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Article

The Effect of Macroprudential Policy on Credit Growth and Financing of MSMEs in Indonesia

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ABSTRACT

The global crisis in 2008 had weakened the Financial System Stability (FFS) of almost every country. This financial crisis proved that the country had not been really responsive to global change so the financial system risk management done by the central bank was not able to stabilize the crisis. The formulation of macroprudential policies aims to mitigate the bank behavior in distributing credits and financing to the MSMEs which are pro-cyclical. Macroprudential policy instruments used in this study are Loan to Value (LTV)/ Financing to Value (FTV) and Minimum Statutory Reserves based on Loan to Deposit Ratio (LDR)/ Financing to Deposit Ratio (FDR). In addition, there are also macroeconomic variables and bank liquidity variables. The purpose of this study is to see how the influence of macroprudential policies on credit growth and MSME financing distributed by banks. The research method used is the Vector Error Correction Model (VECM) analysis using time series data from January 2010 to July 2020. The results show that macroprudential policies have not been able to suppress financing and in general the macroeconomic variables and bank liquidity also have an influence on credit and financing.

Keywords: Macroprudential Policies; Credit Growth; MSMEs

JEL Classification: E02, E5, H81.

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INTRODUCTION

The year 2008 was the beginning of the global crisis threatening some countries which could not anticipate the instability of economy and finance after reformation. As a response, every country created some regulations to stabilize the financial problems stimulated by the crisis. This financial crisis has proven that some countries could not anticipate global change. Therefore, in managing the risk of financial system, the policies carried out by the central bank was not able to stabilize the crisis. For that reason, it is necessary for the central bank to be truly responsible in carrying out policies to stabilize finances. According to Bailiu et al. (2015), macroprudential policy is a policy which is based on prudence to limit systemic financial risks and prevent financial disruptions to the economy that will result in the

global financial crisis. The objective of macroprudential policy is to reduce macroeconomic costs which is used to limit the systemic financial risks. Macroprudential policy interaction can be transmitted to the banking sector using its instruments. The instruments used can be categorized according to the objectivity; whether it is credit-related such as loan to value (LTV) and credit growth, liquidity-related such as reserve requirements, or capital-related such as capital requirements. Macroprudential policy instruments that are always relied upon are countercyclical instruments with strict banking capital supervision. MSMEs credit and financing instruments are instruments that greatly encourage economic growth. Bank Indonesia not only regulates credit and financing macroprudential policy factors but also supervises the MSMEs credit and financing to prevent any risks to Indonesia's financial system. This research is important to determine the influence of macroprudential policies on the increasing trend of MSME credit growth every year, either collectively or individually. The relationship between macroeconomic variables and macroprudential policy instruments as well as credit growth and MSME financing requires a statistical test to obtain scientific and comprehensive results. In terms of property credit, Anggriawan (2015) stated that in his research on the Analysis of the Effect of Macroprudential Policy on Credit Growth in the Indonesian Property Sector, Loan to Deposit Ratio (LDR) and the Basic Loan Interest Rate (SBDK) are able to have a positive influence on the developments of credit in the property sector in Indonesia from 2010-2018.

Previous research from Utami (2017) on the Influence of Microprudential Policy and Macroprudential Policy on Financing for Islamic Commercial Banks revealed that banks with low Financing to Deposit Ratio (FDR) are expected to allocate financing to support the maximum level of Financing to Deposit Ratio. Therefore, it is expected that the banking sector will be able to minimize the occurrence of financing failures or other financing problems. Akhmad Kosasih's research (2016) on the Analysis of the Effect of Loan to Value (LTV) Policy, Consumption Loan Interest Rates, and Non-Performing Loans (NPL) on Property Loan Distribution by Banking in Gorontalo Province resulted that the Loan to Value (LTV) policy was able to maintain price stability property in Gorontalo Province from unreasonable prices or economic bubbles.

On the other hand, previous research conducted by Ubaidillah (2019) on the Effectiveness of Macroprudential Policy as a Countercyclical in Credit Distribution and Banking Financing in Indonesia also revealed that the results of macroprudential policy as a countercyclical have been fulfilled with LTV/FTV and GWM-LDR with general indicators of LTV/FTV policy and GWM-LDR can place credit and financing procyclicality. Based on the above background, macroprudential policy instruments such as LTV/FTV and GWM-LDR/FDR are included in instruments capable of preventing and reducing systemic risk in the financial system. Therefore, research can be carried out with macroeconomics and credit as well as MSME financing in Indonesia.

LITERATURE REVIEW

Commercial Bank Credit to MSMEs

MSMEs credit is an instrument in business development, having contributed to economic growth. In doing so, the government puts a concern by providing credit. According to Kohler (2009), credit is the ability to make purchasing or procuring an arrangement of which its payment agreement is deferred within the agreed due date. Based on Laws No. 20 of 2008 on MSMEs, the government provides collateral and facility for MSMEs, aimed to grow the economic independence of the

business sector. Thus, if credit growth increases, economic growth also takes the same stance. There are some driving factors of credit growth, such as credit procyclicality, financial liberalization, and a higher capital flow. In addition, credit growth is triggered by relatively high economic growth, and the variable relationship between credit and economic growth is positive.

Sharia Bank to MSMEs

Financing of Sharia Bank to MSMEs is based on financing performed by Sharia Bank distributed to Sharia business units to produce Sharia economic independence, derived from Sharia business units of society.

Macroprudential policy

This policy is one of the instruments in the form of regulation to administer the financial system to remain totally stable. It is used to mitigate risk systems, that occurred in financial institutions, either credit risk or liquidity. According to Claessens (2012), there are two significant dimensions in the macroprudential policy. Firstly, the cross-section is to change the focus of the financial system regulation, applied to individual financial institutions into the overall financial system. Secondly, time series is to press risk occurred due to over-procyclicality in the financial system.

Loan to Value (LTV)/ Financing to Value (FTV)

Loan to Value is a risk between credit value, given to Conventional Commercial Banks or Sharia Commercial Banks to collateral value at the beginning of credit opening (Siravati, 2017). LTV is a commonly used instrument in credit and liquidity issues and also a policy of conventional commercial banking; while, FTV is frequently used for Sharia banking policy in solving credit and liquidity issues. The policy had been performed after the 2008 crisis, and it was after the issuance of the macroprudential policy framework by the Basel Committee (Pratiwi, 2018). LTV/FTV policy is based on higher credit growth, so it effect on risk system. In September 2012, Bank Indonesia amended such policy by issuing a circular letter, regulating the application of risk management for credit and financing banks. In the circular letter, the adjustment having been made is a comparison of the regulation of Conventional Commercial Bank and Sharia Commercial Bank. Further, Bank Indonesia adjusted the amount of LTV three times in 2012, 2015, and 2019. In 2019, Bank Indonesia made a loose expansion, aimed to create Green Economy in Indonesia (Indonesia, 2019).

Statutory Reserves based Loan to Deposit

Purnawan and Nasir's research (2015) revealed that the Loan to Value (LTV) instrument carried out by Bank Indonesia had a negative effect on lending, so that the Loan to Value (LTV) tightening policy was able to place emphasis on lending. Based on the explanation above and supported by a study in strengthening one hypothesis. Then the hypothesis is formulated as follows:

H_{1a}= Loan to Value (LTV) has a significant negative effect on Conventional Bank loans to MSMEs

H_{1b}= Financing to Value (FTV) has a significant negative effect on Islamic Bank financing to MSMEs

Ratio (GWM-LDR)/Financing to Deposit Ratio (FDR)

GWM-LDR/ GWM-FDR is a minimal deposit in Rupiah currency, mandatorily maintained and managed by the bank, such as the current balance in Bank Indonesia, providing that the calculated percentage of Third-Party Funds is based on a difference of LDR/FDR Bank with the targeted LDR/FDR. The policy is developed to minimize the risk system via banking intermediating function in line with the capacity of economic growth and securing banking liquidity. The intermediating process performed by the bank is to pull a deposit based on the previous deposit, and it is distributed

in the form of credit, so the bank has recorded clients in the bank's balance sheet (Aziz, 2017). The relationship of GWM-LDR/GWM-FDR with credit growth and MSMEs financing is negative due to the higher amount of GWM-LDR/GWM-FDR, so credit growth and financing also decline in line with the circulated amount. If the GWM is tightened, then the banking sector will also reduce the limit for MSME lending and financing so that the GWM relationship based on the Loan to Deposit Ratio (LDR)/Financing to Deposit Ratio (FDR) is negative, so the following hypothesis is obtained:

H_{2a}= Statutory Reserves based on the Loan to Deposit Ratio (LDR) have a significant negative effect on Conventional Bank loans to MSMEs

H_{2b}= Statutory Reserves based on the Financing to Deposit Ratio (FDR) have a significant negative effect on Islamic Bank financing to MSMEs

Non-Performing Loan (NPL)/ Non-Performing Financing (NPF)

A Non-Performing Loan (NPL) is a comparison ratio of non-performing credit to total credit (Widiyanti et al., 2014). The credit distribution function performed is related to credit risk (default risk). Default risk is the client's failure risk in returning a sum of deposits received from banks, including bank interest within the scheduled term. Under the provisions of Bank Indonesia, the ideal standard of Non-Performing Loan (NPL) is under 5%. The higher the credit growth, the higher the NPL, where the relationship between NPL and credit growth and MSMEs financing is positive. The higher NPL is due to increasing credit growth and financing. The research results of Riska Rosalina et.al. (2019) show that the relationship between Non-Performing Loans (NPL) and lending is negative, which means that when the ratio of Non-Performing Loans (NPL) for each bank increases, lending will decrease due to an increase in the Non-Performing Loan (NPL) ratio. The Performing Loan (NPL) of each bank means that the bank is said to be financially unhealthy. Therefore the hypothesis compiled in this study is:

H_{3a}= Non-Performing Loans (NPL) have a significant negative effect on Conventional Bank loans to MSMEs

H_{3b}= Non-Performing Financing (NPF) has a significant negative effect on Islamic Bank financing to MSMEs

BI Rate

BI Rate is a policy of interest rate, regulated by Bank Indonesia. Also, it is called a policy of loan discount rate, provided by Bank Indonesia to commercial banks (Ubaidillah, 2019). BI Rate is announced by the Board of Governors of Bank Indonesia in every Monthly Meeting of the Board of Governors. On August 19th, 2016, Bank Indonesia amended BI Rate as of BI 7-Day Repo Rate to ease banking institutions in withdrawing their money after depositing for 7 (seven) days. Thus, the policy can effectively control the interest rate. In Indonesia, the stipulation of interest rate, either funds or credit, must refer to BI Rate. The interconnectedness of the BI Rate with MSMEs credit is if BI Rate is raised, it will also increase the credit interest rate. The higher the prime lending rate, the higher the withdrawal by the bank so that credit distribution will decrease. In the Islamic banking system there are no interest rates so the BI Rate has no direct relationship, it's just that later the prime lending rate will have an influence on the margins taken by Islamic banks. The higher the SBDK, the higher the margin taken by Islamic banks, this will cause a decrease in the amount of financing disbursed to MSMEs. Based on the description above, the relationship between the BI Rate and MSME credit and financing is negative, so the following hypothesis is obtained:

H_{4a}= BI Rate has a significant negative effect on Conventional Bank Credit to MSMEs

H_{4b}= BI Rate has a significant negative effect on Islamic Bank Financing for MSMEs

Inflation

Based on Yuliadi (2008), inflation is an economic phenomenon relating to the non-economic and economic dimensions, such as social, political, and socio-cultural aspects. The most used indicator in measuring inflation is Consumer Price Index (CPI). The connection between inflation related to credit growth and MSMEs financing is that as inflation is higher, credit growth and MSMEs financing decrease. Pohan (2008) also explained that high inflation affects the amount of credit disbursed, because people prefer to spend their assets in the real sector so that people will raise funds at banks a little and have an impact on lending and financing to MSMEs. . Based on the description above, the relationship between inflation and MSME credit and financing is negative so that the following hypothesis is obtained:

H_{5a}= inflation has a significant negative effect on Conventional Bank Credit to MSMEs

H_{5b}= inflation has a significant negative effect on Islamic Bank Financing for MSMEs

Research Framework

It describes and conceptualizes the approach to answer the research questions in a visual framework. Here is an example of the research framework that the author should optionally include in the paper.

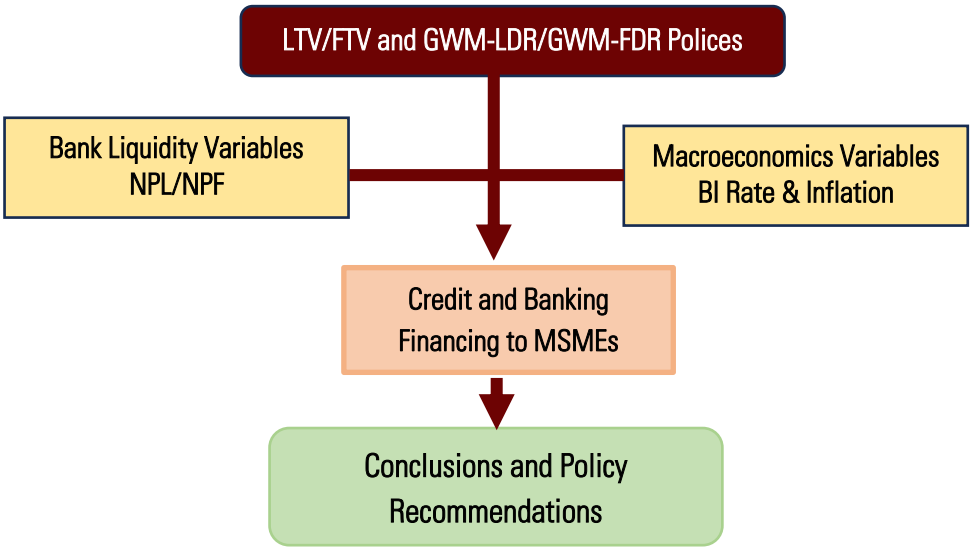

Figure 1
Research Framework

METHODOLOGY

The research employed a quantitative approach, using Vector Auto-Regressive (VAR)/Vector Error Correction Model (VECM) method to analyze the impacts of LTV/FTV, GWM-LDR/GWM-FDR, NPL/NPF, BI Rate, and Inflation on credit growth and MSMEs financing and utilizing EVIEWS10 as software to manage such data. The type of data used in the research was secondary data. Data were obtained from Bank Indonesia and the Financial Services Authority. The secondary data was monthly time-series data, starting from January 2010 up to July 2020. In this research, the variables of LTV/FTV, GWM-LDR/GWM-FDR, NPL/NPF, BI Rate, Inflation, Credit Growth, and MSMEs Financing were used.

The testing of data analysis used Vector Auto-Regressive /Vector Error Correction Model (VECM). The VAR model is an equation system, showing each variable as a linear function from constant and lag value, sourced from such variable, and the existing lag value of other variables within the system.

We also employ a Stationary Test, Optimal Lag Test, Granger Causality Test, and Cointegration Test for VAR/VECM model estimation.

VAR/VECM Model Estimation

The test is predicting test from the data/time-series variable, which is connected and used to the dynamic impact, owned by a variable. In the VAR method, it can observe a movement/trend of the observed data, so a prediction can be performed. If there is cointegrate among variables, the used model is Vector Error Correction Model (VECM). The VECM test is used to know the short-term relationship between variables to the long-term relationship using lag residual from the cointegrated regression (Ajija, 2011).

RESULT AND DISCUSSION

Data Stationarity Test

In this research, the stationarity test used was the Augmented Dickey-Fuller (ADF) test, initiated by formal testing by performing the unit-root test. The Augmented Dickey-Fuller (ADF) test was employed to test normal data, where the movement of such data was smooth. The results of the data stationarity test of conventional and Sharia banks to MSMEs are as follows:

Conventional Bank to MSMEs

The following table displays the stationarity test on the data of conventional banks to MSMEs.

Table 1
Results of ADF Stationarity Test of Conventional Bank to MSMEs in the First Difference Level

Variables	ADF	
	T-Statistic	Prob.
Credit	-11,73167	0,0000***
LTV	-11,12023	0,0000***
GWM-LDR	-11,09054	0,0000***
NPL	-9,719806	0,0000***
BI Rate	-7,191849	0,0000***
Inflation	-8,351657	0,0000***
Test Critical Values		
1% Level		-3,483751
5% Level		-2,884856
10% Level		-2,579282

Note: * shows the stationer data at the level of 10%
** shows the stationer data at the level of 5%
*** shows the stationer data at the level of 1%
Source: Results of Data Analysis by Eviews10

The results of the stationarity test in the first of conventional banks to MSMEs had a smaller value of t-statistic than critical values, so the data was a stationer at a difference level show that all variables in the data

Table 2
Results of Stationarity Test of Sharia Bank to MSMEs in the Second Difference Level

Variables	ADF	
	T-Statistic	Prob.
Financing	-6,041248	0,0000***
FTV	-10,86278	0,0000***
GWM-FDR	-10,86278	0,0000***
NPF	-9,896622	0,0000***
BI Rate	-17,11416	0,0000***
Inflation	-9,286401	0,0000***
Test Critical Values		
1% Level	-3,483751	
5% Level	-2,884856	
10% Level	-2,579282	

Note: * shows the stationer data at the level of 10%
** shows the stationer data at the level of 5%
*** shows the stationer data at the level of 1%
Source: Results of Data Analysis by Eviews10

Sharia Bank to MSMEs

Table 2 is the results of the stationarity test from the data of Sharia banks to MSMEs in the second difference level.

The above table displays that, in the second difference level, the data of Sharia bank to MSMEs using the Augmented Dickey-Fuller (ADF) method in all variables had been stationer due to a smaller value of t-statistic than critical values with the reliability of 5%.

Optimal Lag Test

The optimal lag test was used to mitigate the occurrence of autocorrelation in the analyzed data. The measure used in determining the optimal lag was by viewing the smallest value of LR, FPE, AIC, SC, and HQ

Conventional Bank to MSMEs

The following table is the results of the optimal lag test from the data of conventional banks to MSMEs, as follows:

Table 3
Results of Optimal Lag Test
from Conventional Bank to MSMEs

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-2429.935	NA	3.43	41.28	41.42*	41.34*
1	-2387.327	80.16*	3.07*	41.17*	42.16	41.57
2	-2369.913	30.98	4.23	41.49	43.32	42.23
3	-2359.892	16.81	6.65	41.93	44.60	43.01
4	-2347.883	18.92	1.02	42.33	45.85	43.76
5	-2325.380	33.18	1.33	42.56	46.93	44.33
6	-2294.465	42.44	1.53	42.65	47.86	44.76
7	-2276.372	22.99	2.25	42.95	49.01	45.41
8	-2252.142	28.33	3.06	43.15	50.05	45.95

**LR: Likelihood Ratio, *FPE: Final Prediction Error, *AIC: Akaike Information Criterion, *SIC: Schwarz Information Criterion, *HQ : Hannan-Quinn Information Criterion*

Source: Results of Data Analysis by Eviews10

Viewed from the asterisk in the above table, it can be stated that the data of conventional banks to MSMEs in the optimal lag test depicted the smallest value of each indicator. The smallest value of the LR indicator was in lag 1, where the value result was 80,16196, and the PFE was in lag 1 by the value of 3,07e+10. Followingly, the value in both SC and HQ indicators was in the lag 0 by the value of 41,42792 and 41,34424, respectively. However, the value in the AIC indicator was in the lag 1, where the smallest value was 41,17503. In addition, lag 1 was selected as the optimal lag in the optimal lag test from the data of conventional banks to MSMEs since the asterisks were mostly found in lag 1. Thus, it can be concluded that when the shock occurred in one variable, it would be responded to other variables within the pause of one period.

Sharia Bank to MSMEs

The following table is the results of the optimal lag test on the data of Sharia banks to MSMEs, as follows:

Table 4
Results of Optimal Lag Test
from Sharia Bank to MSMEs

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-2116.733	NA	2.31	36.28	36.42	36.34
1	-2021.914	178.29	8466	35.28	36.27	35.68
2	-1920.292	180.66	2770	34.15	36.00*	34.90*
3	-1890.712	49.55	3128	34.26	36.95	35.36
4	-1852.498	60.09	3081	34.23	37.77	35.66
5	-1805.066	69.72*	2631*	34.03*	38.42	35.81
6	-1770.154	47.74	2838	34.05	39.29	36.18
7	-1748.518	27.36	3937	34.29	40.39	36.77
8	-1724.916	27.43	5448	34.51	41.45	37.32

**LR: Likelihood Ratio, *FPE: Final Prediction Error, *AIC: Akaike Information Criterion, *SIC: Schwarz Information Criterion, *HQ: Hannan-Quinn Information Criterion*

Source: Results of Data Analysis by Eviews10

Based on the above table, it demonstrates that the results of the optimal lag test from the data of Sharia bank to MSMEs showed a smaller value of each indicator. The smallest value in the LR indicator was in the lag 5 by the value of 69,72960, and the value in the FPE indicator was in the lag 5 by the value of 26,317748. Subsequently, the value

of both SC and HQ indicators was in lag 2, where the smallest value was 36,0002 and 34,90644, respectively. However, the value in the AIC indicator was in lag 5, by the smallest value of 34,03531. Thus, lag 5 was selected as the optimal lag in the optimal lag test from the data of Sharia bank to MSMEs. It can be concluded that there was a shock in one variable, so other variables would respond in the pause of 5 periods.

Granger Causality Test

The test was used to know whether the overall relationship direction of the variable, either one way, two-ways, or not available or not. In viewing the relationship of variable, it could be seen from the value of each probability with the optimal lag, and the significant value was 1%, 5% dan 10%.

Conventional Bank to MSMEs

The following table is the results of the Granger Causality Test from the data of conventional banks to MMEs, as follows:

Table 5

Results of Granger Causality Test on Conventional Bank to MSMEs

Null Hypothesis:	Obs	Prob.	Test Results
LTV does not Granger Cause CREDIT	125	0.9826	Accepted H0
CREDIT does not Granger Cause LTV		0.7259	Accepted H0
GWM_LDR does not Granger Cause CREDIT	125	0.9962	Accepted H0
CREDIT does not Granger Cause GWM_LDR		0.1029	Accepted H0
NPL does not Granger Cause CREDIT	125	0.0010*	Rejected H0
CREDIT does not Granger Cause NPL		0.0000*	Rejected H0
BI RATE does not Granger Cause KREDIT	125	0.7467	Accepted H0
CREDIT does not Granger Cause BI RATE		0.3421	Accepted H0
INFLATION does not Granger Cause CREDIT	125	0.0994	Accepted H0
CREDIT does not Granger Cause INFLATION		0.3689	Accepted H0

*= Probability Value < Significance Value of 1%, 5% and 10%

Source: Results of Data Analysis by Eviews10

According to the results of the Granger causality test above, it depicts that there was two-ways causality between the variable of Non-Performing Loan (NPL) and credit. It was proven by viewing the probability value of the F-statistic, which was 0,0010 < 0,005. Meanwhile, other variables were independent or not mutually influencing.

Sharia Bank to MSMEs

The following table is the results of the Granger Causality test in the data of Sharia banks to MSMEs, as follows:

Table 6

Results of Granger Causality Test on Sharia Bank to MSMEs

Null Hypothesis:	Obs	Prob.	Test Results
FTV does not Granger Cause FINANCING	122	0.1208	Accepted H0
FINANCING does not Granger Cause FTV		0.6984	Accepted H0
GWM_LDR does not Granger Cause FINANCING	122	0.6720	Accepted H0
FINANCING does not Granger Cause GWM_FDR		0.7797	Accepted H0
NPF does not Granger Cause FINANCING	122	0.0095*	Rejected H0
FINANCING does not Granger Cause NPF		0.2064	Accepted H0

BI RATE does not Granger Cause FINANCING	122	0.0002*	Rejected H0
FINANCING does not Granger Cause BI RATE		0.2575	Accepted H0
INFLATION does not Granger Cause FINANCING	122	0.0282*	Rejected H0
FINANCING does not Granger Cause INFLATION		0.2846	Accepted H0

*= Probability Value < Significance Value of 1%, 5% and 10%

Source: Results of Data Analysis by Eviews10

Based on the results of the Granger causality test in the data of Sharia bank, it demonstrates that there was a one-way relationship among variables of Non-Performing Financing (NPF), BI Rate, and Inflation to financing. It was proven by viewing the probability value of the F-statistic, which was < 0,005. Additionally, other variables were independent or not mutually influencing.

VAR Stability Test

The testing was used to test the stability of the VAR model, whether it was stable or not. Then, the VAR model could be stable if the modulus value was < 1

Conventional Bank to MSMEs

The following table is the results of the VAR stability test in the data of Conventional Bank to MSMEs, as follows:

Table 7
Results of VAR Stability Test on Conventional Bank to MSMEs

Root	Modulus
0.602348	0.602348*
-0.350094 - 0.396195i	0.528712*
-0.350094 + 0.396195i	0.528712*
0.157647 - 0.467718i	0.493572*
0.157647 + 0.467718i	0.493572*
0.230537 - 0.334470i	0.406223*
0.230537 + 0.334470i	0.406223*
-0.275322	0.275322*
-0.018260 - 0.272887i	0.273497*
-0.018260 + 0.272887i	0.273497*
0.004853 - 0.113768i	0.113871*
0.004853 + 0.113768i	0.113871*

No root lies outside the unit circle. VAR satisfies the stability condition. **Modulus Value < 1*

Source: Results of Data Analysis of Eviews10

Based on the testing results, it can be known that none of the modulus values was more than one. Thus, the results show that the established VAR model was stable.

Sharia Bank to MSMEs

The following table is the results of the VAR stability test in the data of Sharia bank to MSMEs, as follows:

Table 8
Results of VAR Stability Test on Sharia Bank to MSMEs

Root	Modulus
-0.465510 - 0.722736i	0.859678
-0.465510 + 0.722736i	0.859678
-0.296746 - 0.585921i	0.656782
-0.296746 + 0.585921i	0.656782
-0.102573 - 0.597940i	0.606674
-0.102573 + 0.597940i	0.606674
-0.327825 - 0.477327i	0.579060
-0.327825 + 0.477327i	0.579060
-0.153684 - 0.534060i	0.555732
-0.153684 + 0.534060i	0.555732
-0.479120 - 0.235345i	0.533801
-0.479120 + 0.235345i	0.533801

No root lies outside the unit circle. VAR satisfies the stability condition. **Modulus value < 1*

Source: Results of Data Analysis by Eviews10

According to the testing results above, it can be known that none of the modulus values was more than one. Thus, the results depict that the established VAR model was stable.

Cointegration Test

The testing was employed to know the relationship equilibrium between some variables in the long term. Also, the cointegration test was determinant of whether the researcher used VAR or VECM in

estimating the model or not. It was performed by comparing the value of Trace Statistic and Maximum Eigenvalue and Critical Value at α of 5%. Further, it viewed the probability value, showing whether cointegration was in variable or not. If the value of Trace Statistic and Maximum Eigenvalue was < Critical Value, none of the cointegrated variables was available. Hence, the model estimation used was the VAR model. Subsequently, if the value of Trace Statistic and Maximum Eigenvalue was > Critical Value, there was the cointegrated variable relationship, so the model estimation employed was the VECM model.

Conventional Bank to MSMEs

The following table is the results of the cointegration test of the conventional banks to MSMEs, as follows:

Table 9

Results of Cointegration Test on Conventional Bank to MSMEs

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
r=0	0.568286	342.7927	83.93712	0.0000
r≤1	0.413303	238.6337	60.06141	0.0000
r≤2	0.342248	172.5111	40.17493	0.0000

Trace test indicates 6 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
r=0	0.568286	104.1590	36.63019	0.0000
r≤1	0.413303	66.12267	30.43961	0.0000
r≤2	0.342248	51.94700	24.15921	0.0000

Max-eigenvalue test indicates 6 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Source: Results of Data Analysis by Eviews10

Based on the results of the cointegration test above, it displays that the value of Trace Statistic, which was 342.7927, was > Critical Value at α of 5%, which was 83.93712. Then, it can be concluded that there was cointegration in the formed equation. Also, the testing of Maximum Eigenvalue Statistic, in which the value was 104.1590, was > Critical Value at α of 5% as of 36.63019. It explains that there was cointegration in the data of conventional banks to MSMEs.

Sharia Bank to MSMEs

The following table is the results of the cointegration test of Sharia banks to MSMEs, as follows:

Table 10
Results of Cointegration Test on Sharia Bank to MSMEs

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
r=0	0.579927	417.4757	83.93712	0.0001
r≤1	0.503375	312.5291	60.06141	0.0001
r≤2	0.478310	227.8386	40.17493	0.0001

Trace test indicates 6 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
r=0	0.579927	104.9466	36.63019	0.0000
r≤1	0.503375	84.69045	30.43961	0.0000
r≤2	0.478310	78.73255	24.15921	0.0000

Max-eigenvalue test indicates 6 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Source: Results of Data Analysis by Eviews10

According to the results of the cointegration test above, it shows that the value of Trace Statistic by the value of 417.4757 was > Critical Value at α of 5%, which was 83.93712. Thus, it can be concluded that there was cointegration in the established equation. Then, the testing of Maximum Eigenvalue Statistic, in which the value was 104.9466, was > Critical Value at α of 5%, by the value of 36.63019. This states that there was cointegration in the data of Sharia banks to MSMEs.

VECM Estimation

The results of VECM analysis for the model of conventional and Sharia banks show that there was a short- and long-term relationship in each variable. While the results of VECM estimation are presented in the following table, as follows:

Conventional Bank to MSMEs

The following table is the results of the long-term VECM estimation in the conventional banks to MSMEs, as follows:

Table 11
Results of Long-Term Estimation on Credit Distribution of Conventional Bank to MSMEs

Variables	Coefficient	T-Statistic
D(LTV(-1))	-30421,25	-0,69521
D(GWM_LDR(-1))	-25557,81	-0,48944
D(NPL(-1))	-3464,631	-7,17435
D(BIRATE(-1))	-4143,096	-0,16327
D(INFLASI(-1))	-6012,007	-0,59654

**T-Table = 1,980992298 and – 1,980992298*

Source: Results of Data Analysis by Eviews10

According to the results of the VECM estimation in the long-term, it can be noticed that only one variable had a significantly negative impact on the long-term credit distribution, such as the variable of Non-Performing Loan (NPL), by the value of T-Statistic was -7,17435 and it was < T-Table -1,980992298. It means that H0 was rejected. If Non-Performing Loan (NPL) increased by 1%, the credit distribution would decrease to 34,64%. In

addition, in other variables, none of the significant impacts was available on the credit distribution. Therefore, the long-term credit distribution of conventional banks to MSMEs only affected the variable of bank liquidity. The following table is the results of the short-term VECM estimation, as follows:

Table 12
Results of Short-Term Estimation on Credit Distribution of Conventional Bank to MSMEs

Variables	Coefficient	T-Statistic
D(LTV(-1),2)	-8572,030	-0,28894
D(LTV(-2),2)	12313,11	0,41132
D(GWM_LDR(-1),2)	-15905,51	-0,43572
D(GWM_LDR(-2),2)	-13681,42	-0,37620
D(NPL(-1),2)	-11966,87	-2,51666
D(NPL(-2),2)	-7283,344	-2,48448
D(BIRATE(-1),2)	-4177,531	-0,01498
D(BIRATE(-2),2)	-3640,182	-0,13076
D(INFLATION(-1),2)	-4333,953	-0,55894
D(INFLATION(-2),2)	-12040,22	-1,55355
C	-3599,576	-0,07013

**T-Table = 1,980992298 and – 1,980992298*

Source: Results of Data Analysis by Eviews10

According to the results of the short-term VCEM estimation, it can be known that only one variable had a significantly negative impact on the short-term credit distribution, performed by conventional banking, such as Non-Performing Loan (NPL). It was due to the value of the T-Statistic was < T-Table. It means that H0 was rejected. If Non-Performing Loan (NPL) increased by 1%, the credit distribution to MSMEs would decrease to 11,96% in the first year of the previous period, and 72,83% in the two years of the previous period. Therefore, the short-term credit distribution of conventional banking to MSMEs only affected the variable of bank liquidity.

Sharia Bank to MSMEs

The following table is the results of the long-term VECM estimation of Sharia banks to MSMEs, as follows:

Table 13
Results of Long-Term Estimation on Financing Distribution of Sharia Bank to MSMEs

Variables	Coefficient	T-Statistic
D(D(FTV(-1)))	-1141,958	-0,45110
D(D(GWM_FDR(-1)))	11758,36	3,97025
D(D(NPF(-1)))	2739,157	3,08998
D(D(BIRATE(-1)))	7344,093	4,05949
D(D(INFLATION(-1)))	-3005,046	-5,24870

**T-Table 1,986086317 and -1,986086317*

Source: Results of Data Analysis by Eviews10

According to the results of the long-term VCEM estimation, it can be known that only one variable had a significant impact on the long-term financing distribution, such as Financing To Value (FTV), where the value of T-Statistic was -0,45110, or it was > T-Table -1,986086317. However, other variables, such as Statutory Reserves based on the Loan to Deposit Ratio (GWM-LDR), Non-Performing Financing (NPF), and BI Rate, had a significantly positive impact on the long-term financing distribution, and Inflation had a negative impact on the long-term financing distribution, where the value of T-Statistic was < T-Table. If the firmness of Statutory Reserves based on the Loan to Deposit Ratio (GWM-LDR) policy was performed at 1%, the financing distribution of Sharia banks to MSMEs would increase to 11,75%. For the variable of Non-Performing Financing (NPF), if it was increased by 1%, the financing distribution of Sharia banks to MSMEs would increase by 27,39%. While, in BI Rate, if it increased, the financing distribution of Sharia banks to MSMEs would increase to 73,44%. Additionally, if inflation increased at 1%, the financing distribution of Sharia banks to MSMEs would increase by 30,55% in the long-term. Therefore, in the long-term financing distribution of Sharia banks to MSMEs, it affected the variable of either macroeconomy or macroprudential. The following table is the results of the short-term VCEM estimation of Sharia banks to MSMEs.

Table 14
Results of Short-Term Estimation on Financing Distribution of Sharia Bank to MSMEs

Variables	Coefficient	T-Statistic	Variables	Coefficient	T-Statistic
D(D(FTV(-1)),2)	-7052,589	-0,54382	D(D(NPF(-3)),2)	0,273137	0,33701
D(D(FTV(-2)),2)	-2547,159	-1,32222	D(D(NPF(-4)),2)	-0,428805	-0,82169
D(D(FTV(-3)),2)	-3510,317	-1,81793	D(D(BIRATE(-1)),2)	2939,679	1,22490
D(D(FTV(-4)),2)	-1034,963	-0,79534	D(D(BIRATE(-2)),2)	1179,516	0,48850
D(D(GWM_FDR(-1)),2)	11244,99	3,24246	D(D(BIRATE(-3)),2)	-6663,739	-0,31543
D(D(GWM_FDR(-2)),2)	9595,452	2,99764	D(D(BIRATE(-4)),2)	-1628,457	-1,20611
D(D(GWM_FDR(-3)),2)	6104,593	2,32523	D(D(INFLATION (-1)),2)	-3086,798	-3,64857
D(D(GWM_FDR(-4)),2)	2250,633	1,40550	D(D(INFLATION (-2)),2)	-2385,798	-3,24157
D(D(NPF(-1)),2)	3081,097	3,73911	D(D(INFLATION (-3)),2)	-1893,577	-3,48633
D(D(NPF(-2)),2)	2331,491	2,69930	D(D(INFLATION(-4)),2)	-8635,877	-2,27683
			C	-3595,370	-0,14127

*T-Table 1,986086317 and -1,986086317 Source: Results of Data Analysis by Eviews10

According to the estimating results of the short-term VECM in Sharia banks to MSMEs, it can be known that the variable of Statutory Reserves based on Financing to Deposit Ratio (GWM-FDR) had a significantly positive impact on the financing distribution of Sharia banks to MSMEs for the period of four previous years. Further, the variable of Non-Performing Financing (NPF) for two previous periods had a positive impact on the financing distribution of Sharia banks to MSMEs. Additionally, the variable of inflation had a significantly negative impact on the financing distribution of Sharia banks in the short term. Therefore, the estimating results of the short-term VECM in the data of Sharia banks, such as macro-economy and liquidity, had a short-term impact on financing distribution.

Discussion of Quantitative and Qualitative Type Firmness Impact on Loan to Value (LTV) Policy to Credit of Conventional Bank to MSMEs.

Loan to Value (LTV) is a ratio between credit values provided by Commercial Bank or Sharia Commercial Bank to collateral value at the beginning of credit opening (Siravati, 2017). LTV is the most used instrument in both credit and liquidity issues, and it is the policy of the conventional bank. The objective of LTV firmness is to press credit distribution to MSMEs so it is not too big.

The first hypothesis (H1a) argues that the firmness of LTV policy had impacts or negative relationships to credit. As the firmness of LTV policy was performed, credit distribution of conventional banks to MSMEs had been able to decrease. It was proven from the results of IRF testing, describing negative credit response to LTV. In the initial period, decreasing occurred and started to be stable in the 10th period. However, viewed from the results of VECM testing, either short- or long-term, it had no significant impact. It means that the results had not been in line with the first hypothesis, in which the firmness of LTV policy had been able to press total credit distribution to MSMEs. Then, it can be concluded that H1a was rejected due to the inability of LTV in pressing down credit distribution when the COVID-19 pandemic occurred at the beginning of March 2020, so the occurrence of shock forced to lose the macroprudential policy.

Firmness Impact on Financing to Value (FTV) Policy to Financing of Sharia Bank to MSMEs.

In the first hypothesis (H1b), the model of financing distribution of Sharia banks to MSMEs states that

the policy firmness had a negative impact or relationship to financing. When the firmness of the FTV policy was conducted, financing distribution had not been able to decrease. Also, it is proven by the results of IRF testing describing the variable's negative response of financing to FTV and zero value. Nonetheless, the results of short- and long-term VECM estimation had no impact on financing distribution. It was in line with the first hypothesis stating it had a negative impact. Thus, it can be concluded that H1b was rejected. Similarly, it was in line with credit distribution, where FTV policy had not also been able to provide broader impacts on financing distribution to MSMEs.

Firmness Impact on GWM-LDR Policy to Credit of Conventional Bank to MSMEs.

Based on the second hypothesis (H2a), for the conventional banks, it states that the policy firmness had an impact or negative relationship to credit. As it was performed, the firmness of GWM-LDR policy and credit distribution had not been able to decrease. However, the results of IRF testing provided positive results and approached zero. Further, the results of short- and long-term VECM prediction had no significant impact on credit distribution to MSMEs. It means that the results of some tests indicated the firmness of the GWM-LDR policy, having not been able to press credit distribution of conventional banks to MSMEs. It, then, can be concluded that H2a was rejected. It was due to some shocks, such as the COvID-19 pandemic forcing Bank Indonesia to be more prudent in making policy to maintain financial stability, so the loosening policy was performed.

Firmness Impact on GWM-FDR Policy to Financing of Sharia Bank to MSMEs.

Based on the second hypothesis (H2b), for Sharia banks, it argues that the policy firmness had an impact or positive relationship to financing. As the firmness of the GWM-FDR policy was performed, financing distribution had not been able to decrease. However, the IRF testing obtained negative results and approached zero. It was different from the results of short- and long-term VECM estimation. Within the long term, if the firmness of Statutory Reserves based on the Loan to Deposit Ratio (GWM-LDR) policy was performed as of 1%, the financing distribution of Sharia banks to MSMEs would increase to 11,75%. While, in the short-term, the firmness of Statutory Reserves based on the Financing to Deposit Ratio (GWM-FDR) policy had a significantly positive impact on the financing distribution of Sharia banks to MSMEs for the 4 previously period. Shortly, the results of some tests indicated that the firmness of the GWM-FDR policy had been able to press financing distribution of Sharia banks to MSMEs. It can be concluded that H2b was rejected since some shocks occurred, so the loosening policy was conducted to maintain financial stability.

Non-Performing Loan (NPL) Impact on Credit of Conventional Bank to MSMEs.

Further, the third hypothesis (H3a) shows that Non-Performing Loan (NPL) had a negative impact on the credit distribution of conventional banks to MSMEs. Viewing some results of testing, it depicts that the hypothesis of H3a regarding NPL impact on credit distribution of conventional banks to MSMEs was accepted. It can be proven from VECM testing showing significantly negative impact in the short- and long-term during the period of two previous years. Therefore, the results of some tests indicate that the amount of Non-Performing Loan (NPL) had been able to press total credit distribution of conventional banks to MSMEs.

Non-Performing Financing (NPF) Impact on Financing of Sharia Bank to MSMEs

Based on the third hypothesis (H3b), it shows that Non-Performing Financing (NPF) had a negative impact on the financing distribution of Sharia banks to MSMEs. Viewed from the results of some tests, the hypothesis of H3b regarding NPF impact on

financing distribution of Sharia banks to MSMEs was rejected. It is proven from the VECM testing showing a significantly positive impact on the short- and long-term during the period of two previous years. Thus, the results of some tests indicate that the amount of Non-Performing Financing (NPF) had not been able to press total financing distribution of Sharia banks to MSMEs due to the occurrence of some shocks, so the loosening policy was performed to maintain the financial stability.

BI Rate Impact on Credit of Conventional Bank to MSMEs.

Based on the fourth hypothesis (H4b), for the conventional bank, it argues that BI Rate showed a negative relationship to credit distribution of conventional banks to MSMEs. Thus, as BI Rate increased, credit distribution to MSMEs decreased. However, viewed from some results of testing, such as IRF testing showing negative responses to credit distribution, it differed from VECM prediction, displaying no relationship or short- and long-term impact. It means that the results of some tests indicated BI Rate having not been able to press total credit distribution of conventional bank to MSMEs, so H4a was rejected. It was due to shock, so the value of BI Rate was fluctuated and impacted on the value of credit distribution.

BI Rate Impact on Financing of Sharia Bank to MSMEs.

Based on the fourth hypothesis (H4b) for Sharia banks, it states that the BI Rate showed a negative relationship to the financing relationship of Sharia banks to MSMEs. Thus, as BI Rate increased, financing distribution to MSMEs decreased. However, viewed from some results of tests, such as IRF testing, showing a negative response to financing distribution, it was different from VECM estimation, depicting a positive impact or relationship in the long term. It means that the results of some tests indicated BI Rate had not been able to press total financing distribution of Sharia bank to MSMEs, so H4b was rejected. It was due to shock, so the value of the BI Rate fluctuated and impacted the value of financing distribution.

Inflation Impacts on Credit of Conventional Bank to MSMEs.

Based on the fifth hypothesis (H5a) for the conventional bank, it states that inflation depicted a negative relationship to credit distribution of conventional banks to MSMEs. Then, as inflation hiked up, credit distribution to MSMEs went down. Nonetheless, if viewed from some results of IRF testing, showing a negative response to credit distribution, it was different from VECM estimation, depicting no relationship or short- and long-term impacts. In short, the results of some tests argue that inflation had not been able to press credit distribution of conventional banks to MSMEs, so H5a was rejected. It was due to the pandemic, forcing banking to improve its credit distribution, though inflation increased.

Inflation Impact on the financing of Sharia Bank to MSMEs

According to the fifth hypothesis (H5b) for the conventional bank, it states that inflation showed a negative relationship to the financing distribution of Sharia banks to MSMEs. Thus, as inflation increased, financing distribution to MSMEs decreased. However, viewing some results of testing, such as IRF testing results showing a positive response to financing distribution, this situation differed from VECM prediction, showing a negative relationship or short- and long-term impacts. It means that the results of some tests indicated inflation as having been able to press total financing distribution of Sharia bank to MSMEs, so H5b was accepted.

CONCLUSION AND RECOMMENDATION

Based on the results of the research using the Vector Error Correction Model (VECM) method and

the discussion having been explained in chapter IV, the conclusion is as follows:

Macroprudential policy in the firmness of Loan to Value (LTV) does not affect or has a negative relationship with the credit distribution of conventional banks to MSMEs. The results of some tests depict that credit response to shock from the firmness of Loan to Value (LTV) has been negative and it has no both short- and long-term impacts. It, then, suggests that the Loan to Value (LTV) policy has not been able to press credit distribution of conventional banks to MSMEs. While, in the macroprudential policy, the firmness of Financing to Value (FTV) has no impact or it was negative impacts on the financing distribution of Sharia banks to MSMEs. The results of some tests demonstrate that financing response to shock from the firmness of Financing to Value (FTV) has been negative, and it has no both short- and long-term impacts. This statement explains that the Financing to Value (FTV) policy has not been able to press financing distribution of Sharia banks to MSMEs.

The Macroprudential policy in the firmness of Statutory Reserves based on Loan to Deposit Ratio (GWM-LDR) has been no impact, or it was a negative impact on the credit distribution of conventional banks to MSMEs. Some tests display that credit response to shock from the firmness of Statutory Reserves based on Loan to Deposit Ratio (GWM-LDR) has been negative. It describes that the policy of Statutory Reserves based on the Loan to Deposit Ratio (GWM-LDR) has not been able to press credit distribution of conventional banks to MSMEs. Additionally, in the Macroprudential policy, the firmness of Statutory Reserves based on the Financing to Deposit Ratio (GWM-FDR) has provided impacts, or it was a positive impact on the financing distribution of Sharia banks to MSMEs. Then, the results of some tests demonstrate that financing response to shock from the firmness of Statutory Reserves based on Financing to Deposit Ratio (GWM-FDR) has been negative, and it has short- and long-term impacts. It argues that the policy of Statutory Reserves based on Financing to Deposit Ratio (GWM-FDR) has not been able to press financing distribution of Sharia banks to MSMEs.

In the variable of bank liquidity, such as Non-Performing Loan (NPL), it has been able to press credit distribution of conventional banks to MSMEs. It is proven by the acceptance of the H3a hypothesis and some results of testing having been performed. Contrastingly, the Non-Performing Financing (NPF) has not been able to press financing distribution of Sharia banks to MSMEs. Thus, it is proven by the rejection of the H3b hypothesis and some results of testing having been performed.

The increase in BI Rate has had no significant impact on credit distribution of conventional banks or financing distribution of Sharia banks to MSMEs. It is proven by the rejection of the second hypothesis and some results of testing having been performed.

The increase in inflation has had no significant impact on the credit distribution of conventional banks to MSMEs. It is proven by the rejection of the H5a hypothesis and some results of testing having been performed. Different from the model

of Sharia bank, the increase of inflation has impacted financing distribution to MSMEs, as proven by the acceptance of the H5b hypothesis.

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