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ANALYSIS OF SME FINANCING AND SHOCK VARIABLES AT INDONESIA'S SHARIA RURAL BANKS (BPRS) IN INDONESIA

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Abstract

This study investigates the effects of macroeconomic shock variables, namely inflation, the BI rate, and the exchange rate, on SME financing in Indonesia's Sharia Rural Banks (BPRS). This research employs a quantitative approach using time-series data from April 2016 to August 2023, comprising 89 observations, and is analyzed using EViews 10. The results show that inflation has a more stable and dominant effect on SME financing cycles, whereas the BI rate and exchange rate exhibit heterogeneous and time-varying influences. Moreover, the contribution of inflation to SME financing in BPRS tends to increase over time. This study contributes to the Islamic finance literature by demonstrating a distinctive transmission mechanism of macroeconomic shocks within Sharia-based rural banking, which operates under profit-and-loss sharing and asset-backed financing principles. From a policy perspective, the findings suggest that maintaining price stability is crucial for sustaining SME financing growth in the Islamic banking sector. Therefore, Bank Indonesia (BI) should prioritize inflation control, while the Financial Services Authority (OJK) needs to strengthen prudential supervision to enhance BPRS resilience against external volatility. In addition, BPRS management is encouraged to improve risk management and portfolio strategies to mitigate macroeconomic uncertainty and ensure financing sustainability.

Keywords: BPRS, Islamic finance, macroeconomic shocks, SME financing

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INTRODUCTION

Banking has two types of Commercial and Rural Banks (BPR), as provided in UU No. 10 of 1998. In Islamic banking, Rural Banks have an equal position with Indonesia's Sharia Rural Banks. Indonesia has various types of Islamic banking. According to Law No. 21 of 2008, Islamic Banking comprises Islamic Commercial Banks (BUS), Islamic Business Units (UUS), and Indonesia's Sharia Rural Banks (BPRS). The Islamic bank is a financial institution that can be a positive alternative for the community to obtain capital for running a business at the micro, small, and medium scales, for people who wish to obtain funding from banks that adhere to the principles of Sharia. BPRS in Indonesia contributes positively to the adequacy of usury-free funding needs for the community. As of February 2023, the number of BPRS in Indonesia reached 169, with total assets of Rp. 20.27 trillion, as well as financing disbursed and third-party funds of Rp. 14.90 trillion and Rp. 13.53 trillion, respectively (OJK, 2023).

The growing need for Islamic banking services continues as the Islamic financial industry develops (Putri & Hanif, 2024). Regarding market share, BPRS is still low compared to BUS and UUS. Moreover, these intermediary institutions have almost the same target customers in the Small and Medium Enterprises (SMEs) segment. One advantage of BPRS is the procedures and requirements that make it easier for customers in the SME sector to obtain financing than in BUS and UUS (Utami et al., 2023).

Smooth financing by BPRS is influenced by various factors, including external conditions commonly referred to as macroeconomic factors. Each macroeconomic variable exerts a different impact on BPRS financing, including financing to the SME sector, which is also exposed to macroeconomic shocks. Moreover, SME financing is a key focus of BPRS operations (Akasumbawa et al., 2025), as BPRS aims to support and enhance community economic welfare by promoting the development of micro, small, and medium enterprises in rural areas (Akilah, 2024). Therefore, the operational activities of BPRS cannot be separated from the influence of macroeconomic variables. In this study, the BI rate, inflation, and exchange rate are examined to analyze their shock effects on SME financing in BPRS in Indonesia.

This study investigates how SME financing responds to macroeconomic factors that act as shock variables. What distinguishes this study from previous works is threefold. First, it employs a more recent sample period that covers not only the pre-pandemic era but also the COVID-19 shock and the subsequent post-pandemic recovery, thereby capturing structural changes in SME financing behavior. Second, rather than merely examining long-run relationships, this study focuses on the transmission of macroeconomic shocks to SME financing, providing deeper insights into the dynamic responses of BPRS to external disturbances. Third, this study highlights the institutional characteristics of BPRS explicitly as Islamic rural banks operating under Sharia principles, such as profit-and-loss sharing and asset-backed financing, which may lead to different responses to macroeconomic shocks compared to conventional rural banks. Thus, this research offers a more contextual and updated understanding of SME financing dynamics in Indonesia's Islamic rural banking sector.

METHODS

This study uses Indonesia's Sharia Rural Banks (BPRS) as the research object. It employs a quantitative approach using secondary monthly time-series data from April 2016 to August 2023. The data are obtained from the Indonesian Financial System Statistics (SSKI) and the Sharia Banking Statistics (SPS), available at www.bi.go.id and www.ojk.go.id. The variables used in this study include SME financing as the dependent variable and the BI rate, inflation, and exchange rate as macroeconomic shock variables. The analysis is conducted using EViews 10.

This study is based on a framework in which macroeconomic shocks, represented by changes in inflation, the BI rate, and the exchange rate, are transmitted to the real sector and subsequently affect SME financing provided by BPRS. Inflation reflects price stability and purchasing power, the BI rate represents the monetary policy stance, and the exchange rate captures external sector pressures, all of which are expected to influence banks' financing behavior and SMEs' demand for funds. Thus, the conceptual model assumes a unidirectional transmission from macroeconomic variables to SME financing, while allowing for dynamic feedback effects within the system.

All variables are treated as endogenous in the system, consistent with the Vector Error Correction Model (VECM) framework, acknowledging that SME financing may also respond to, and potentially influence, macroeconomic conditions in the long run. The variable ordering follows the degree of exogeneity, with inflation, the BI rate, and the exchange rate placed before SME financing, reflecting the assumption that macroeconomic conditions are relatively more exogenous

to individual BPRS financing decisions. In contrast, SME financing adjusts to shocks originating in these macro variables.

This study adopts the VECM approach because the variables are expected to be non-stationary but cointegrated, indicating the existence of both long-run equilibrium relationships and short-run dynamics among macroeconomic variables and SME financing. VECM is therefore suitable to capture the speed of adjustment toward the long-run equilibrium after a shock. VECM is considered the most appropriate model for analyzing both the long-run relationships and the short-run shock transmission mechanisms between macroeconomic factors and SME financing in BPRS in Indonesia.

Table 1. Operational Definition of Variables

Variables	Definition	Source
SME Financing (Billion IDR)	A financing facility is provided to meet working capital needs in one business cycle.	Financial Services Authority (www.ojk.go.id)
BI rate (%)	A policy rate that represents the monetary policy set by Bank Indonesia.	Bank Indonesia (www.bi.go.id)
Inflation (%)	There is a tendency for the overall price of products to increase.	Bank Indonesia (www.bi.go.id)
Exchange rates (IDR/USD)	The price of the rupiah against the US dollar.	Bank Indonesia (www.bi.go.id)

Financing of Indonesia's Sharia Rural Banks (BPRS)

Indonesia's Sharia Rural Banks, commonly abbreviated as BPRS based on the OJK definition, are Islamic banks organized under Sharia principles and do not provide tendance in payment traffic. This institution is a business entity equivalent to a Rural Bank (BPR) and has an institutional structure as a limited liability company, regional firm, or cooperative (Akilah, 2024). BPRS has played an essential role in the development of the Indonesian economy. As a Sharia-based BPR, BPRS has a significant economic role. The growth of BPRS can be seen in the distribution of financing, funding sources, and assets (Khasanah & Aditya, 2025). BPRS is vital in supporting rural economic development and providing financial services to underserved communities. Because it operates on a small scale, BPRS serves the needs of MSMEs in districts and cities with limited reach (Utami et al., 2023).

The categorization of financing based on OJK Syariah Banking Statistics is based on: (1) Composition, namely mudharabah, musyarakah, murabahah, salam, istishna', ijarah, qardh, multijasa, and other contracts. (2) The economic sector includes agriculture, silviculture and agricultural facilities, mining, industry, electricity, gas and water, construction, commerce, restaurants and hotels, transportation, warehousing and communication, and business and social services. (3) Type of use: working capital, investment, and consumption. (4) Classes, namely SMEs and other than SMEs. (5) Quality, namely, current and non-current financing. And (6) the provincial sector.

Factors that influence financing can generally be classified into internal and external factors. Internal factors that affect financing include profit-sharing rate, third-party funds, capital adequacy, and non-performing financing (NPF) (Amanda et al., 2025). External factors can be seen from macroeconomic indicators that affect BPRS performance, such as inflation, Bank Indonesia interest rates, and exchange rates (Akasumbawa et al., 2025).

Relationship between BI Rate and SME Financing

The BI rate is the policy rate set by Bank Indonesia and published to the public. Bank Indonesia strengthened its monetary operating framework by implementing a new policy rate, the BI 7-Day (Reverse) Repo Rate. The instrument is used as a new policy interest rate because it can have an immediate impact on the banking and real sectors (BI, 2021). The BI rate is also a stability tool for Bank Indonesia to control inflation (Wartoyo et al., 2024). If the BI rate rises, Islamic banking, including BPRS, will adjust its yield rate. The BI rate remains a benchmark in Islamic banking because it relates to the profit-sharing margins used when financing customers.

H1a: There is a positive and significant influence between the BI rate and SME financing in the long term.

H1b: There is a positive and significant influence between the BI rate and SME financing in the short term.

Relationship between Inflation and SME Financing

Inflation is an increase in the prices of goods, commodities, and services over a while or a continuous decline in the value of money. Inflation can be considered a monetary indication because of the regression in the unit value of a commodity. Inflation is the tendency of prices to continue to rise and also has a tendency to increase the value of prices overall (Yaman, 2023). The study of inflation is always interesting to discuss, especially regarding its broad impact on the macroeconomy, such as economic growth, external balance, competitiveness, interest rates, and even revenue allocation. Inflation also affects the mobilization of funds through financial

institutions (Nasution et al., 2022). High inflation can result from too much money circulating in the economy, leading to higher prices. The rising price of goods reduces the amount of financing (Anisa & Tripuspitorini, 2019). Therefore, customers will think again about applying for financing to BPRS.

H2a: There is a negative and significant influence between inflation and SME financing in the long term.

H2b: There is a negative and significant influence between inflation and SME financing in the short term.

Relationship between Exchange Rate and SME Financing

Exchange rates can be used to measure economic stability. The exchange rate of a country's currency often fluctuates up or down in response to increases in production and import costs, which, if the exchange rate rises, can cause people's incomes to fall. If people's income falls, customers will have difficulty repaying the financing they have received (Nugraheni & Risman, 2025). Therefore, the government must pay more attention to currency exchange rates to maintain the country's economic stability (Amelia & Fitri, 2022). Islamic banking also tends to avoid foreign exchange risks in its operational activities (Hernawati & Puspasari, 2018). In addition, the exchange rate will also affect the growth of public deposits in Islamic banking. It will affect funding, an essential capital for BPRS to carry out its financing, including financing to the SME sector.

H3a: There is a negative and significant influence between the exchange rates and SME financing in the long term.

H3b: There is a negative and significant influence between the exchange rate and SME financing in the short term.

In this study, the exogenous variables are SME financing, and the endogenous variables are macroeconomic variables such as the BI rate, inflation, and the exchange rate. To analyze the influence of macroeconomic conditions on SME financing at BPRS, the researchers used the Vector Error Correction Model (VECM) to observe the long-term and short-term effects on each research variable. The stages of analysis used in the VECM method are the stationarity test, optimal lag test, stability test, cointegration test, granger causality test, impulse response function test, and variance decomposition test.

RESULT AND DISCUSSION

Descriptive Statistics Results

The descriptive statistical results present the details of each observed research variable. Based on the data, the average SME financing is Rp. 5.357.794, maximum and minimum values of Rp.

9.547.446 and Rp. 3.467.101 and a standard deviation of 1.705.515. The BI rate shows an average of 4,682584%, a maximum of 6%, a minimum of 3.5%, and a standard deviation of 0,860071. The average inflation rate is 3,116067%, the maximum value is 5.95%, the minimum is 1.32%, and the standard deviation is 1,112641. Furthermore, the last variable is the exchange rate, with an average during the sampling period of 14.247,42 IDR/USD, maximum and minimum values of 16.367,01 IDR/USD and 12,998 IDR/USD, and a standard deviation of 693,3682.

Table 2. Descriptive Statistics of Research Variables

	UKM	BI RATE	INFLS	KURS
Mean	5357794.	4.682584	3.116067	14247.42
Maximum	9547446.	6.000000	5.950000	16367.01
Minimum	3467101.	3.500000	1.320000	12998.00
Std. Dev.	1705515.	0.860071	1.112641	693.3682
Observations	89	89	89	89

Source: Data processed (2024)

Stationarity Test Results

The stationary test is the first step in estimating a VAR model, and the goal is to ensure that the data used are stationary at the level or in first differences. Stationary testing will use the Unit Root Test. The stationarity test results show that all probability values are below 0.05, indicating that all variables are stationary in first differences; therefore, they can be analyzed using the Vector Error Correction Model (VECM) estimation.

Table 3. Stationarity Test Results

Variable	ADF t-statistic	
	Level	1st difference
UKM	2.120423 (0.9999)	-7.821828 (0.0000)*
BI RATE	-1.836613 (0.3607)	-4.540181 (0.0004)*
INFLS	-2.545531 (0.1086)	-8.189747 (0.0000)*
KURS	-2.562949 (0.1046)	-10.72483 (0.0001)*

Note: *significant at the 5% level

Source: Data processed (2024)

Optimal Lag Test Results

The optimal lag test processes the data at the first-difference level. The optimal lag test is intended to determine the lag length. The lag test is also used to observe how long a variable is influenced by its past variables and other endogenous variables. The results of determining the lag test can be obtained from the LR model criteria (sequential modified LR test statistic), Final Prediction Error (FPE), Akaike Information Criterion (AIC), Schwarz Information Criterion (SC), Hannan-Quinn Information Criterion (HQ). In this test, we need to see most of the asterisks in the test results to determine the optimal lag value.

Table 4. Optimal Lag Test Results

Endogenous variables: D(UKM) D(BIRATE) D(INFLS) D(KURS)

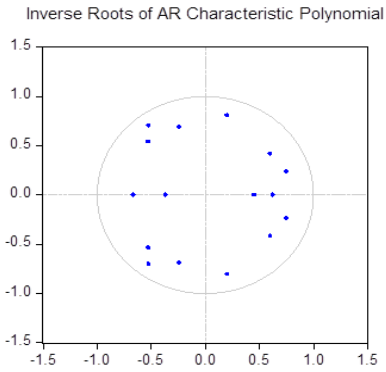
Lag	LogL	LR	FPE	AIC	SC	HQ
0	367.9637	NA	2.03e-09	-8.665802	-8.550049*	-8.619270
1	395.4894	51.77453	1.54e-09	-8.940223	-8.361457	-8.707564*
2	403.2952	13.93895	1.88e-09	-8.745124	-7.703345	-8.326337
3	430.3722	45.77305	1.45e-09	-9.008862	-7.504071	-8.403949
4	451.3944	33.53532*	1.30e-09*	-9.128437*	-7.160633	-8.337396

Source: Data processed (2024)

Based on the optimal lag test results, it is known that the optimal lag length is located at the fourth lag. The selection of the fourth lag in this result is because the fourth lag has more stars than the other lags. After determining the lag length, the stability and cointegration tests with Johansen's Cointegration Test are conducted.

Stability Test Results

Based on Figure 1 of the data processing results above, it can be seen that all the points listed are in a circle, so this VAR model fulfills a stable condition.



Source: Data processed (2024)

Figure 1. Stability Test Results

Cointegration Test Results

At this stage, the cointegration test is intended to analyze the existence of a long-term relationship between each variable. Cointegration is individual non-stationary, but a linear combination of two or more variables can be stationary. If there is no cointegration relationship, the Vector Auto Regression (VAR) model is used instead of the VECM.

The cointegration test is conducted using the Johansen test. The assessment compares the trace statistic value with the 0.05 critical value. If the trace statistic value is greater than 0.05 critical value, then the data is cointegrated and vice versa. The following are the results of the cointegration test with Johansen's Cointegration Test:

Table 6. Cointegration Test Results

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.514075	98.76849	47.85613	0.0000
At most 1 *	0.211356	38.86724	29.79707	0.0035
At most 2 *	0.122135	19.15973	15.49471	0.0134
At most 3 *	0.095686	8.347987	3.841466	0.0039

Source: Data processed (2024)

Based on the calculations, the results show all trace statistic values greater than 0.05 critical value, namely 98.76849 > 47.85613 at the 5% probability level. Then at most 1, at most 2, and at most 3 also show trace statistic values greater than 0.05 critical value, namely 38.86724 > 29.79707 at most 1, 19.15973 > 15.49471 at most 2, and 8.347987 > 3.841466 at most 3 with all 5% probability level, which means that there is a long-term relationship between SME financing and its macroeconomic variables. The model used is the VECM, and the VAR model cannot be used for this analysis.

Granger Causality Test Results

The Granger causality test evaluates the ability to predict a one-time change in the previous period to another time change in the current period. Based on the Granger causality test, none of the variables show a causal relationship or a two-way relationship.

Table 7. Granger Causality Test Results

Null Hypothesis:	Obs	F-Statistic	Prob.
BIRATE does not Granger Cause UKM	85	1.06477	0.3799
UKM does not Granger Cause BIRATE		1.04312	0.3907
INFLS does not Granger Cause UKM	85	0.80932	0.5231
UKM does not Granger Cause INFLS		0.25774	0.9041
KURS does not Granger Cause UKM	85	1.70377	0.1579
UKM does not Granger Cause KURS		6.11761	0.0003
INFLS does not Granger Cause BIRATE	85	1.80161	0.1373
BIRATE does not Granger Cause INFLS		0.58447	0.6748
KURS does not Granger Cause BIRATE	85	2.02006	0.1000
BIRATE does not Granger Cause KURS		0.88684	0.4760
KURS does not Granger Cause INFLS	85	0.52195	0.7199
INFLS does not Granger Cause KURS		0.33883	0.8510

Source: Data processed (2024)

VECM Estimation Results

The VECM analysis process begins with a stationarity test conducted on all variables, and the results show that all variables have been stationary at the first difference level, then the optimal lag test, stability test, and then proceed with the cointegration test, and Granger causality test. VECM estimation was chosen because there was cointegration when the cointegration test was conducted.

Table 8. VECM Estimation Results

Short-Term				**Long-Term**			
Variable	**Coefficient**	**t-Statistics**	**t-Table**	**Variable**	**Coefficient**	**t-Statistics**	**t-Table**
D(UKM(-1))	0.239785	2.17810*	1,98698	UKM(-1)	1	-	1,98698
D(UKM(-2))	0.032075	0.29648	1,98698	BIRATE(-1)	0.200395	4.67377*	1,98698
D(UKM(-3))	0.242755	2.29440*	1,98698	INFLS(-1)	-0.194251	-5.62619*	1,98698
D(UKM(-4))	-0.214496	-1.78889	1,98698	KURS(-1)	-7.700071	-10.5234*	1,98698
D(BIRATE(-1))	0.038180	1.35443	1,98698				

D(BIRATE(-2))	-0.075859	-2.59812*	1,98698	
D(BIRATE(-3))	0.018786	0.62911	1,98698	
D(BIRATE(-4))	-0.009650	-0.37046	1,98698	
D(INFLS(-1))	-0.006577	-0.59633	1,98698	
D(INFLS(-2))	0.005389	0.50854	1,98698	
D(INFLS(-3))	0.004054	0.36970	1,98698	
D(INFLS(-4))	0.016149	1.38197	1,98698	
D(KURS(-1))	0.103875	0.47483	1,98698	
D(KURS(-2))	-0.320719	-1.74397	1,98698	
D(KURS(-3))	0.005756	0.03466	1,98698	
D(KURS(-4))	-0.683674	-4.39404*	1,98698	
C	0.009281	2.50432*	1,98698	
R-squared				0.396495
F-statistic				2.550660

Note: *significant at the 5% level

Source: Data processed (2024)

The long-term estimation results show that the BI rate has a positive and significant effect on SME financing in BPRS. In contrast, inflation and the exchange rate exert significant adverse effects. Specifically, a one-unit increase in the BI rate is associated with a 0.200395 increase in SME financing. In contrast, one-unit increases in inflation and the exchange rate are associated with reductions of 0.194251 and 7.700071 in SME financing, respectively. These results suggest that macroeconomic conditions play a meaningful role in shaping SME financing dynamics in Sharia rural banking. The model explains approximately 39.65% of the variation in SME financing, indicating that other institutional and microeconomic factors, such as bank risk management practices, regulatory frameworks, and SME credit demand conditions, also substantially influence financing outcomes.

From an Islamic banking operational perspective, the positive long-run relationship between the BI rate and SME financing may initially appear counterintuitive given that Sharia banks do not operate with conventional interest rates. However, in practice, the BI rate indirectly influences the cost of funds and liquidity conditions in the broader financial system. In the context of profit-and-loss sharing and asset-based contracts that characterize BPRS operations, a stable and credible monetary policy stance, as reflected in the BI rate, can enhance overall economic confidence and reduce uncertainty for both lenders and SME borrowers. This may encourage BPRS to expand financing in anticipation of stable economic conditions. Similar observations have been made in

prior research on Islamic banking, where macroeconomic stability fosters greater financing activity, even though the mechanisms differ from those of interest-based channels (Shaukat & Alhabshi, 2015).

The adverse effect of inflation on SME financing aligns with theoretical expectations and empirical evidence in the broader banking literature. High and volatile inflation typically erodes real purchasing power, increases uncertainty, and raises the cost of doing business for SMEs, thereby dampening both demand for financing and banks' willingness to extend credit (Zulkarnain Nasution & Henky Japina, 2025). In Sharia banking, where profit-sharing and risk-sharing contracts are prevalent, elevated inflation can exacerbate risk perceptions and reduce the expected profitability of financing agreements, leading to more conservative lending behavior. Studies in the Indonesian Islamic finance context have likewise documented the adverse impact of inflation on various performance indicators of Islamic financial institutions, including financing volumes and credit quality (Saputri & Hannase, 2021).

The negative and significant impact of the exchange rate suggests that depreciation of the domestic currency may impose additional challenges for SME financing in BPRS. Exchange rate instability can affect SMEs through higher input costs, reduced competitiveness, and increased exposure to foreign goods pricing, which in turn may elevate credit risk for banks (Umeaduma & Dugbartey, 2023). Although BPRS primarily serve the domestic rural sectors, fluctuations in the exchange rate can still be transmitted through the supply chain and cost structures, impacting the viability of SME operations and financing demand. This finding is consistent with other empirical studies showing that external-sector volatility can adversely affect bank financing in emerging economies (Suganda, 2024).

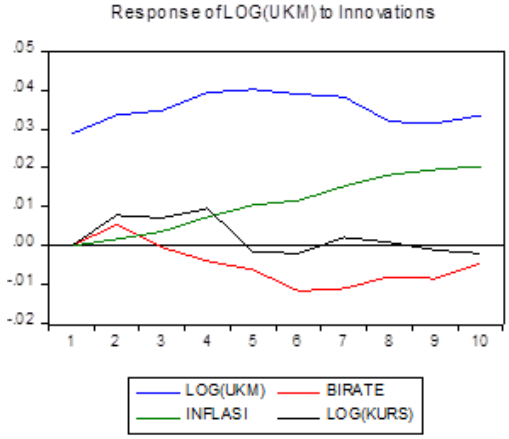
In the short term, the results reveal that the BI rate for the second lag and the fourth-period exchange rate negatively and significantly influence SME financing, indicating that short-run adjustments and dynamic lagged effects are essential in understanding the transmission of macroeconomic shocks. Overall, the F-statistic confirms that the model is jointly significant, and subsequent impulse response and variance decomposition analyses can further elucidate the dynamic interactions.

Compared with previous empirical studies, this research's results show both similarities and differences. For instance, studies examining Islamic banks' responses to macroeconomic variables often find that inflation and exchange rates negatively affect financing activities. In contrast, the role of monetary policy variables varies across institutional contexts and time periods (Zaimsyah & Fitri, 2022). Unlike research limited to pre-COVID periods, this study's extended sample includes the pandemic and post-pandemic recovery, capturing structural shifts in economic conditions and

financing behavior. Furthermore, by focusing specifically on BPRS, this study highlights institutional nuances, such as profit-and-loss sharing and asset-based contracts, that may yield different macroeconomic sensitivities compared to conventional or larger Islamic commercial banks.

Impulse Response Function Test Results

Impulse response function analysis is used to determine the impact of a variable shock on the variable itself and other variables in the equation used so that it can be seen how long the effect of a variable shock on other variables.



Source: Data processed (2024)

Figure 2. Impulse Response Function Test Results

The Impulse Response Function test results in Figure 2 explain the response to SME financing from macroeconomic variable shocks. The shock to the BI rate on SME financing led to an increase in the first-to-second period, after which the graph continued to move downward below the line, indicating an opposing movement. Then, the following response is SME financing due to the inflation variable shock. The inflationary shock to SME financing caused the graph to continue to increase in the first to tenth periods. Furthermore, the response to SME financing was driven by the exchange rate shock. The exchange rate shock on SME financing caused the first to the fourth period to increase, and then, from the fourth to the tenth period, the graph decreased, indicating an opposing movement.

Variance Decomposition Test Results

The use of variance decomposition aims to determine how a variable's variance is determined by the contributions of other variables and the variable itself. Based on Table 3 of the variance decomposition test results, SME financing has the most significant influence on the variable itself.

Table 9. Variance Decomposition Test Results

Variance Decomposition of UKM: Period	SE.	UKM	BIRATE	INFLS	KURS
1	0.028742	100.0000	0.000000	0.000000	0.000000
2	0.045248	95.36892	1.449603	0.148062	3.033419
3	0.057671	95.18127	0.896963	0.504238	3.417529
4	0.071001	93.59236	0.888890	1.434262	4.084491
5	0.082488	93.03872	1.204606	2.695167	3.061505
6	0.092700	91.31633	2.510536	3.708337	2.464794
7	0.102057	89.39564	3.211293	5.312913	2.080157
8	0.108756	87.31473	3.354277	7.492106	1.838888
9	0.115205	85.27400	3.518101	9.560310	1.647585
10	0.121814	83.85045	3.283976	11.36590	1.499680

Source: Data processed (2024)

The highest ability in the first period was 100%. In the following period, the ability to explain the variability of SME financing decreased to 83.85045% by the 10th period. Meanwhile, the BI rate contribution increased by 1.449603% in the second period, then decreased through the fifth period, and rose again through the 10th. The same was also found in the exchange rate variable, which provided varying contributions; the most significant contribution occurred in the fourth period, amounting to 4.084491%. On the other hand, the inflation variable from the first to the 10th period shows an increasing contribution, with the largest at 11.36590% in the 10th period.

Discussion

The preceding test results demonstrate a positive and statistically significant relationship between the Bank Indonesia (BI) rate and SME financing over the long term, thereby supporting Hypothesis 1a. Conversely, in the short term, the influence exerted by the BI rate is negative and statistically significant in the second period, leading to the rejection of Hypothesis 1b. Regarding inflation, a negative and statistically significant impact on SME financing is observed in the long term, supporting Hypothesis 2a. However, no significant short-term effect of inflation on SME financing is detected, leading to the rejection of Hypothesis 2b. Additionally, the exchange rate has a statistically significant, adverse effect on SME financing in the long term, supporting Hypothesis 3a.

Moreover, in the short term, an adverse, statistically significant effect of the exchange rate on SME financing is identified in the fourth period, thereby supporting Hypothesis 3b. Inflation is a macroeconomic variable that impacts the financing channeled by BPRS. An increase in inflation prompts the government to raise the BI rate, which in turn increases interest rates on deposits and loans at banks. The increase in deposit interest rates will trigger people's desire to keep their funds in the bank. On the other hand, the increase in lending rates will hamper banks' ability to channel financing (Wahyuni, 2023). BPRS does not use interest in implementing and providing financing, but in determining the profit-sharing ratio, BPRS still uses the equivalent rate. The equivalent rate influences various economic activities, one of which will affect the continuity of BPRS financing.

The results of this study are expected to provide valuable input for relevant authorities in formulating strategies to enhance the potential of BPRS financing. In particular, strengthening financing services through closer collaboration among Islamic financial institutions, local governments, and SME support agencies can improve outreach and effectiveness in serving productive sectors. Community building programs, such as financial literacy, mentoring, and capacity development for SMEs, are also essential to ensure that financing is not only accessible but also used optimally to improve business performance and sustainability.

Furthermore, the government plays a crucial role in creating a supportive regulatory and institutional environment for the development of BPRS. This includes providing incentives for SME-oriented financing, simplifying regulations for micro and small enterprises, and facilitating access to guarantees or refinancing schemes that can reduce the risk borne by BPRS. A stable macroeconomic environment, particularly regarding inflation and exchange rate stability, is also critical, as evidenced by this study's findings, for sustaining the growth of SME financing in Islamic rural banks.

From a broader perspective, these policy efforts can strengthen BPRS's role as a key intermediary in promoting inclusive finance and rural economic development. By aligning monetary policy, regulatory support, and community empowerment programs, stakeholders can enhance the resilience and competitiveness of BPRS, thereby enabling them to contribute more effectively to the development of the SME sector and to long-term regional economic welfare.

CONCLUSION

Based on the Granger causality test, there is no evidence of short-run causality between macroeconomic variables and SME financing. However, the cointegration results confirm the existence of a long-run equilibrium relationship between SME financing and macroeconomic

variables in BPRS in Indonesia. In the long run, the BI rate has a positive and significant effect on SME financing, while inflation and the exchange rate exert significant adverse effects. In the short run, the BI rate, inflation, and exchange rate affect SME financing with varying dynamics across periods. Furthermore, the impulse response function indicates that SME financing responds fluctuatively to shocks in all macroeconomic variables, while the variance decomposition shows that the BI rate and exchange rate contribute variably over time, whereas inflation consistently explains a substantial portion of the variation in SME financing.

The empirical results imply several important policy directions. For regulators, particularly Bank Indonesia and the Financial Services Authority (OJK), the dominant and persistent role of inflation in explaining SME financing dynamics underscores the importance of maintaining price stability to sustain Islamic rural bank financing. Bank Indonesia should therefore prioritize inflation control while carefully assessing the indirect transmission of BI rate policy to Sharia financing activities. Meanwhile, OJK is encouraged to strengthen risk-based supervision and prudential regulation for BPRS, including stress testing and governance improvement, to enhance their resilience to macroeconomic volatility, especially inflationary and exchange rate shocks.

For BPRS management, the findings suggest the need for more proactive macroeconomic risk management. The positive long-run impact of the BI rate underscores the importance of closely monitoring monetary policy signals when setting profit-sharing ratios and pricing Sharia contracts. At the same time, the adverse effects of inflation and exchange rate movements call for stronger asset–liability management, portfolio diversification across SME sectors, and the development of early warning systems to anticipate potential deterioration in financing quality. Adopting more flexible and adaptive financing schemes can help BPRS mitigate short-term shocks while maintaining long-term financing growth.

Regarding SME development policy, the results emphasize that macroeconomic stability is a key prerequisite for adequate SME financing through BPRS. Government programs should therefore integrate SME empowerment with macro-stabilization efforts by providing Sharia-based credit guarantees, refinancing facilities, and capacity-building programs for SMEs. Strengthening collaboration between BPRS, local governments, and SME support institutions can ensure that financing is complemented by mentoring and financial literacy, thereby improving SMEs' resilience and supporting inclusive and sustainable rural economic development.

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