

The Effect of Non-Cash Payments, BI Rate, and Money Supply on Economic Growth in Indonesia

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ABSTRACT

This study aims to analyze the effect of non-cash payments, the BI Rate, and narrow money supply (M1) on economic growth in Indonesia. Utilizing a quantitative approach with quarterly time-series secondary data from 2014 to 2025 (48 observations), the analysis was conducted using Multiple Linear Regression (Ghozali, 2021; Wooldridge, 2021). The results indicate that partially, non-cash payments and the BI Rate have a negative and significant effect on economic growth, whereas M1 money supply has a positive and significant effect. Simultaneously, all three independent variables significantly affect economic growth, with a coefficient of determination (R^2) of 61.32%. This study highlights the importance of harmonizing monetary policy and integrating the digital payment ecosystem to optimally stimulate the real sector (Bank Indonesia, 2024).

INTRODUCTION

Economic growth serves as a primary indicator in evaluating the success of a country's development process, as it reflects the economy's capacity to produce goods and services over a specific period (Yulyanti, 2023). The indicator commonly used to measure it is real Gross Domestic Product (GDP) at constant prices, which mirrors the optimized management of national resources (Pertiwi & Marna, 2023). From 2014 to 2025, Indonesia's economic growth demonstrated a relatively stable trend around 5% annually, despite experiencing severe pressure down to -2.07% in 2020 due to the COVID-19 pandemic (Rahayu et al., 2026). This fluctuation indicates that economic performance is determined not only by real-sector factors such as capital and labor, but is also heavily influenced by the dynamics of the monetary sector and information technology advancements (Ferra & Ajija, 2023).

In recent decades, the transformation of the payment system from cash to non-cash (less-cash society) has become a crucial pillar of economic modernization (Kumar & Shobana, 2024). Bank Indonesia's initiatives – ranging from the National Non-Cash Movement (GNNT) in 2014 and the National Payment Gateway (GPN) in 2017 to the Indonesia Payment System Blueprint (BSPI) 2025 and the implementation of the Quick Response Code Indonesian Standard (QRIS) have proven to enhance the penetration of transaction digitalization across various levels of society (Hendrawan et al., 2023; Aldi & Dika, 2025). Theoretically, seamless non-cash transactions reduce transaction costs and accelerate the velocity of money, which in turn drives an increase in Gross Domestic Product (Lintangsari et al., 2020; Valencia & Sishadiyati, 2024).

On the other hand, the stability of economic growth is inseparable from monetary policy decisions by Bank Indonesia, particularly through benchmark interest rate instruments such as the BI Rate / BI 7-Day Reverse Repo Rate (Bank Indonesia, 2024). Interest rates play a key role in controlling inflation and maintaining rupiah exchange rate stability; however, changes directly impact investment financing costs and public consumption decisions (Sari & Nugroho, 2023; Hidayat & Pratama, 2023). Furthermore, liquidity management through the narrow money supply (M1) determines the availability of payment media to facilitate transactions and aggregate demand in the real sector (Prihantono & Kholifah, 2023; Damanik et al., 2024).

Although non cash transactions, the BI Rate, and the money supply are theoretically projected to support economic expansion, previous empirical studies present contradictory findings. Christianiti (2024) found that non cash transactions had yet to exert an impact on economic growth during its early phase. Conversely, Jawak & Sipayung (2024) found that the money supply and the BI Rate had a significant negative effect on economic growth, while Latif & Astuti (2022) as well as Asrian & Saharuddin (2024) concluded that the interest rate had no effect on economic growth. Ambarawa et al. (2021), by contrast, found that the money supply and the BI Rate had a significant positive effect on economic growth in Indonesia. These divergent findings indicate that the relationship between the three monetary instruments and economic growth has not been consistently mapped, leaving unresolved whether such discrepancies

stem from differences in study periods, the maturity of digital payment adoption, or the prevailing monetary conditions during each study a question that has not yet been systematically addressed through an integrated analysis of the three variables.

These phenomena rapid non cash transaction growth without proportional economic gains, BI Rate fluctuations that do not consistently align with growth trends, a steadily rising money supply, and inconsistent prior findings collectively point to a gap between monetary sector developments and Indonesia's actual economic growth performance. Unlike previous studies that tend to examine non-cash payments, the BI Rate, and the money supply separately, this study contributes theoretically by integrating Fisher's Quantity Theory of Money and the Liquidity Preference framework to explain their joint transmission mechanism on economic growth, while empirically updating the evidence using quarterly data spanning 2014-2025 that covers the pre-, during-, and post pandemic phases.

LITERATURE REVIEW

Solow Growth Model Theory

The neoclassical economic growth theory developed by Robert Solow (1956) explains that national production levels are determined by three primary factors: capital accumulation, labor growth, and technological progress (Mankiw, 2007; Alfatar & Soebagiyo, 2023). The model is commonly expressed through the aggregate production function $Y = f(K, L, A)$, where output (Y) is a function of capital (K), labor (L), and technology (A). When expressed in per-worker terms, the function becomes $y = f(k)$, where y (Y/L) denotes output per worker and k (K/L) denotes capital per worker, indicating that output per worker is primarily determined by the level of capital per worker, given a fixed state of technology (Mankiw, 2006).

A distinctive feature of the Solow model is that technological progress is treated as an exogenous factor originating outside the model yet it plays a decisive role in sustaining long-run economic growth. Without technological progress, capital accumulation alone would eventually be constrained by diminishing marginal returns, causing the economy to converge toward a steady state with no further per-capita output growth. Technological progress shifts the production function upward, allowing the same level of capital and labor to generate higher output, thereby enabling continuous productivity gains and improving the efficiency of capital and labor utilization (Mankiw, 2006).

In the context of a modern digital economy, the development of fintech-based non-cash payment systems such as electronic money (e-money), card-based payment instruments (APMK), and the QR Code Indonesian Standard (QRIS) can be interpreted as a concrete manifestation of technological progress within the Solow framework. These payment innovations function analogously to the technology factor (A) by reducing transaction costs, minimizing the time required to complete economic transactions, and accelerating the velocity of money circulation in the economy (Putri Maharani et al., 2023; Wardhana et al., 2023). By lowering transaction frictions, non-cash payment systems shift the aggregate production function upward, enabling a given stock of capital and

labor to generate a higher volume of economic transactions. Consequently, the expansion of non-cash payments is projected to have a positive effect on economic growth.

Monetary Policy Theory in the IS-LM Model Approach

Monetary policy is an instrument utilized by monetary authorities (Bank Indonesia) to maintain macroeconomic equilibrium and currency stability (Budiayanti, 2020). The interaction between the monetary sector and the real sector is comprehensively explained through the IS-LM Model (Hicks, 1937; Mankiw, 2006). The IS (Investment-Saving) curve represents equilibrium in the goods market with a negative slope, where lower interest rates stimulate investment and national output (Mankiw, 2006). The LM (Liquidity Preference-Money Supply) curve illustrates equilibrium in the money market, with a positive slope reflecting that higher income raises transaction demand for money, which in turn pushes interest rates upward when the money supply is held constant (Hicks, 1937).

In this study, the benchmark interest rate (BI Rate) is treated as the direct representation of the equilibrium interest rate (i) on the vertical axis of the model. An increase in the BI Rate is implemented through a reduction in the money supply, which shifts the LM curve to the left. This raises the equilibrium interest rate and, because the IS curve itself remains unaffected, the resulting adjustment takes the form of a movement along the fixed IS curve toward a higher interest rate and a correspondingly lower level of output investment declines as the cost of capital rises. Consequently, an increase in the BI Rate is projected to have a negative effect on economic growth

Conversely, the Money Supply ($M1/JUB$) affects the position of the LM curve through the money supply channel. An increase in JUB expands the real money supply available in the economy, shifting the LM curve to the right. This shift lowers the equilibrium interest rate at any given level of income, which in turn stimulates higher investment and consumption, strengthening aggregate demand and expanding Gross Domestic Product (GDP) (Mankiw, 2006; Bank Indonesia, 2024). Consequently, an increase in JUB is projected to have a positive effect on economic growth

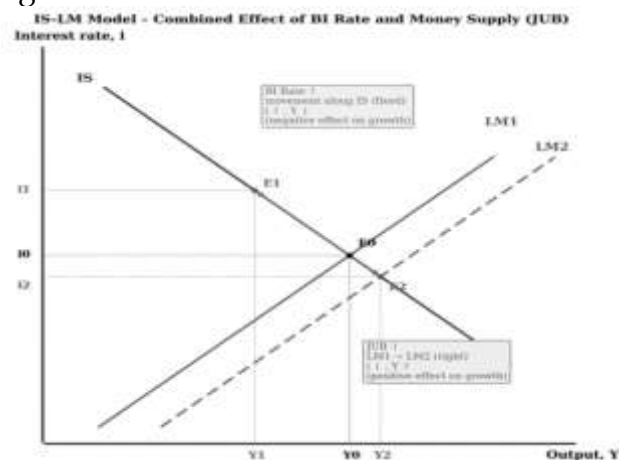


Figure 1. IS-LM Model - Combined Effect of BI Rate and Money Supply (JUB)
Source: Adapted from Mankiw (2006)

Illustrates the two mechanisms above. At the initial equilibrium (E_0), an increase in the BI Rate raises the equilibrium interest rate, moving the economy along the fixed IS curve from E_0 to E_1 (i_1 , Y_1) and lowering output a contractionary effect. Conversely, an increase in JUB shifts the LM curve rightward ($LM_1 \rightarrow LM_2$), lowering the interest rate and raising output from E_0 to E_2 (i_2 , Y_2), an expansionary effect. Thus, BI Rate and JUB affect economic growth through opposite mechanisms: a movement along the IS curve versus a shift of the LM curve.

Hypothesis Development

The Effect of Non-Cash Payments on Economic Growth

The use of non-cash payments enhances transaction efficiency, cuts operational costs, and accelerates the velocity of money; thus, the rapid facilitation of business activities is projected to contribute positively to Gross Domestic Product (Nur Aeni et al., 2023; Valencia & Sishadiyati, 2024).

H_1 : Non-cash payments are hypothesized to have a positive and significant effect on economic growth in Indonesia.

The Effect of the BI Rate on Economic Growth

An increase in the BI Rate elevates banking credit financing costs, which dampens business investment interest and suppresses household consumption (Mishkin, 2007). In line with the IS-LM model, an increase in the benchmark interest rate restrains the rate of real-sector expansion (Mankiw, 2006).

H_2 : The benchmark interest rate (BI Rate) is hypothesized to have a negative and significant effect on economic growth in Indonesia.

The Effect of Money Supply (M_1) on Economic Growth

The expansion of narrow money supply (M_1) increases public liquidity availability for conducting transactions, boosts purchasing power, and stimulates aggregate demand to increase national production capacity (Matondang et al., 2025).

H_3 : Narrow money supply (M_1) is hypothesized to have a positive and significant effect on economic growth in Indonesia.

Conceptual Framework

Based on the theoretical foundation and hypothesis formulation above, the relationship between variables in this study is illustrated in Figure 1 below:

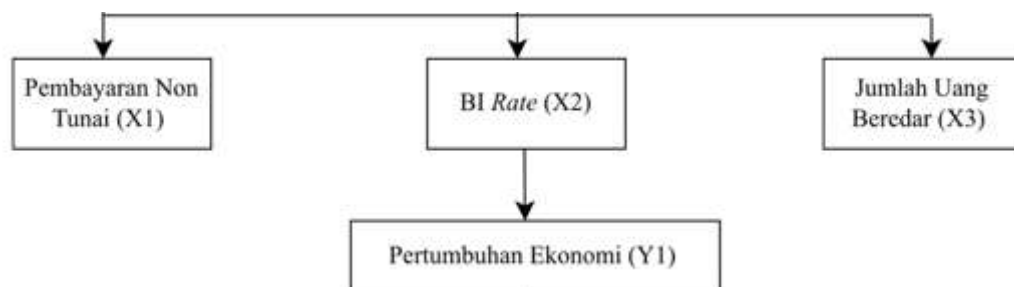


Figure 2. Conceptual Framework

METHODOLOGY

This study employs a descriptive quantitative approach based on quarterly time-series secondary data for the period of Quarter I-2014 to Quarter IV-2025 (N = 48 observations), obtained from official publications of Bank Indonesia and Statistics Indonesia (BPS). The dependent variable is Economic Growth (Y), measured by the growth rate of real GDP at constant prices (%). The independent variables include Non-Cash Payments (X₁, total transactions of card-based payment instruments [APMK] and e-money in natural logarithm/ln), the BI Rate (X₂, benchmark interest rate in %), and Narrow Money Supply M1 (X₃, currency and demand deposits in ln). The relationships between variables are estimated using Multiple Linear Regression with the Ordinary Least Squares (OLS) method through the following equation:

$$PE_t = \beta_0 + \beta_1 \ln(\text{NonTunai}_t) + \beta_2 \text{BIRate}_t + \beta_3 \ln(\text{JUB}_t) + e_t$$

The model's validity is evaluated through Classical Assumption Testing, which includes the Normality Test (Jarque-Bera), Multicollinearity Test (Centered VIF), Heteroskedasticity Test (Glejser Test), and Autocorrelation Test (Breusch-Godfrey Serial Correlation LM Test). Hypothesis testing is conducted partially (t-test) and simultaneously (F-test) at a significance level of $\alpha = 5\%$, and evaluated through the coefficient of determination (R²).

RESEARCH RESULT

Data Description and Variable Trends

This study evaluates 48 quarterly data observations from Quarter I-2014 to Quarter IV-2025, capturing the dynamic annual average developments of Economic Growth (GDP), Non-Cash Payments, the BI Rate, and Money Supply (M1).

An evaluation of the 48 quarterly observations over the 2014–2025 period demonstrates dynamic fluctuations across all macroeconomic and monetary variables examined. Indonesia's economic growth, measured via real GDP, moved relatively stably within the range of 4.88% to 5.31% per year outside crisis periods, prior to experiencing a sharp contraction to an annual average of -1.97% in 2020 as a result of social mobility restrictions during the COVID-19 pandemic. The national economy subsequently recovered consistently, re-strengthening to 5.11% at the end of the observation period in 2025.

The expansion of the non-cash payment system recorded a rapid long-term upward trend, increasing from an average of IDR 1,175.86 trillion in 2014 to reach IDR 2,261.39 trillion in 2025, despite undergoing minor normalization and transaction value corrections in 2020 and 2024 due to a reduction in high-value transactions. Meanwhile, movements in the benchmark BI Rate operated flexibly within the range of 3.52% to 7.54% in response to inflation dynamics and exchange rate stability, where monetary easing cycles were implemented in 2016–2017 and 2020–2021, followed by a tightening phase in 2023–2024 before being gradually lowered again in 2025. On the other hand, narrow money supply (M1) demonstrated consistent liquidity expansion, growing steadily from IDR

905.43 trillion in 2014 to IDR 2,984.46 trillion in 2025 in line with the ongoing fulfillment of daily transaction needs among households and businesses.

Classical Assumption Test Results

1. Normality Test

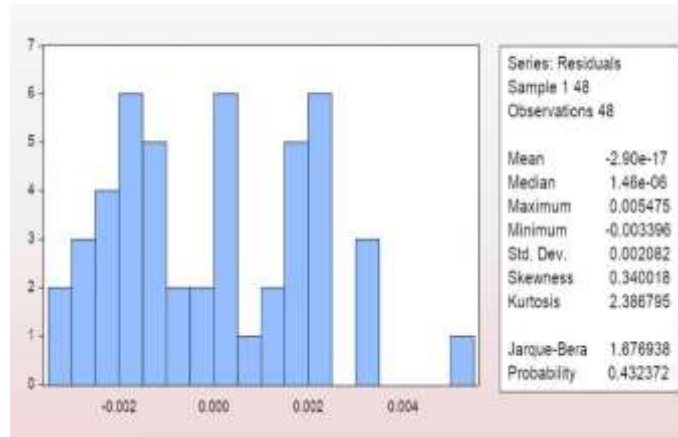


Figure 3. Residual Distribution Graph of Normality Test (Jarque-Bera)

(Source: EViews 14 Processed Output, JB = 1.6769, $p = 0.4324$)

Residual normality testing was conducted using the Jarque-Bera test. The results yielded a Jarque-Bera statistic of 1.676938 with a probability value of 0.432372. Since the probability value exceeds the significance threshold of 0.05 ($p = 0.4324 > 0.05$), the residuals of the regression model are confirmed to be normally distributed.

2. Multicollinearity Test

Multicollinearity was evaluated using the Centered Variance Inflation Factor (VIF) values.

Table 1. Multicollinearity Test Results

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
C	0.000313	3243.133	NA
Non Cash	5.79E-06	12229.06	6.354057
BIRate	0.000928	33.20432	1.295123
JUB	2.83E-06	5904.335	6.228973

(Source: EViews 14, 2026, Processed Data)

All variables exhibit Centered VIF values below 10.00, confirming the absence of multicollinearity among the independent variables in the model.

3. Heteroskedasticity Test

Heteroskedasticity testing was conducted using the Glejser Test by regressing the absolute values of the residuals against the independent variables.

Table 2. Heteroskedasticity Test Results (Glejser Test)

Heteroskedasticity Test: Glejser			
F-statistic	1.917089	Prob. F(3,44)	0.1407
Obs*R-squared	5.548820	Prob. Chi-Square (3)	0.1357
Scaled explained SS	3.946036	Prob. Chi-Square (3)	0.2674

(Source: EViews 14, 2026, Processed Data)

The probability value of Obs x R-squared is 0.1357 ($p = 0.1357 > 0.05$), confirming that the regression model is free from heteroskedasticity.

4. Autocorrelation Test

Autocorrelation testing was conducted using the Breusch-Godfrey Serial Correlation LM Test.

Table 3. Autocorrelation Test Results (Breusch-Godfrey Serial Correlation LM Test)

Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	1.548050	Prob. F(6,38)	0.1892
Obs*R-squared	9.428092	Prob. Chi-Square(6)	0.1509

(Source: EViews 14, 2026, Processed Data)

The probability value of Obs x R-squared is 0.1509 ($p = 0.1509 > 0.05$), indicating that the regression model is free from serial autocorrelation.

Multiple Linear Regression Analysis Results

Multiple linear regression estimation was conducted to determine the effects of Non-Cash Payments, the BI Rate, and Narrow Money Supply (M1) on Economic Growth.

Table 4. Multiple Linear Regression Estimation and Partial Test (t-Test) Results

Dependent Variable: Y_PERTUMBUHAN				
Method: Least Squares				
Date: 07/21/26 Time: 00:39				
Sample: 1 48				
Included observations: 48				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.198647	0.017686	11.23178	0.0000
X1_NONTUNAI	-0.015528	0.002406	-6.453981	0.0000
X2_BIRATE	-0.142122	0.030457	-4.666315	0.0000
X3_JUB	0.005857	0.001682	3.481326	0.0011
R-squared	0.613210	Mean dependent var		0.051898
Adjusted R-squared	0.586838	S.D. dependent var		0.003347
S.E. of regression	0.002152	Akaike info criterion		-9.365505
Sum squared resid	0.000204	Schwarz criterion		-9.209572
Log likelihood	228.7721	Hannan-Quinn criter.		-9.306578
F-statistic	23.25227	Durbin-Watson stat		1.206786
Prob(F-statistic)	0.000000			

(Source: EViews 14, 2026, Processed Data)

Based on Table 5, the multiple linear regression equation is formulated as follows:

$$PE_t = 0,198647 - 0,015528 \ln(\text{NonTunai}_t) - 0,142122 \text{BIRate}_t + 0,005857 \ln(\text{JUB}_t) + \epsilon_t$$

The interpretation of the regression model parameters is as follows:

1. **Constant ($\beta_0 = 0.198647$):** If all independent variables are zero or held constant, Economic Growth (PE_t) is projected to be 0.1986%.
2. **Non-Cash Payments Coefficient ($\beta_1 = -0.015528$):** A 1% increase in the transaction value of non-cash payments is associated with a 0.0155\% decrease in Economic Growth, *ceteris paribus*.
3. **BI Rate Coefficient ($\beta_2 = -0.142122$):** A 1% increase in the BI Rate is associated with a 0.1421% decrease in Economic Growth, *ceteris paribus*.
4. **Narrow Money Supply (M1) Coefficient ($\beta_3 = 0.005857$):** A 1% increase in the M1 Money Supply is associated with a 0.0059% increase in Economic Growth, *ceteris paribus*.

Hypothesis Testing

1. Partial Test (t-Test)

- a. **Non-Cash Payments (X_1):** Displays a t-statistic of -6.453981 with a p-value of $0.0000 < 0.05$. This indicates that Non-Cash Payments have a statistically significant negative partial effect on Economic Growth.
- b. **BI Rate (X_2):** Displays a t-statistic of -4.666315 with a p-value of $0.0000 < 0.05$. This indicates that the BI Rate has a statistically significant negative partial effect on Economic Growth.
- c. **Narrow Money Supply (M1) (X_3):** Displays a t-statistic of 3.481326 with a p-value of $0.0011 < 0.05$. This indicates that the M1 Money Supply has a statistically significant positive partial effect on Economic Growth.

2. Simultaneous Test (F-Test) and Coefficient of Determination (R^2)

Table 6 Simultaneous Test (F-Test) and Coefficient of Determination (R^2)

R-squared	0.613210	Mean dependent var	0.051898
Adjusted R-squared	0.586838	S.D. dependent var	0.003347
S.E. of regression	0.002152	Akaike info criterion	-9.365505
Sum squared resid	0.000204	Schwarz criterion	-9.209572
Log likelihood	228.7721	Hannan-Quinn criter.	-9.306578
F-statistic	23.25227	Durbin-Watson stat	1.206786
Prob(F-statistic)	0.000000		

The simultaneous test yielded an F-statistic of 23.25227 with a probability value of $\text{Prob}(\text{F-statistic}) = 0.000000 < 0.05$. This demonstrates that Non-Cash Payments, the BI Rate, and Narrow Money Supply (M1) jointly (simultaneously) exert a statistically significant effect on Economic Growth in Indonesia. The coefficient of determination (R^2) of 0.613210 indicates that 61.32% of the variation in economic growth can be explained by the three independent variables in the model, while the remaining 38.68% is influenced by other exogenous factors omitted from the specification.

DISCUSSION

The Effect of Non-Cash Payments on Economic Growth

The regression results show that non cash payments have a negative and statistically significant effect on economic growth ($\beta = -0.015528$; $t = -6.453981$; $p = 0.0000$). This finding is contrary to H1, which predicted a positive relationship, and differs from the theoretical expectation derived from Solow's (1956) growth model, in which technological progress, including digital payment innovation, is expected to enhance productivity and support output growth. This divergence may indicate that the expansion of non cash payments during the study period did not necessarily translate proportionally into real economic activity

The gap becomes clearer when the data are read period by period. Before the pandemic, non-cash transaction value nearly doubled, far outpacing the roughly 5% annual growth of the national economy, suggesting the surge reflected a migration of payment habits from cash to digital rather than an expansion of real output. During the pandemic, transaction value fell sharply as high-value spending in retail and lifestyle sectors collapsed under mobility restrictions, moving in step with the broader economic contraction. After the pandemic, non-cash transactions recovered but grew unevenly, while economic growth recovered on a steadier footing driven by consumption, investment, and exports. Across the period as a whole, the two series did not move consistently together transaction volume tracked changing payment behavior, while output growth was shaped by broader real-sector activity and this lack of stable co-movement is what ultimately produces the negative relationship observed in the regression.

Read against Solow's framework, the result suggests that digital payment adoption in Indonesia over 2014–2025 functioned mainly as a substitution in the medium of exchange rather than the productivity-enhancing shift the theory anticipates, which would require efficiency gains from faster, cheaper transactions to translate into higher real-sector investment and output. In the absence of that link, an increase in transaction value need not correspond to economic expansion, which explains why the estimated relationship departs from theoretical expectation.

This result is consistent with Cahyani et al. (2023) and with Maduwansha and Boyagoda (2022), both of whom found that non cash transaction growth does not automatically translate into GDP growth. Both studies point to the same underlying mechanism, transaction growth reflects a shift in payment method more than an increase in the production of goods and services, so unless it is accompanied by rising investment and real sector output, its contribution to growth remains limited a pattern this study's findings for Indonesia appear to confirm.

The Effect of the BI Rate on Economic Growth

The BI Rate exhibits a negative and statistically significant effect on economic growth ($\beta = -0.142122$; $t = -4.666315$; $p = 0.0000$), confirming H2 and providing empirical support for the interest rate channel of monetary policy transmission. Economically, the coefficient implies that each one-percentage-

point increase in the benchmark rate is associated with a 0.1421 percentage-point decline in economic growth, holding other variables constant.

The mechanism behind this result is straightforward. An increase in the BI Rate signals a contractionary stance aimed at containing inflation, and commercial banks respond by raising lending rates. Higher borrowing costs raise the cost of capital for firms, discouraging business expansion and delaying investment decisions, while also dampening credit-financed household consumption. The combined weakening of investment and consumption demand translates into slower growth in national output.

This finding is consistent with the IS-LM framework developed by Hicks (1937) as a formalization of Keynesian theory, in which the equilibrium interest rate and national income are jointly determined by the goods market (IS curve) and the money market (LM curve). An increase in the benchmark rate reduces liquidity and shifts the LM curve upward, moving the economy to a new equilibrium at a higher interest rate and lower output. As borrowing costs rise, firms scale back investment, aggregate demand weakens, and output growth slows accordingly. The direction of the estimated coefficient therefore matches what the IS-LM model predicts, rather than departing from it.

The result also aligns with Siregar and Lubis (2024), who found that interest rate increases raise firms' cost of capital and suppress both investment and consumption, ultimately slowing economic activity. Taken together, these consistent findings across studies using different periods and methods reinforce the interest rate channel as a stable and predictable driver of short run growth dynamics in the Indonesian economy unlike the non cash payment channel discussed above, whose effect on growth is comparatively less direct and more sensitive to how transaction growth is actually generated.

The Effect of Narrow Money Supply (M1) on Economic Growth

Narrow money supply (M1) comprising currency in circulation and demand deposits exhibits a positive and statistically significant effect on economic growth ($\beta = 0.005857$; $t = 3.481326$; $p = 0.0011$), confirming H3. The coefficient indicates that each one-percent increase in M1 is associated with a 0.0059 percentage-point rise in economic growth, holding other variables constant, the larger the money supply, the faster the pace of economic expansion.

The steady expansion of M1 observed over the study period indicates that additional liquidity in the economy continued to translate into real economic activity rather than sitting idle. A larger money supply gave households and firms greater financial capacity for both consumption and investment, which in turn strengthened demand for goods and services in the market. Producers responded to this rising demand by expanding output to meet it a response that depended on real production factors, such as labor and raw materials, remaining sufficiently available; had capacity failed to keep pace with demand, the additional liquidity would more likely have shown up as inflationary pressure rather than real output growth. That this did not occur suggests the liquidity generated during the period was, on balance, absorbed productively.

This pattern is consistent with the IS-LM framework (Hicks, 1937; Mankiw, 2006). An increase in M1 expands the real money supply available in the economy, shifting the LM curve rightward. This shift lowers the equilibrium interest rate at any given level of income, reducing the cost of borrowing for both households and firms, which stimulates higher investment and consumption and strengthens aggregate demand the same channel through which the observed expansion of M1 appears to have contributed to higher national output during the study period.

This finding is consistent with Ulfa and Fisabilillah (2023), who similarly found that M1 has a significant positive effect on Indonesia's GDP, as the money supply expands, part of that additional liquidity is channeled into consumption, prompting producers to raise output and, in turn, demand more labor and raw materials to meet it. The convergence of these results across studies using different time periods suggests that the money-supply channel has remained a robust and consistent driver of economic growth in the Indonesian context reinforcing, alongside the BI Rate findings, the central role of monetary liquidity conditions in shaping short-run growth outcomes.

CONCLUSIONS

Based on the empirical findings from the multiple linear regression analysis examining the impacts of non-cash payments, the BI Rate, and narrow money supply (M1) on Indonesia's economic growth during the 2014–2025 period, the following primary conclusions are drawn:

1. Non-Cash Payments have a negative and statistically significant effect on economic growth in Indonesia. This finding may indicate that the increase in non-cash payment transactions during the study period did not necessarily correspond to a proportional increase in real economic activity, as the expansion of non-cash payments may have been more closely associated with changes in payment systems and transaction patterns than with a direct increase in production.
2. The BI Rate has a negative and statistically significant effect on economic growth in Indonesia. This finding may be associated with the potential pressure exerted by higher benchmark interest rates on economic activity through increased financing costs for households and businesses. Such conditions may constrain investment and consumption, thereby contributing to slower economic growth.
3. Narrow Money Supply (M1) has a positive and statistically significant effect on economic growth in Indonesia. This finding may indicate that increased money supply and liquidity availability can support economic activity by strengthening household purchasing power, investment capacity, and aggregate demand, which may subsequently contribute to economic growth.

RECOMMENDATIONS

1. For Bank Indonesia as the Monetary Authority: Bank Indonesia is encouraged to implement BI Rate adjustments cautiously and flexibly, particularly during periods of economic uncertainty, to avoid placing excessive pressure on household consumption and business investment. At

the same time, monetary liquidity should be managed appropriately to maintain adequate M1 growth while preserving macroeconomic and financial stability.

2. For the Government and Bank Indonesia: The government and financial institutions are encouraged to strengthen the transmission of liquidity into productive economic activities by maintaining accessible financing for UMKM and other productive sectors. Such measures may help ensure that adequate M1 liquidity supports consumption, investment, and real-sector production while avoiding excessive liquidity that could generate macroeconomic imbalances.
3. For the Government and Financial Institutions: The government and financial institutions are encouraged to strengthen the transmission of liquidity into productive economic activities by maintaining accessible financing for MSMEs and other productive sectors. Such measures may help ensure that adequate M1 liquidity supports consumption, investment, and real-sector production while avoiding excessive liquidity that could generate macroeconomic imbalances.

ADVANCED RESEARCH

This study has several limitations, including the scope of independent variables being restricted to monetary instruments (Non-Cash Payments, BI Rate, and M1 Money Supply), as well as the reliance on a static multiple linear regression method. To deepen future research, subsequent studies are advised to incorporate digital financial and macroeconomic variables by including fintech adoption indicators, financial inclusion indices, and macroeconomic control variables such as exchange rates and inflation. Furthermore, future research should employ dynamic econometric methods, such as the Vector Error Correction Model (VECM) or Autoregressive Distributed Lag (ARDL), to estimate the transmission impacts of monetary policy and digital payment systems across both the short and long run. Lastly, subsequent studies are encouraged to extend data observations by utilizing monthly time-series data or expanding the overall observation timeframe so that real-sector adjustment responses can be captured in greater detail.

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