_t = 10.58878GWM_t - 7.287599BI7DRR_t - 4.833373Inflation_t + \varepsilon_t \quad (3)$$

The estimated coefficients indicate that the Minimum Reserve Requirement (GWM) positively affects the Loan-to-Deposit Ratio (LDR) in the long run, while the BI 7-Day Reverse Repo Rate (BI7DRR) and inflation exert negative effects on banking liquidity. The statistical significance of these coefficients is confirmed by the corresponding t-statistics, where GWM = 6.345, BI7DRR = −3.234, and Inflation = −3.13708. These findings suggest that higher policy interest rates tend to suppress banking liquidity by increasing funding costs and constraining credit expansion, while inflation reduces the real value of financial resources available for lending.

The inflation model further highlights the importance of energy price shocks in shaping inflation dynamics. The long-run relationship is expressed as:

$$Inflation_t = 0.010376Fuel_t + \beta_1 ExchangeRate_t + \beta_2 JUB_t + \varepsilon_t \quad (4)$$

The positive coefficient of fuel prices indicates that increases in domestic energy prices significantly raise inflation levels. This finding supports the Cost-Push Inflation framework proposed by (Courtoy et al., 2025), which highlights the function of production cost increases in generating sustained price pressures. Empirical finding from this study confirms that energy price shocks constitute a major source of inflation in Indonesia, consistent with the findings of Lestari & Asyiqin, (2022) and Karn et al., (2022). The results also align with Akhmad et al. (2023), who document strong transmission effects of fuel price adjustments on regional inflation.

Short-run dynamics are captured through the Error Correction Term (ECT), which measures the speed of adjustment toward long-run equilibrium following short-term deviations. The estimated ECT coefficient is −0.181 with a t-statistic of −3.043, indicating statistical significance. This result implies that approximately 18.1 percent of disequilibrium is adjusted in every interval, suggesting a moderate modification process within the macro-financial system.

Short-run relationships reveal several important transmission mechanisms. Changes in BI7DRR negatively affect LDR, indicating that increases in policy interest rates immediately reduce banking liquidity. Fuel price shocks positively affect inflation in the short run, while increases in inflation lead to adjustments in policy interest rates. In contrast, exchange rate movements and money supply do not exhibit statistically significant short-run effects within the model.

Granger causality analysis further supports the existence of dynamic interactions among variables. Significant causal relationships are observed from inflation to GWM (Prob = 0.035) and from inflation to BI7DRR (Prob = 0.018), indicating that inflation acts as a key driver of monetary policy adjustments.

Additionally, a causal relationship from GWM to BI7DRR (Prob = 0.001) suggests that reserve requirement policies may influence broader monetary policy decisions. No bidirectional causality is detected between inflation and LDR, indicating that banking liquidity adjustments occur primarily through monetary policy channels rather than direct inflationary effects.

The Impulse Response Function (IRF) analysis is extended to a 10-period horizon to capture the persistence of shocks over time. The results indicate that fuel price shocks generate a sustained increase in inflation, with the strongest impact occurring in the early periods before gradually stabilizing. Inflation shocks lead to a positive response in BI7DRR, reflecting the central bank's reaction to inflationary pressures. In contrast, shocks to BI7DRR result in a negative response in LDR, indicating a contraction in banking liquidity following monetary tightening. The IRF results also show that energy-related shocks exhibit longer persistence compared to exchange rate shocks, highlighting the structural importance of energy prices in the Indonesian economy.

The IRF analysis provides further evidence of the dynamic propagation of shocks within the system. A positive shock to fuel prices generates a persistent increase in inflation, confirming the strong transmission effect of energy prices. Inflation shocks subsequently trigger positive responses in BI7DRR, reflecting the reaction of monetary authorities to rising inflationary pressures. Conversely, shocks to BI7DRR produce negative responses in LDR, indicating that higher policy rates reduce banking liquidity. Meanwhile, shocks to GWM generate positive adjustments in LDR, suggesting that reserve requirement policies may stabilize banking liquidity under certain conditions.

Variance Decomposition results reinforce these findings by quantifying the relative contribution of each variable to inflation and banking liquidity fluctuations. Fuel prices account for 41percent of inflation variance over the ten-period horizon, followed by exchange rates (18 percent) and money supply (12 percent), while the remaining 29 percent is explained by inflation's own shocks. In contrast, the variance of LDR is primarily influenced by monetary policy instruments, with BI7DRR contributing 34 percent and GWM contributing 27 percent. Inflation explains 15 percent of LDR variance, while the remaining 24 percent is attributed to the variable's own innovations. These results indicate that energy price shocks dominate inflation dynamics, whereas monetary policy instruments play a more significant role in determining banking liquidity conditions.

Overall, the empirical findings reveal a clear sequential transmission mechanism within Indonesia's macro-financial system. Energy price shocks first affect inflation dynamics, which subsequently trigger monetary policy responses through adjustments in BI7DRR and GWM. These policy changes then influence banking liquidity, as reflected in movements of the Loan-to-Deposit Ratio. This sequential transmission pathway can be summarized as Fuel Price Shock → Inflation → BI7DRR → LDR.

The results provide empirical evidence that macroeconomic shocks propagate through inflation before influencing banking sector dynamics. This integrated framework helps bridge the gap between previous studies that examined inflation determinants (Dananjaya & Dewi, 2025; Ridwan, 2022)and those focusing on banking liquidity (Rahmatullah, 2025; Rokiyanto & Siahaan, 2024). By modeling the entire transmission process surrounded by a unified VECM framework, the present study offers a more comprehensive understanding of how external shocks, inflation dynamics, and monetary policy jointly shape financial stability in Indonesia.

This study contributes to the macro-financial literature by integrating inflation as a mediating variable within the monetary transmission framework. Unlike previous studies that treat inflation and banking liquidity separately, this research demonstrates a sequential transmission mechanism linking external shocks, inflation dynamics, monetary policy responses, and banking liquidity. This integrated approach provides a more comprehensive understanding of how macroeconomic instability propagates through the financial system in emerging economies.

The empirical findings are strongly supported by established monetary theories. The negative effect of BI7DRR on banking liquidity is consistent with the bank lending channel, where higher interest rates increase the cost of funds and reduce credit expansion. Furthermore, the dominant role of fuel prices in driving inflation aligns with the cost-push inflation theory, which emphasizes that increases in production costs, particularly energy inputs, lead to sustained price increases. The observed relationship between exchange rate movements and inflation also reflects the Purchasing Power Parity (PPP) framework, where currency depreciation increases import prices and contributes to domestic inflation.

These findings confirm that the monetary transmission process in Indonesia operates through a combination of cost-push, exchange rate, and policy-driven channels, consistent with both classical and modern macroeconomic theories. From a policy perspective, the findings suggest that Bank Indonesia should adopt a more flexible and countercyclical macroprudential framework during periods of energy price shocks. Specifically, monetary tightening through increases in the BI7DRR should be complemented by adaptive reserve requirement policies to prevent excessive contraction in banking liquidity.

In addition, policymakers should strengthen coordination between monetary and energy policies to mitigate the inflationary impact of fuel price adjustments. This includes implementing targeted energy subsidies and improving domestic energy supply resilience to reduce external vulnerability. Furthermore, banking institutions are encouraged to enhance liquidity risk management by anticipating interest rate cycles and maintaining adequate funding buffers. Such an integrated policy approach is essential to ensure that inflation control measures do not undermine financial intermediation and banking sector stability.

CONCLUSION DAN RECOMMENDATION

This study aims to examine the monetary transmission mechanism linking external shocks, inflation dynamics, monetary policy instruments, and banking liquidity in Indonesia during the 2018–2024 period employing a Vector Error Correction Model (VECM) approach. The empirical findings indicate that fuel prices are the primary determinant of inflation, where increases in energy prices significantly contribute to higher inflation rates. Inflation subsequently influences monetary policy responses through adjustments in the BI 7-Day Reverse Repo Rate (BI7DRR) and Minimum Reserve Requirements (GWM), which ultimately affect banking liquidity as shown in the Loan-to-Deposit Ratio (LDR). The long-run estimation shows that GWM has a positive effect on LDR, while BI7DRR and inflation exert negative effects on banking liquidity. These results confirm the existence of a sequential macro-financial transmission mechanism in which energy price shocks affect inflation, inflation triggers monetary policy responses, and monetary policy adjustments subsequently influence banking liquidity.

This research has various limitations. First, the investigation focuses on the 2018–2024 observation period, which may not fully capture the long-term structural dynamics of Indonesia's macro-financial system. Second, the model includes only selected macroeconomic indicators and does not incorporate broader external variables such as global interest rates, international commodity prices, or additional financial stability indicators. Therefore, upcoming investigation is recommended to increase the observation interval and incorporate a broader widen of macroeconomic and financial variable quantity to obtain a extra comprehensive understanding of the monetary transmission mechanism. In addition, future studies may consider applying alternative econometric approaches, such as Structural VAR or dynamic macro-financial models, to provide deeper insights into the causal relationships between external shocks, inflation dynamics, monetary policy responses, and banking sector stability in emerging economies.

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