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The Influence of Macroeconomic Indicators on Non-Performing Financing in Islamic Banking Using Mudharabah, Musharakah, and Murabahah Contracts

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KEYWORDS
Macroeconomic Indicators; Non-Performing Financing; Islamic Banking; Mudharabah; Musyarakah; Murabahah

ABSTRACT
This research aims to analyze the influence of macroeconomic indicators on non-performing financing in Islamic banking with Mudharabah, Musyarakah, and Murabahah contracts. This research uses a quantitative approach with the VAR/VECM method. The research data covers the years 2015 - 2018 and includes all Islamic banks in Indonesia. The research results indicate that the macroeconomic indicators that influence and determine non-performing financing, based on Impulse Response Function (IRF) and Forecast Error Variance Decomposition (FEVD) tests, are as follows: for Mudharabah financing, Inflation, Industrial Production Index, and Exchange Rate according to IRF, and Inflation and Exchange Rate according to FEVD; for Musyarakah financing, Money Supply according to IRF, and Inflation according to FEVD; and for Murabahah financing, Inflation and Money Supply according to IRF, and Industrial Production Index, Exchange Rate, and Money Supply according to FEVD.

Introduction

Islamic banking in its activities provides services in payment traffic (Law No. 21 of 2008) (Pemerintah Pusat, 2008). Islamic banks function to raise public funds, both in the form of deposits and loans where each product has been reviewed and supervised by the Sharia Supervisory Board (DPS) so as not to deviate from sharia principles.

The distribution of mudharabah financing contracts from 2015 to 2017 has increased by an average of 4.29% with a financing distribution of IDR 630 billion. However, from 2018 to 2021, the distribution of financing experienced an average *negative growth of* 12.22% with a nominal value of IDR 1,632 trillion. There are several things that cause the distribution of mudharabah contract financing to decline, including:

First, the decline in Indonesia's economic growth in 2018-2022 from 5.2% (2018) to 5% (2019), 4.1% (2020), and 3.69% (2021). This decline in economic growth has an impact on the decline in people's purchasing power and demand for credit. Second, the increase in Bank Indonesia's benchmark interest rate in 2018-2022, from 4.75% in 2018 to 5.25% in 2019, 6% in 2020, and 6.25% in 2021 (Priyadi et al., 2021). The increase in interest rates is one of the causes of Islamic banking financing margins increasing, so that Islamic banks become more conservative in lending. Third, government policies that have an impact on the decline in Islamic bank lending, such as the banking credit relaxation policy and the policy of postponing credit installments. These policies make Islamic banks prefer to extend credit to debtors who have low risk, so that lending to debtors who have high risk is reduced. Fourth, competition with conventional banks that

are increasingly aggressive in offering credit to customers, so that Islamic banks become less competitive. Islamic banking needs to offer lower margins and easier terms, even though the profit margins of Islamic banks are reduced. Fifth, the development of financial technology (fintech) has made it easier for people to get access to loans, making Islamic banks less attractive. Fintech offers loans with a faster, easier, and cheaper process, making it difficult for Islamic banks to compete. After the decline in financing caused by several things that have been explained above, in 2022 the distribution of financing with the Mudahrabah contract increased again by 1.13% with a nominal distribution of Rp 107 billion.

The distribution of musyarakah financing contracts from 2015 to 2022 has a growth trend every year which is always positive where during the eight-year period the average growth is 21.22% with a nominal value of Rp 20,642 trillion. the performance of the distribution of murabaha financing contracts in Indonesia is always positive from 2015 - 2022, this can be seen from the average growth of 9.80% with a nominal value that has been distributed to the public amounting to Rp 15,177 trillion.

Non-performing financing in Islamic banking is also inseparable from the influence of macroeconomic variables, because macroeconomic variables can affect overall economic conditions. Unstable economic conditions can make it difficult for customers to repay their financing to Islamic banks. Macroeconomic variables that can affect problematic financing include:

The Industrial Production Index (IPI) is one of the indicators used to measure the performance of the manufacturing industry. A high IPI indicates that the manufacturing industry is experiencing good growth. This can increase people's purchasing power and increase demand for goods and services. This can increase the risk of non-performing financing in Islamic banks because customers who have businesses in manufacturing will be more likely to apply for loans to Islamic banks to develop their businesses. However, if the IPI decreases, it can lead to a decrease in people's purchasing power and demand for goods and services. This can cause customers who have businesses in manufacturing to be unable to repay their loans to Islamic banks.

Inflation can also make people's purchasing power decrease. This can lead to customers being unable to repay their loans to Islamic banks, even if they have the ability to do so. Exchange rate is the price of one country's currency expressed in another country's currency. A low exchange rate can make goods and services from other countries cheaper in that country. This can increase demand for goods and services from other countries, and can reduce demand for goods and services from that country. In addition, this can cause customers who have businesses in trade to be unable to repay their loans to Islamic banks.

Money supply is the amount of money circulating in the economy. A high money supply can cause high inflation, which can make the value of customer loans higher, so that it can make it difficult for customers to repay their loans to Islamic banks. In addition, a high money supply can lead to high economic growth, which can make customers more consumptive, thus increasing the risk of non-performing financing at Islamic banks.

For Musyarakah and Murabahah financing based on the data above, it can be seen that the distribution of financing carried out by Islamic banking is increasing every year, but the increase in distribution should not be followed by an increase in non-performing financing. The increase in non-performing financing in Islamic banking financing using the Murabahah and Musayarakah contracts shows that Islamic banking risk management has not anticipated the potential risks that arise.

This thesis focuses on examining the influence of macroeconomic indicators on the problematic financing of Islamic banking with Mudharabah, Musyarakah and Murabahah contracts. Where the macroeconomic indicators used are the Industrial Production Index (IPI), inflation, exchange rates and money supply.

Research Methods

This research design will use quantitative methods to analyze the effect of macroeconomic indicators on *Non Performing* Financing of Murabahah, Mudharabah and Musyarakah Financing in Islamic banking in Indonesia.

The data used in this study is entirely secondary data which the authors obtained through the official website of each agency concerned, namely Bank Indonesia, the Indonesian Financial Services Authority and the Central Bureau of Statistics. The data used is monthly or *time series* data from January 2015 to December 2022 which is a combination of Islamic Commercial Banks (BUS) and Islamic Business Units (UUS).

The analysis method used in this study is Vector Autoregression (VAR), a non-structural approach developed by Sims (1980). VAR assumes that all variables in the system are endogenous, making it an a-theoretical model, often used when economic theory alone cannot fully explain variable relationships (Ascarya, 2009).

Model Testing Steps

1. Stationarity Test
   Using the ADF (Augmented Dickey-Fuller) test with a real level of 5% (α=5%). If the ADF t-statistic probability < 5%, the data is stationary; if > 5%, the data is not stationary.
   a. Stationary data at level: use VAR method.
   b. Data is not stationary at level: use VAR difference or VECM.
2. Correlation Test If the residual correlation between variables is >0.2 at more than 50%, a causality test or variable order specification is required.
3. Optimum Lag Determination Test
   Determine the optimum lag length using LR, FPE, AIC, SC, or HQ criteria. The model is selected based on the smallest criterion value.
4. Cointegration Test
   Performed on level data with the trace method. If the trace statistic value > critical value, there is cointegration.
5. VAR Model Stability Test
   The stability of the model is seen from the modulus value of the inverse roots AR polynomial. If the modulus < 1, the model is stable.
6. Impulse Response Function (IRF)
   Analyze the response of variables to shocks from other variables in the short and long term.
7. Forecast Error Variance Decomposition (FEVD)
   Estimating the contribution of variables to changes in other variables. In this study, it is used to see the effect of macroeconomic variables on NPF in Islamic banking in Indonesia.

Results and Discussion

Stationarity Test Results

Table 1 shows the results of the Stationarity Test of Islamic Banking Problem Financing Research Data with Mudharabah, Musyarakah and Murabahah Akad.

Table 1. Stationarity test results

Variable	Argumented Dicky Fuller (ADF)		MCKinnon Critical Value 5%	
	Level	First Difference	Level	First Difference
MUD	-2.048087	**-9.048087**	-3.457808	-3.458326
MUS	-2.851454	**-5.806142**	-3.459597	-3.45995
MUR	**-3.954324**	**-6.282584**	-3.459597	-3.460516
INF	-0.624084	**-8.291611**	-3.457808	-3.458326

IPI	**-5.176444**	**-10.07126**	-3.457808	-3.458856
NT	**-4.138823**	**-10.93946**	-3.457808	-3.458326
M2	-2.042927	-14.22971	-3.458326	-3.458326

Ket:* bold means stationary at 5% real level (attachment)

The stationary test results show that four variables are not stationary at the 5% real level (MUD: -2.048087, MUS: -2.851454, INF: -0.624084, M2: -2.042927). The data must be transformed to first derivative form. If cointegrated, the VECM (Vector Eror Corection Model) method is used for short and long run analysis. Otherwise, First Difference VAR is used for short-term analysis.

Correlation Test Results

The results of the correlation test for the research model of Conflict Financing in Islamic Banking with Mudharabah, Musyarakah and Murabahah Agreements can be seen in table 2 where the results of the majority of correlation values in the system are below 0.2.

Table 2. Correlation test results

	MUD	**MUS**	**MUR**	**INF**	**IPI**	**NT**	**M2**
MUD	1.000000						
MUS	-0.007622	1.000000					
MUR	-0.031917	0.806571	1.000000				
INF	-0.077206	0.4693	-0.500179	1.000000			
IPI	0.077692	-0.60948	-0.517135	-0.261513	1.000000		
NT	-0.074119	-0.663964	-0.751419	-0.263853	0.436717	1.000000	
M2	-0.164257	-0.80304	-0.919517	-0.446191	0.505994	0.74936	1.000000

Optimum Lag Test Results

In table 3 the information criterion used is Akaike Information Criterion (AIC). Based on the Akaike Information Criterion (AIC) criteria, the optimum lag result is obtained at lag one.

Table 3. Optimal lag test results of mudharabah contracts

Lag	AIC	SC	HQ
0	-10.96664	-10.82195*	-10.90848*
1	-10.74596	-9.877812	-10.39697
2	-10.71658	-9.124973	-10.07677
3	-10.66535	-8.350288	-9.734716
4	-10.40071	-7.362192	-9.179253
5	-10.29869	-6.536715	-8.786410
6	-10.21331	-5.727875	-8.410203
7	-10.30786	-5.098965	-8.213927
8	-10.20144	-4.269094	-7.816690
9	-10.56618	-3.910368	-7.890597
10	-10.71245	-3.333188	-7.746051
11	**-11.36231***	-3.259589	-8.105085

Notes: Asterisks (*) and bold print indicate the optimum lag level.

Table 3. Optimal lag test results of contracts

Lag	**AIC**	**SC**	**HQ**
0	-12.08221	-11.93752*	-12.02404*
1	-11.94397	-11.07582	-11.59498

2	-12.04444	-10.45283	-11.40463
3	-11.86787	-9.552809	-10.93724
4	-11.58114	-8.542621	-10.35968
5	-11.39879	-7.636815	-9.886510
6	-11.33564	-6.850207	-9.532536
7	-11.45183	-6.242934	-9.357896
8	-11.43063	-5.498283	-9.045879
9	-11.81909	-5.163279	-9.143508
10	-11.97578	-4.596519	-9.009381
11	**-12.59793***	-4.495207	-9.340704

Notes: Asterisks (*) and bold print indicate the optimum lag level.

Table 3. Optimal lag test results of murabaha contracts

Lag	AIC	SC	HQ
0	-12.83435	-12.68966*	-12.77619*
1	-12.62103	-11.75288	-12.27204
2	-12.64574	-11.05413	-12.00593
3	-12.45282	-10.13775	-11.52218
4	-12.16350	-9.124981	-10.94204
5	-12.05311	-8.291136	-10.54083
6	-11.99532	-7.509885	-10.19221
7	-12.06948	-6.860587	-9.975549
8	-12.09985	-6.167504	-9.715099
9	-12.47020	-5.814390	-9.794619
10	-12.77742	-5.398153	-9.811016
11	**-13.31642***	-5.213700	-10.05920

Notes: Asterisks (*) and bold print indicate the optimum lag level.

Cointegration Test Results

The criterion for testing this cointegration is based on the trace-statistic which is compared with the real level value of 5% and 1%, if the trace-statistic value is greater than the real level value then the number of cointegration ranks can be accepted.

Table 4. Cointegration test results of mudharabah contracts

Hypothesized No. of CE(s)	Trace Statistic	5 Percent Critical Value	1 Percent Critical Value
None	104.4162	68.52	76.07
At most 1**	63.10202	47.21	54.46
At most 2*	35.03696	29.68	35.65
At most 3*	15.57080	15.41	20.04
At most 4*	5.981860	3.76	6.65

Notes: The asterisk * (**) 5% (1%) and bold indicates there is cointegration in the model.

Table 4. Cointegration test results of musyarakah contract

Hypothesized No. of CE(s)	Trace Statistic	5 Percent Critical Value	1 Percent Critical Value

None	109.1684	68.52	76.07
At most 1**	60.61267	47.21	54.46
At most 2*	34.50891	29.68	35.65
At most 3*	18.59474	15.41	20.04
At most 4*	6.564224	3.76	6.65

Notes: The asterisk * (**) 5% (1%) and bold indicates there is cointegration in the model.

Table 4. Cointegration test results of murabaha contracts

Hypothesized No. of CE(s)	Trace Statistic	5 Percent Critical Value	1 Percent Critical Value
None	109.1684	68.52	76.07
At most 1**	60.61267	47.21	54.46
At most 2*	34.50891	29.68	35.65
At most 3*	18.59474	15.41	20.04
At most 4*	6.564224	3.76	6.65

Notes: The asterisk * (**) 5% (1%) and bold indicates there is cointegration in the model.

Haji VAR Model Stability Test

Table 5. Stability test results of var model *of mudharabah, musyarakah* and *murabahah* contracts

Model	Modulus	Lag
MUD	0.220558 - 0.894077	6
MUS	0.150955 - 0.917884	6
MUR	0.261221 - 0.911416	6

VECM Test Results and Analysis

The VECM estimation results can show the short and long term information of the research variables which can be seen in table 6.

Table 6. VECM test results for *mudharabah* contracts

SHORT TERM		
VARIABLES	COEFICIENT	T-STATISTICS
CointEq1	-0.011922	[-1.92971]
D(MUD(-1))	-0.042691	[-0.38962]
D(INF(-1))	0.224403	[1.52194]
D(LNIPI(-1))	0.376352	[0.40157]
D(LNNT(-1))	-5.055894	[-1.92508]
D(LNM2(-1))	3.801595	[0.82697]
LONG TERM		
INF(-1)	2.030519	[1.53663]
LNIPI(-1)	-11.04964	[-0.39279]
LNNT(-1)	-324.1889	**[-5.43932]**
LNM2(-1)	92.22304	**[5.40058]**

Notes: Bold indicates significant results at 5% real level (>1.96).

The VECM test results of the model (MUD) show a long-run equilibrium with a negative ECT value (-). In the long run, LNNT and LNM2 significantly affect MUD. LNNT has a negative effect of -5.43932, meaning that a 1% increase in LNNT decreases MUD by -5.43932, indicating that MUD's non-

performing financing tends to decrease. This finding is in accordance with the research of Beck et al. (2015) which confirms the significant effect of LNNT on non-performing financing.

LNM2 positively affects MUD by 5.40058, meaning that every 1% increase in LNM2 will increase MUD by 5.40058. and this influence can be concluded that MUD's problematic financing will increase in the future. These results are in accordance with research conducted by Iriani and Yuliadi (2015) which states that the variable money supply (LNM2) has a significant effect on non-performing loans.

From the test results above, the VECM equation obtained is that macroeconomic indicators strongly influence and determine non-performing financing in Islamic banking as follows:

$\Delta MUD = \alpha 0 - \alpha 1\ \Delta INF\ t\text{-}1 + \alpha 2\ \Delta IPI\ t\text{-}1 + \alpha 3\ \Delta NT\ t\text{-}1 + \alpha 4\ \Delta M2\ t\text{-}1 - \lambda(MUS - INF - IPI - NT - M2) + \varepsilon$

If the coefficient values are entered into the equation, the VECM equation is obtained as follows:

$\Delta MUD = \alpha 0 - 0.173336\ \Delta INF - 0.560814\ \Delta IPI + 1.291168\ \Delta NT + 1.202279\ \Delta M2 - \lambda(MUS + 2.030519 - 11.04964 - 324.1889 + 92.22304) + \varepsilon$

Table 6. VECM test results for *musyarakah* contracts

SHORT TERM		
VARIABLES	COEFICIENT	T-STATISTICS
CointEq1	-0.039969	[-1.92662]
D(MUS(-1))	-0.120981	[-1.15827]
D(INF(-1))	-0.173336	**[-2.03957]**
D(LNIPI(-1))	-0.560814	[-1.04010]
D(LNNT(-1))	1.291168	[0.85432]
D(LNM2(-1))	1.202279	[0.42802]
LONG TERM		
INF(-1)	-0.248969	[-0.99266]
LNIPI(-1)	2.166237	[0.40147]
LNNT(-1)	49.79237	**[4.44749]**
LNM2(-1)	-11.22285	**[-3.52579]**

Notes: Bold indicates significant results at 5% real level (>1.96).

The VECM test results of the model (MUS) show a long-run equilibrium with a negative ECT value (-). In the long run, LNNT and LNM2 significantly affect MUS. LNNT has a positive effect of 4.44749, meaning that a 1% increase in LNNT increases MUS by 4.44749, indicating that MUS problematic financing tends to rise. This finding is consistent with the research of Jayaraman et al. (2019) and Budiman et al. (2018) which confirmed the significant effect of LNNT on non-performing financing.

LNM2 negatively affects MUS by -3.52579, meaning that every 1% increase in LNM2 will reduce MUS by -3.52579. and this effect can be concluded that MUS problematic financing will decrease in the future.

From the test results above, the VECM equation obtained is that macroeconomic indicators strongly influence and determine non-performing financing in Islamic banking as follows:

$\Delta MUS = \alpha 0 + \alpha 1\ \Delta INF\ t\text{-}1 + \alpha 2\ \Delta IPI\ t\text{-}1 + \alpha 3\ \Delta NT\ t\text{-}1 + \alpha 4\ \Delta M2\ t\text{-}1 - \lambda\ (MUD - INF - IPI - NT - M2) + \varepsilon$

If the coefficient values are entered into the equation, the VECM equation is obtained as follows:

$\Delta MUS = \alpha 0 + 0.224403\ \Delta INF + 0.376352\ \Delta IPI - 5.055894\ \Delta NT + 3.801595\ \Delta M2 - \lambda(MUD - 0.248969 + 2.166237 + 49.79237 - 11.22285) + \varepsilon$

Table 6. Vecm test results for murabaha contracts

SHORT TERM		
VARIABLES	COEFICIENT	T-STATISTICS
CointEq1	-0.096940	[-2.22373]
D(MUR(-1))	-0.126202	[-1.07531]
D(INF(-1))	-0.012290	[-0.19302]
D(LNIPI(-1))	-0.245499	[-0.61150]
D(LNNT(-1))	0.848637	[0.73621]
D(LNM2(-1))	2.622106	[1.25675]
LONG TERM		
INF(-1)	-0.122429	[-1.59095]
LNIPI(-1)	0.647774	[0.38701]
LNNT(-1)	21.92952	**[6.42248]**
LNM2(-1)	-0.440928	[-0.45168]

Notes: Bold indicates significant results at 5% real level (>1.96).

The results of the VECM model (MUR) test on the influence of macroeconomic indicators on the problematic financing of Islamic banking with a musyarakah contract can be said to show a long-term balance which can be seen from the ECT (Eror Corection Model) value which is negative (-). In the long-term analysis, the LNNT variable significantly affects MUR.

LNNT positively affects MUR by 6.42248, meaning that every 1% increase will increase MUR by 6.42248. and this influence can be concluded that MUR's non-performing financing will increase in the future. This result is in accordance with research conducted by (Jayaraman, et al 2019), Budiman et al. (2018) which states that the exchange rate variable (LNNT) has a significant effect on non-performing loans.

From the test results above, the VECM equation obtained is that macroeconomic indicators strongly influence and determine non-performing financing in Islamic banking as follows:

$\Delta MUR = \alpha 0 + \alpha 1\ \Delta INF\ t\text{-}1 + \alpha 2\ \Delta IPI\ t\text{-}1 + \alpha 3\ \Delta NT\ t\text{-}1 + \alpha 4\ \Delta M2\ t\text{-}1 - \lambda\ (MUR - INF - IPI - NT - M2) + \varepsilon$

If the coefficient values are entered into the equation, the VECM equation is obtained as follows:

$\Delta MUR = \alpha 0 - 0.012290\ \Delta INF - 0.245499 \Delta IPI + 0.848637 \Delta NT + 2.622106\ \Delta M2 - \lambda(MUR - 0.122429 + 0.647774 + 21.92952 - 0.440928) + \varepsilon$

From the results of the VECM test of Mudharabah, Musyarakah and Murabahah Acts in table 4.1.6, it can be explained that the variables that have a significant influence in the long-term economic and financial time can be interpreted as follows:

1. Economically
   a. Inflation: High or uncontrolled inflation can reduce the purchasing power of money and lead to increased prices of goods and services. In the context of financing, high inflation can affect borrowers' ability to repay their loans, especially if their income has not kept up with the rate of inflation.
   b. Exchange Rates: Fluctuations in currency exchange rates can affect the competitiveness of exports and imports, as well as the price of raw materials needed in business. If exchange rates have an influence on non-performing loans, this suggests that exchange rate instability may affect business results and the ability of borrowers to meet their obligations.

c. Money Supply: The money supply reflects the liquidity of the economy. Rapid or uncontrolled growth in the money supply can lead to inflation risk or reduce the value of money. If money supply has an influence on non-performing financing, it means that this factor also has an important role in business health and financing.

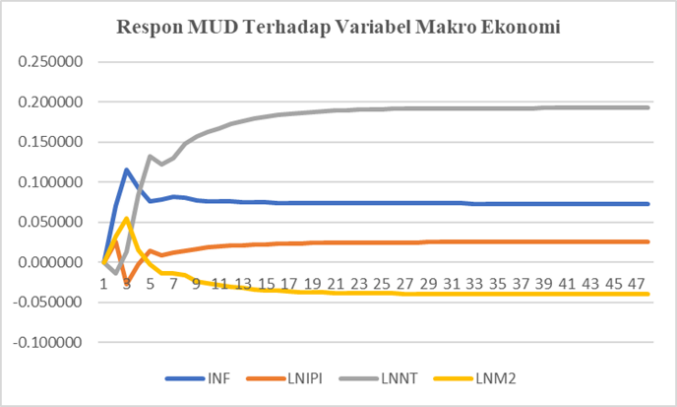
2. Financially
   a. Long-term Effect: The significant long-run effect of Inflation, exchange rate and money supply on *mudharabah, musyarakah and murabahah* non-performing financing may indicate that long-lasting fluctuations may lead to potential losses.
   b. Risk Management: The financial implications of these results emphasize the importance of risk management in *mudharabah, musyarakah* and *murabahah* businesses The parties involved need to consider how to manage inflation, exchange rate and money supply risks in their *mudharabah, musyarakah* and *murabahah* cooperation agreements to minimize the risk of loss.
3. Practical Implications
   a. Contract Structure: The results of this study may lead to changes in the structure of *mudharabah* and *musyarakah* contracts. Parties may need to include clauses or mechanisms that consider the impact of exchange rates in the sharing of profits and losses.
   b. Risk Management: It is important to consider how the parties will manage exchange rate risks that may occur during the cooperation period. A more detailed and proactive risk management approach may be required.
4. Business Continuity

   This finding may affect perceptions of the long-term sustainability of the business within a mudharabah framework. The parties involved should consider the impact of exchange rate fluctuations on the ability of the business to generate sufficient profits.

The results of this study can provide a deeper insight into how fluctuations in Inflation, exchange rates and money supply can impact business performance and results within the framework of mudharabah and *musyarakah*. This confirms the importance of a deeper understanding of exchange rate risk and risk management in Islamic banking operations that adopt the *mudharabah* principle.

Impulse Response Function (IRF) Test Results

In the VECM method there is one of the main forms of analysis, namely the Impulse Response Function (IRF) which aims to see the current and future response traces of a variable to a shock from a particular variable (Ascarya, 2009, p. 19).



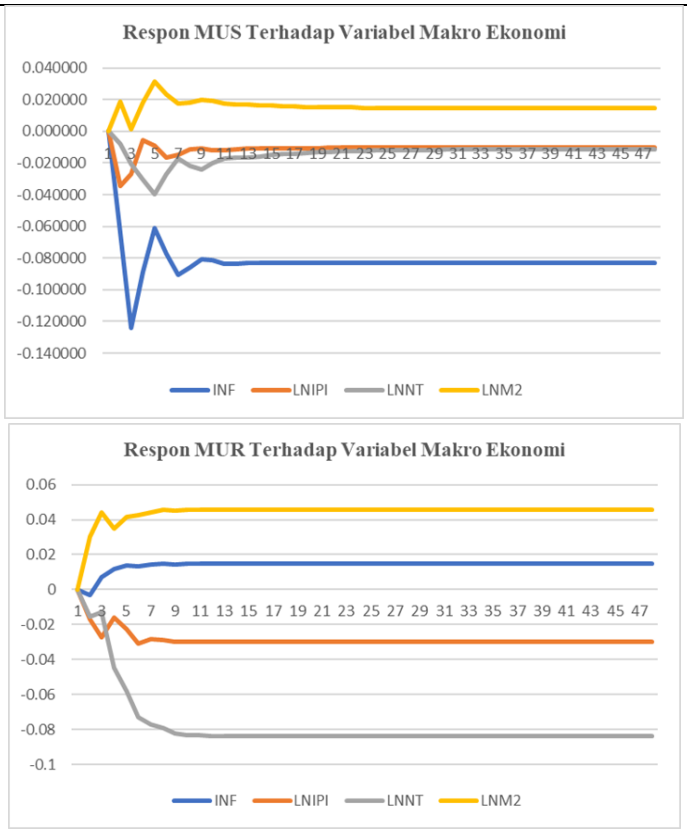
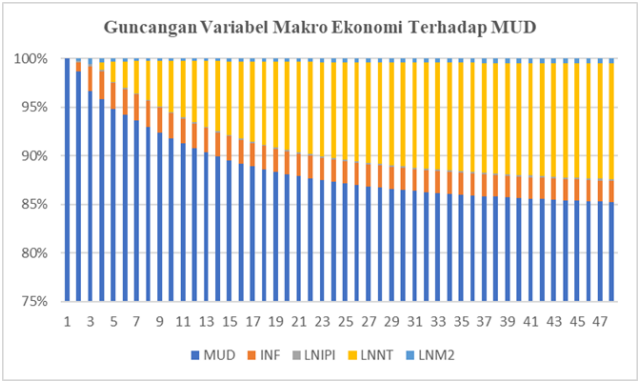
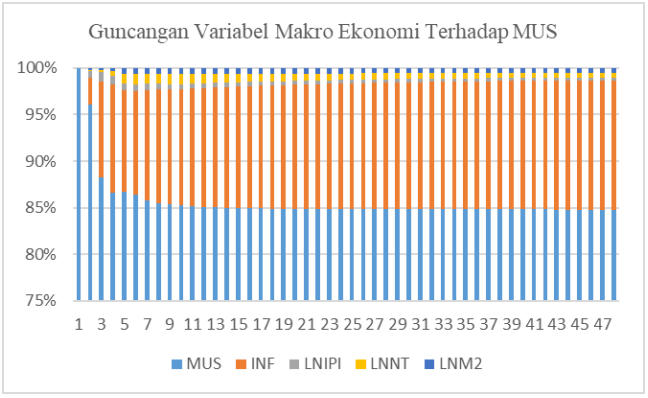


Figure 1. Impulse response function (irf) test results of *mudharabah*, *musyarakah* and *murabahah* contracts

Forecast Error Variance Decomposition (FEVD) Test Results

After analyzing through Impulse Response Function (IRF), we will then see or predict the contribution of each variable to shocks or changes in certain variables through Forecast Error Variance Decomposition (FEVD) Analysis (Ascarya, 2009, p. 21).





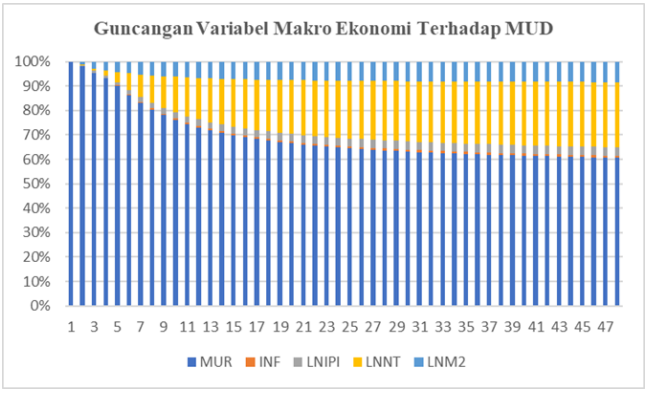


Table 2. Results of forecast error variance decomposition (fevd) test for mudharabah, musyarakah and murabahah contracts

Discussion

Analysis Impulse Response Function (IRF) Test Results

MUD response to INF

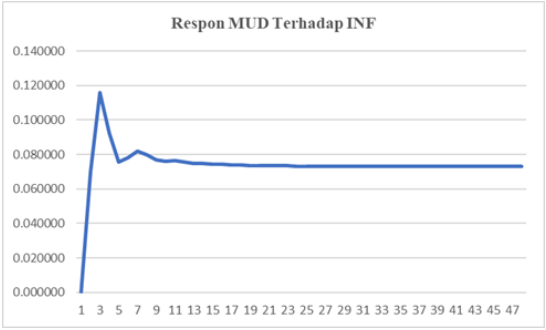


Figure 3. IRF Test Result Graph of MUD Response to INF

INF shocks are responded positively by MUD by 0.069752 to 0.074157 and stabilized in period 17. This shows that inflation affects MUD positively because inflation reflects the amount of money in circulation, encouraging banks to raise interest rates to control inflation. This result is consistent with the research of Damanhur et al. (2018), Jayaraman et al. (2019), Kjosevski and Petkovski (2017), Nkusu (2011), and Skarica (2014) which state that inflation has a significant effect on non-performing financing.

MUD's response to IPI

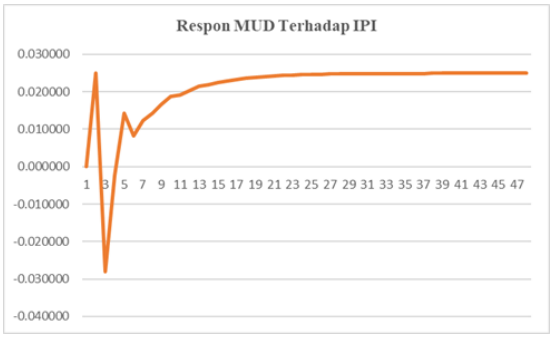


Figure 4. IRF Test Result Graph of MUD Response to IPI

IPI shocks are responded positively by MUD by 0.024923 in period 2, negatively in period 4 (-0.028004 to -0.002346), and again positively in period 5 (0.014197 to 0.023848) before stabilizing in period 20. This response reflects a complex relationship, where IPI growth supports income but can increase the risk of non-performing financing if imbalances occur. This result is different from the research of Budiman et al. (2018) and Nursechafia and Abduh (2014).

MUD response to NT

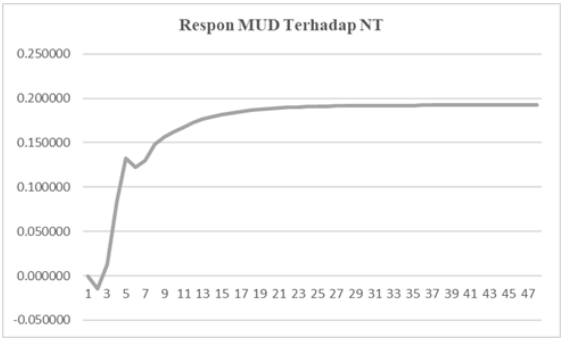


Figure 5. IRF Test Result Graph of MUD Response to NT

The NT variable shock is responded negatively by MUD in period 2 by -0.014207, then positively in period 3 by 0.012564 until it reaches 0.189759 in period 22 and stabilizes in period 23. The positive impact of currency depreciation is not always evenly distributed across all sectors, depending on economic dynamics and business structure. This result is in line with Beck et al. (2015) but different from Jayaraman et al. (2019) and Budiman et al. (2018).

MUD response to M2

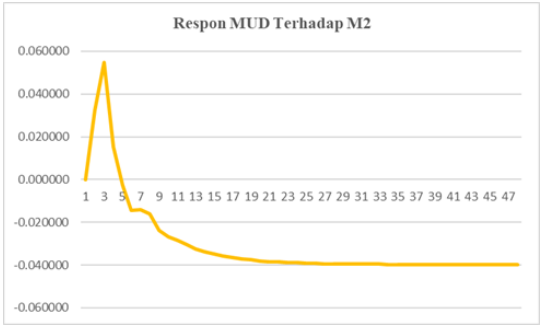


Figure 6. IRF Test Result Graph of MUD Response to M2

M2 variable shocks are responded positively by MUD by 0.032516 to 0.015351 in period 4, then negatively by -0.002566 to -0.038970 in period 24 and stable in period 25. The increase in money supply does not have a direct impact on Mudharabah non-performing financing, because every Rp 1 increase decreases non-performing financing by -0.039115. This negative effect occurs if the increase in money supply is not matched by healthy economic growth, which can cause inflation and customer difficulties in repaying credit.

MUS response to INF

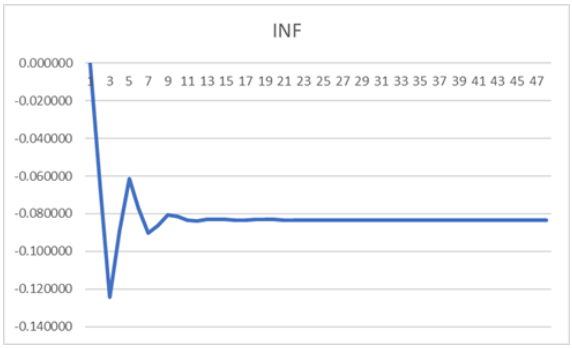


Figure 7. IRF Test Result Graph of MUS Response to INF

The INF variable shock is negatively responded by the MUS variable by -0.064174 to -0.081333 in period 10 and stabilizes in period 11. This shows that when there is an increase in inflation, it does not have an impact on the high distribution of musyarakah financing which is also followed by high non-performing financing.

MUS response to IPI

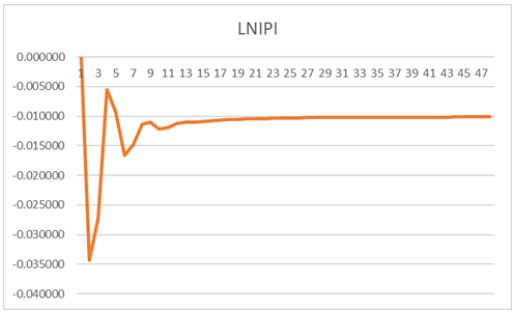


Figure 8. IRF Test Result Graph of MUS Response to IPI

The IPI variable shock is negatively responded by MUS by -0.034384 to -0.011012 in period 14 and stabilizes in period 15, indicating that Musyarakah non-performing financing is not affected by IPI. Good industrial performance remains important for economic stability, and policies that support the industrial sector can avoid the negative impact of a decline in I.

MUS response to NT

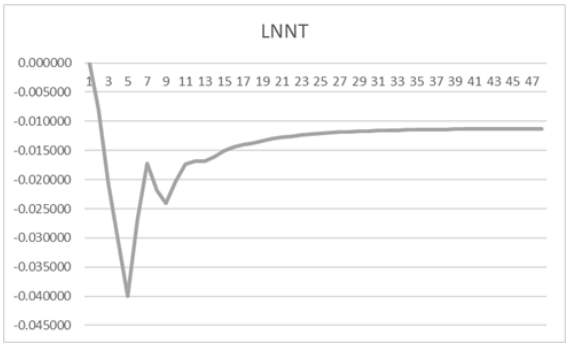


Figure 9. IRF Test Result Graph of MUS Response to NT

The NT variable shock was negatively responded by the MUS variable by -0.007958 to -0.012216 in period 24 and stabilized in period 25. The Islamic banking sector has grown and developed significantly in various countries. Nevertheless, it should be recognized that the financing channeled by Islamic banks in Indonesia still has a limited scope, especially domestically.

MUS response to M2

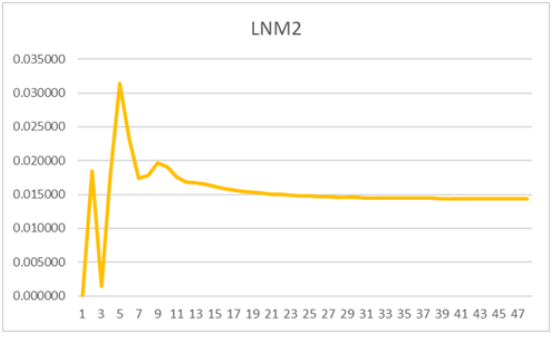


Figure 10. IRF Test Result Graph of MUS Response to M2

M2 variable shocks are responded positively by MUS by 0.018460 to 0.015055 in period 21 and stabilized in period 22. This indicates that money supply has a significant impact on financing disbursement. Money supply management by the central bank and government through monetary and fiscal policies is important to maintain economic stability and financing effectiveness.

MUR response to INF

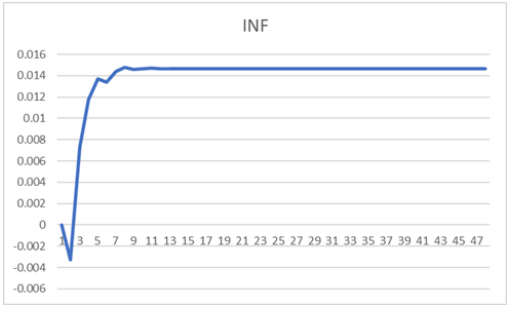


Figure 11. IRF Test Result Graph of MUR Response to INF

The INF variable shock is responded negatively by MUR by -0.003254 in period 2, then positively by 0.007275 to 0.013373 in period 3, and stable in period 7. This result shows that inflation affects MUR positively because an increase in inflation reflects the amount of money in circulation, encouraging banks to raise interest rates to control inflation. This finding is in line with the research of Damanhur et al. (2018), Jayaraman et al. (2019), Kjosevski and Petkovski (2017), Nkusu (2011), and Skarica (2014).

MUR response to IPI

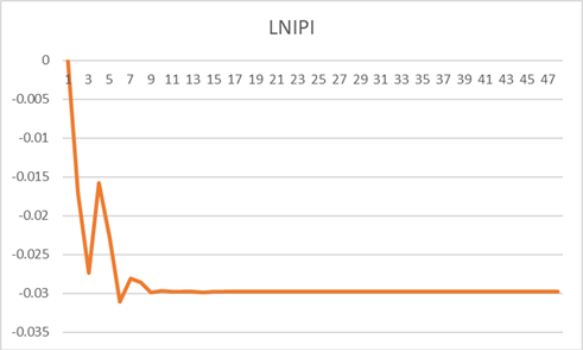


Figure 12. IRF Test Result Graph of MUR Response to IPI

MUR responded negatively to IPI shocks by -0.017072 to -0.028597 in period 8 and stabilized in period 9, indicating that Murabahah's non-performing financing is not affected by IPI. Good industry performance remains important to support economic stability and sustainable growth.

MUR response to NT

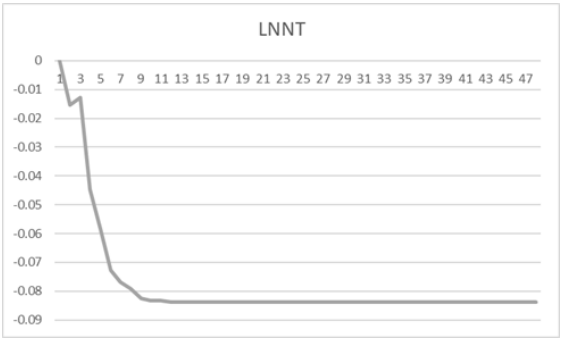


Figure 13. IRF Test Result Graph of MUR Response to NT

The MUR variable responds negatively to the NT variable shock by -0.015348 to -0.079271 in period 8 and stabilizes in period 9. The Islamic banking sector has grown and developed significantly in various countries. Nevertheless, it needs to be recognized that the financing channeled by Islamic banks in Indonesia still has a limited scope, especially domestically.

MUR response to M2

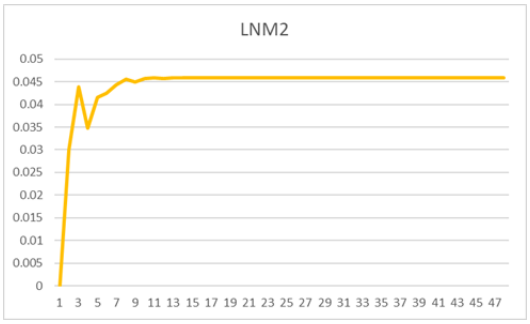


Figure 14. IRF Test Result Graph of MUR Response to M2

M2 shocks are responded positively by MUR by 0.030025 to 0.044284 in period 7 and stabilized in period 8, indicating that money supply has a significant impact on financing. Liquidity management through monetary and fiscal policy is important to maintain economic stability and effectiveness of financing distribution.

Analysis of Forecast Error Variance Decomposition (FEVD) Test Results
Macroeconomic Variable Shocks to MUDs

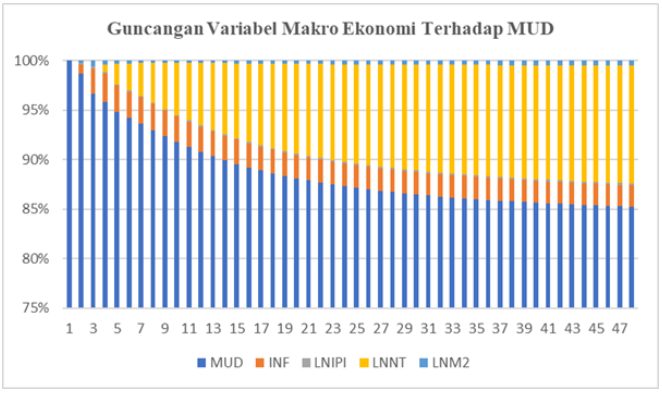


Figure 15. Graph of FEVD Test Results of Macroeconomic Variable Shocks to MUDs

Figure 15 above provides an overview of the influence or contribution of each variable that affects the problematic financing with the Mudharabah (MUD) contract. The level of the MUD variable is influenced by the INF variable from the 3rd period of 2.556562 to the 48th period of 2.155874. This shows that the INF variable makes a significant contribution to MUD because the figure in that period is above 1%.

The LNIPI variable in period 2 of 0.126589 to period 48 of 0.199424 shows an insignificant effect because in that period the LNIPI variable shows a number below 1%.

The LNNT variable in period 2 of 0.041130 to period 4 of 0.768039 shows an insignificant influence because in that period the inflation variable shows a number below 1%, and in the next period, namely period 5 of 2.055740 to period 48 of 11.923230, in that period shows that the LNNT variable makes a significant contribution to the MUD variable, because the figure in that period is above 1%.

The LNM2 variable in period 2 of 0.215461 to period 48 of 0.496148 shows an insignificant effect because in that period the LNM2 variable shows a number below 1%.

Macroeconomic Variables Shocks to MUS

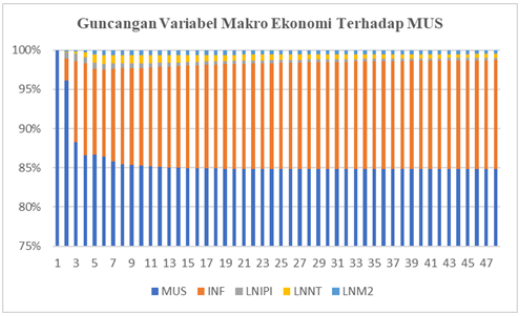


Figure 16. Graph of FEVD Test Results of Macroeconomic Variable Shocks to MUS

It can be seen in Figure 16 above that it provides an overview of the influence or contribution of each variable that affects the problematic financing with the Musyarakah contract (MUS). The level of the MUS variable is influenced by the INF variable in the 2nd period by 2.822344 to the 48th period by 13.897670, this shows that the INF variable makes a significant contribution to MUS because the figure in that period is above 1%.

The LNIPI variable in period 2 of 0.810203 to period 48 of 0.297926 shows an insignificant effect because in that period the LNIPI variable shows a number below 1%. The LNNT variable in period 2 of 0.043402 to period 48 of 0.489066 shows an insignificant effect because in that period the LNNT variable shows a number below 1%. The LNM2 variable in period 2 of 0.233525 to period 48 of 0.510203 shows an insignificant effect because in that period the LNNT variable shows a number below 1%.

Macroeconomic Variable Shocks to MUR

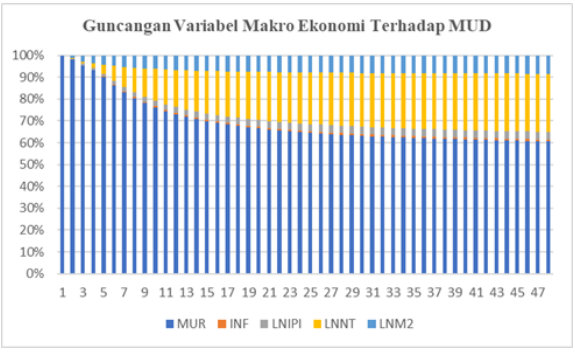


Figure 17. Graph of FEVD Test Results of Macroeconomic Variable Shocks to MUR

It can be seen in Figure 17 above that it provides an overview of the influence or contribution of each variable that affects the problematic financing with the Musyarakah contract (MUR). The level of the MUR variable is influenced by the INF variable in the 2nd period by 0.014832 to the 48th period by 0.841381, this shows that the INF variable does not significantly contribute to MUR because the figure in that period is below 1%.

The LNIPI variable in period 2 of 0.408154 shows an insignificant effect because in that period the LNIPI variable shows a number below 1%, and in the next period, namely period 3 of 1.138428 to period 48 of 3.504973, in that period it shows that the LNIPI variable makes a significant contribution to the MUR variable, because the figure in that period is above 1%.

The LNNT variable in period 2 of 0.329891 to period 3 of 0.432920 shows an insignificant influence because in that period the LNNT variable shows a number below 1%, and in the next period, namely period

4 of 2.078018 to period 48 of 26.651280, in that period shows that the LNNT variable makes a significant contribution to the MUR variable, because the figure in that period is above 1%.

The MUR variable is influenced by the INM2 variable in period 2 of 1.262485 to period 48 of 8.391600, this shows that the LNM2 variable makes a significant contribution to MUR because the figure in that period is above 1%.

This study also found that different types of Islamic financing have different levels of non-performing financing risk. Musyarakah financing has a higher level of non-performing financing risk than mudharabah and murabahah financing. This is because musyarakah financing is a partnership agreement between the bank and the customer, where the bank and the customer share the risks and profits of the project. If the project fails, the bank and the customer will suffer losses together.

This study provides evidence that macroeconomic conditions and the type of Islamic financing have a significant influence on Islamic banking non-performing financing. Islamic banks need to consider these factors when making decisions on the type of financing to offer and how to manage the risk of non-performing financing.

The following are some recommendations that can be made by Islamic banking to reduce the risk of non-performing financing:

1. Conduct a careful analysis of macroeconomic conditions before offering financing.
2. Choose the type of financing that is suitable for the risk that can be borne.
3. Conduct strict selection and assessment of prospective customers.
4. Manage the risk of non-performing financing well

Hypothesis

Hypothesis of Impulse Response Function (IRF) Test Results

1. Hypothesis I: Inflation variable based on the results of the above research on *Mudharabah* and *Murabahah* financing contracts has a positive or significant influence on non-performing loans, while the opposite response is shown by the *Musyarakah* financing contract. With this it can be concluded that the hypothesis is proven for the *Mudharabah* and *Murabahah* financing contracts, while the *Musyarakah* contract is not proven.
2. Hypothesis II: The industrial production index (IPI) variable based on the results of the above research on the *Mudharabah* financing contract has a positive or significant influence on non-performing loans, while the opposite response is shown by the *Musyarakah* and *Murabahah* financing contracts. With this it can be concluded that the hypothesis is proven for the *Mudharabah* financing contract while the *Musyarakah* and *Murabahah* contracts are not proven.
3. Hypothesis III: The Exchange Rate Variable based on the results of the above research on the Mudharabah financing contract has a positive or significant influence on non-performing loans, while the opposite response is shown by the *Musyarakah* and *Murabahah* financing contracts. With this it can be concluded that the hypothesis is proven for the *Mudharabah* financing contract while the *Musyarakah* and *Murabahah* contracts are not proven.
4. Hypothesis IV: The variable money supply based on the results of the above research on the *Musyarakah* and *Murabahah* financing contracts has a positive or significant influence on non-performing loans, while the opposite response is shown by the *Mudharabah* financing contract. With this it can be concluded that the hypothesis is proven for the *Musyarakah* and *Murabahah* financing contracts, while the *Mudharabah* contract is not proven.

Hypothesis of Forecast Error Variance Decomposition (FEVD) Test Results

1. Hypothesis I: Inflation variable based on the results of the above research on *Mudharabah* and *Musyarakah* financing contracts has a positive or significant influence on providing shocks to non-performing loans, while the opposite response is shown by the *Murabahah* financing contract. With this it can be concluded that the hypothesis is proven for the *Mudharabah* and *Musyarakah* financing contracts, while the Murabahah contract is not proven.
2. Hypothesis II: The industrial production index (IPI) variable based on the results of the above research on the *Murabahah* financing contract has a positive or significant influence on shocks to non-performing loans, while the opposite response is shown by the *Mudharabah* and *Musyarakah* financing contracts. With this it can be concluded that the hypothesis is proven for the *Murabahah* financing contract while the *Mudharabah* and *Musyarakah* contracts are not proven.
3. Hypothesis III: The Exchange Rate Variable based on the results of the above research on the *Mudharabah* and *Murabahah* financing contracts has a positive or significant effect on providing shocks to non-performing loans, while the opposite response is shown by the Musyarakah financing contract. With this it can be concluded that the hypothesis is proven for the Mudharabah and Murabahah financing contracts, while the Musyarakah contract is not proven.
4. Hypothesis IV: Based on the results of the above research, the *Murabahah* financing contract has a positive or significant influence on non-performing loans, while the opposite response is shown by the *Mudharabah* and *Musyarakah* financing contracts. With this it can be concluded that the hypothesis is proven for the *Murabahah* financing contract while the *Mudharabah* and *Musyarakah* contracts are not proven.

Conclusion

This study shows that macroeconomic indicators such as inflation, industrial production index (IPI), exchange rate, and money supply have a significant influence on non-performing financing on *Mudharabah*, *Musyarakah*, and *Murabahah* contracts. Inflation and exchange rate are proven to contribute significantly to non-performing financing in *Mudharabah*, while in *Musyarakah*, inflation is the dominant influencing factor, followed by money supply which has a significant impact on the distribution of financing. For *Murabahah*, the exchange rate has the largest influence, followed by money supply. Overall, inflation and exchange rates are the dominant variables affecting non-performing loans in the three contracts. To overcome the negative impact of unfavorable economic conditions, strategic steps are needed such as improving risk management, conducting regular monitoring, adjusting the financing structure, and providing education and flexible financing alternatives to customers. In addition, open communication and careful management of assets and collateral are also key. With this strategic approach, Islamic banking can mitigate the impact of unfavorable economic conditions, maintain business stability, and increase customer confidence.

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