CHAPTER IV

RESULT AND ANALYSIS

A. Causality Test and Data Instruments

1. Unit Root test

The VECM estimation has to pass is testing the data stationarity of each variable in initial process. The stationary data is needed to influence the results of VECM estimation testing. Regression equations with variables that are not stationary, will produce so called *spurious refression* (Winarno, 2015). In this study, to detect stationary or not each variable data, the ADF (Augmented Dickey Fuller) test will used the intercept model. Data sets are declared stationary if the average values and variants of the time series data do not change systematically over time, or the averages and their variants are constant (Rosadi, 2012). The ADF stationary test for each variable can be indicated by the follow:

Table 4.1

Unit Root Test-Augmented Dickey Fuller (Level)

Variable	T-Statistic	Mackinnon Critical value			Prob	Conclussion
		1%	5%	10%		
FDR	-1.011989	-3.495021	-2.889753	-2.581890	0.7440	Non Stationary
NPF	-1.55662	-3.497029	-2.890623	-2582353	0.5009	Non Stationary
BOPO	-1.786319	-3.495021	-2.889753	-2.58189	0.3854	Non Stationary

Sources: Author's Calculation

At the Level there is no single variable that meets Stationary requirements, neither from *Financing to Deposit Ratio* (FDR), *Non Performing Financing* (NPF) and *The Operating Expenses to Operating Revenue* (BOPO). It is indicated by the value of t-ADF which is greater than the critical value of Mackinnon, so it is necessary to test at the First Difference level shown in table 4.2 below:

Table 4.2

Unit Root Test-Augmented Dickey Fuller (First Difference)

Variable	T-Statistic	Mackinnon Critical value			Prob	Conclussion
		1%	5%	10%		
FDR	-11.55782	-3.495677	-2.890037	-2.582041	0.0000	Stationary
NPF	-4.724193	-3.497029	-2.890623	-2.582353	0.0002	Stationary
BOPO	-11.03276	-3.495677	-2.890037	-2.582041	0.0000	Stationary

Sources: Author's Calculation

Based on the results of the table 4.2, it can be concluded thet al variables used in this study are stationary at the level (*First Difference*) with a predetermined critical value ($\alpha = 5\%$). It can be known from each variable:

a. The FDR variable in the *First Difference* level test shows that the ADF t-statistic value is smaller than the *MacKinnon Critical Value* 5 percent (in this study used that is α 0.05) which is -11.55782 <-2.890037 which means, H_0 is rejected and H_1 is accepted or with the word other, the FDR variable data is stationary.

b. The NPF variable in the *First Difference* level test shows that the ADF t-statistic value is smaller than the *MacKinnon Critical Value* 5 percent (in this study used that is α 0.05) which is -4.724193 <-2.890623 which means, H_0 is rejected and H_1 is accepted or with the word another, the NPF Variable data is stationary.

c. The BOPO variable at the First Difference level test shows that the ADF t-statistic value is smaller than the MacKinnon Critical Value 5 percent (in this study used that is α 0.05) which is -11.03276 <-2.890037 which means, H_0 is rejected and H_1 is accepted other, the BOPO Variable data is stationary.

From the above tests all variables have met the requirements of the ADF test data stationary, ADF t-statistics are smaller than the Mc Kinnon Critical Value 5 percent at the First Difference level. Therefore, the next step can be done in estimating VECM, which is the determination of Optimal Lag length.

2. Lag Length Criteria.

The lag length is used to determine the effect of the time taken from each variable on the past variable. The selected lag candidates are the length of lag according to the *likelihood ratio* Criteria (LR), *Final Prediction error* (PPE), *Akaike Information Crition* (AIC), *Schwarz Information Crition* (SC) and *Hannah Quin Crition* (HQ). The determination of the optimal lag length in this study is based on the sequential modified LR test statistical criteria. The lag length that was included included in this study is from 0 to 3.

Table 4.3

Lag Length Criteria

Lag	LogL	LR	FPE	AIC
0	-502.5902	NA	4.943996	10.11180
1	-491.1235	22.01603	4.706602	10.06247
2	-479.1256	22.31603	4.435183	10.00251
3	-465.3591	24.77971*	4.037246*	9.907182*

Sources: Author's Calculation

Based on Table 4.3 it can be seen that the optimal lag on all variables both from FDR, NPF and BOPO is in lag 3. That is with the sequential modified LR test statistic 24.77971, PPE 4.037246 and AIC 9.907182. Therefore, the optimal lag has been determined, the next stage of testing can be carried out, namely the VECM stability test.

3. Stability VAR Model Test.

The stability test of the VAR model was used to test IRF (Impulse Response Function) and VCD (Variance Dc compotitions). The stability test for VAR estimation can be seen in table 4.4 below:

Table 4.4

Test of VAR Stability

Root	Moduls
0.165181 - 0.446285i	0.475873
0.165181 + 0.446285i	0.475873
-0.239743 - 0.404530i	0.470235
-0.239743 + 0.404530i	0.470235
-0.239164 - 0.036076i	0.241869
-0.239164 + 0.036076i	0.241869

Sources: Author's Calculation

Based on table 4.4, it can be explained that the model used is stable in lags of 0 to 3. This can be seen from the range of mosuls with an average value of less than one. Therefore, the results of the IRF (Impulse Response Function) and VDC (Variance Decomposition) analysis are valid, so that the granger causality test can be done.

4. Co-Integration Test.

The fourth stage that must be passed in the VECM estimation is cointegration testing. Cointegration tests are conducted to determine whether there is a long-term relationship on each variable because the estimation requirement of VECM is that there is a cointegration relationship in it. If there is no cointegration relationship, the VECM estimation cannot be used yet, must use the VAR (Vector Autoregression) model. This study uses the Johansen's Cointegration Test method available in Eviews 7.2 software with a Critical Value of 0.05. The cointegration test results are shown in table 4.5 as follows:

Table 4.5

Co-Integration Test

Hypothesized No. of CE(s)	Trace Static	Prob	Critical Value	Variable
None *	80.84738	0.0000	29.79707	FDR
At most 1 *	36.79544	0.0000	15.49471	NPF
At most 2 *	12.11161	0.0005	3.841466	BOPO

Sources: Author's Calculation

Based on table 4.5, it can be seen that at the 5 percent test level there are 3 ranks of cointegration variables. This can be proven from the value of trace static 80.84738, 36.79544, and 12.11161 which is greater than the Critical value of 0.05 namely 29.79707, 15.49471, 3.841466 which means, H_0 is rejected and H_1 is accepted. In other words, the variables used have an influence in the long term or have been cointegrated with each other. Therefore, VECM estimates in this study can already be used. The next step is to carry out the VECM stability test.

5. Vector Error Correction Model (VECM) Estimation

After testing process of the pre-estimation stage the Vector Error Correction Model will find out how short-term and long-term relationships and also how the variables affect each other. The variables of FDR, NPF, BOPO shows the significant effect on lag 3 in monthly data.

Table 4.6

Vector Error Correction Model (VECM) in Short-Term

	Variable	**Coefficient**	**t-Statistic Partial**
FDR	CointEq1	0.001081	[0.17523]
	D(FDR(-1))	-0.255421	[-2.50543]
	D(FDR(-2))	0.038103	[0.37947]
	D(FDR(-3))	0.271292	[2.86236]
	D(NPF(-1))	1.360963	[2.11235]
	D(NPF(-2))	-0.37662	[-0.59751]
	D(NPF(-3))	0.344605	[0.55659]
	D(BOPO(-1))	-0.207859	[-2.93623]
	D(BOPO(-2))	-0.223429	[-3.27360]
	D(BOPO(-3))	-0.01964	[-0.28727]
	C	-0.112072	[-0.60029]
NPF	**Variable**	**Coefficient**	**t-Statistic Partial**
	CointEq1	-0.197484	[-2.69286]
	D(NPF(-1))	-0.081274	[-0.77003]
	D(NPF(-2))	-0.015491	[-0.15002]
	D(NPF(-3))	0.404753	[3.99059]
	D(BOPO(-1))	-0.015403	[-1.32823]
	D(BOPO(-2))	-0.023770	[-2.12593]
	D(BOPO(-3))	0.005957	[0.53189]
	D(FDR(-1))	-0.010509	[-0.62922]
	D(FDR(-2))	-0.015999	[-0.97261]
	D(FDR(-3))	-0.005072	[-0.32666]
	C	-0.008109	[-0.26512]
BOPO	**Variable**	**Coefficient**	**t-Statistic Partial**
	CointEq1	-0.282793	[-3.19815]
	D(BOPO(-1))	0.042771	[0.38050]
	D(BOPO(-2))	0.034201	[0.31558]
	D(BOPO(-3))	0.052325	[0.48200]
	D(FDR(-1))	0.122321	[0.75564]
	D(FDR(-2))	0.119351	[0.74857]
	D(FDR(-3))	-0.224285	[-1.49029]
	D(NPF(-1))	-0.953621	[-0.93213]
	D(NPF(-2))	-0.600455	[-0.59994]
	D(NPF(-3))	1.006292	[1.02358]
	C	0.101554	[0.34256]

Sources: Author's Calculation

The table 4.6, the FDR variable on the NPF and BOPO variables. The short-term estimation results show that the FDR variable influenced by the

NPF variable in lag 1 has a positive effect of 1.36 percent. In lag 2 the relationship of the variable negatively affects -0.37 percent. Furthermore, in the lag the 3 variables have a positive effect with a value of 0.34 percent. Then the FDR variable is influenced by the BOPO variable in the 1st lag until the third lag has a negative effect of -0.01.

The table 4.6 also, NPF variables on BOPO and FDR variables. Short-term results show that the NPF variable is influenced by the BOPO variable in the first lag which has a negative effect of -0.01 percent and in the second lag also shows a negative of 0.02, then the NPF variable is influenced by the BOPO variable in the third lag has a positive effect that is 0.005. Then the NPF variable influenced by the FDR variable negatively affects the 1st lag until the Lag 3.

Furthermore, BOPO variable on the FDR and NPF variables in the table 4.6. Shows that the BOPO variable is influenced by the FDR variable in the 1st and 2nd lags which have a positive effect of 0.12 and 0.11 percent, then continued in the third lag the variables have a negative effect of -0.22 percent. On the contrary, the BOPO variable is influenced by the NPF variable which has a negative effect on the 1st lag and 3rd lag which is -0.95 and -0.60, but in the third lag shows a positive effect on the variable, namely 1 percent.

Table 4.7

Vector Error Correction Model (VECM) in Long-Term

FDR	**Variable**	**Coefficient**	**t-Static Partial**
	NPF(-1)	-72.5889	[-4.47911]
	BOPO(-1)	9.029681	[4.64308]
NPF	**Variable**	**Coefficient**	**t-Static Partial**
	BOPO	-0.1244	[-7.14765]
	FDR	-0.01378	[-0.67799]
BOPO	**Variable**	**Coefficient**	**t-Static Partial**
	FDR	0.110746	[0.75713]
	NPF	-8.038916	[-7.70009]

Sources: Author's Calculation

Based on the table 4.7 VECM analyzes in order to see the influence of significant variables in long-term relationships. The FDR variable is influenced by NPF and BOPO variables. In the first lag, the FDR variable was influenced negatively by -72.58 percent. However, in contrast to the 1st lag, the FDR variable was influenced positively by 9.02 percent. The NPF variable is influenced by the BOPO variable and the FDR variable. In the first lag both variables negatively affect the values of 0.12 percent and 0.01. The BOPO variables are influenced by FDR variables and NPF variables. In the first lag the BOPO variable is influenced by the FDR variable which has a positive effect of 0.01 percent. Then in the 1st lag the BOPO variable is influenced by the NPF variable which has a negative effect of -8.03 percent.

6. Impulse Response Function (IRF)

The IRF analysis explains how the effects of shocks (shock) occur on one variable with the other variables, both in the short term and in the long term. This analysis is to see a long-term response if the variable experiences shock (shock). Impulse response Function (IRF) analysis also functions to find out how long the influence occurs. The horizontal axis shows the period of the year, while the vertical axis shows the response value in percentage. The following are the results of the IRF:

a. Impulse Response FDR to NPF

The first IRF analysis will explain the response received by the FDR variable to the *shock* given by NPF. The response of the FDR variable to the *shock* of the NPF variable 104 Monthly period as follows:

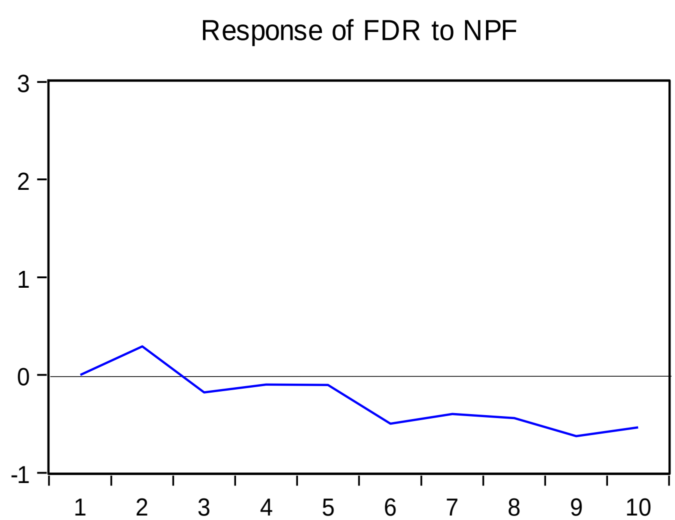

Figure 4.1 *Impulse Response* FDR to NPF

It can be explained that the response of the FDR variable there is a shock from NPF is positive (+), from period 1 to entering the second period has increased. Then in the 3rd period the response of the FDR variable to NPF shock decreased until the 10th period. Based on the explanation above, it can be concluded that the negative (-) response of the FDR variable to the shock of the NPF variable takes place throughout the period, namely from the 3rd period to the 10th period, this is indicated by the IRF line below the horizontal line.

b. Impulse Response FDR to BOPO

The first IRF analysis will explain the response received by the FDR variable to the *shock* given by BOPO. The response of the FDR variable to the *shock* of the BOPO variable 104 in monthly period as follows:

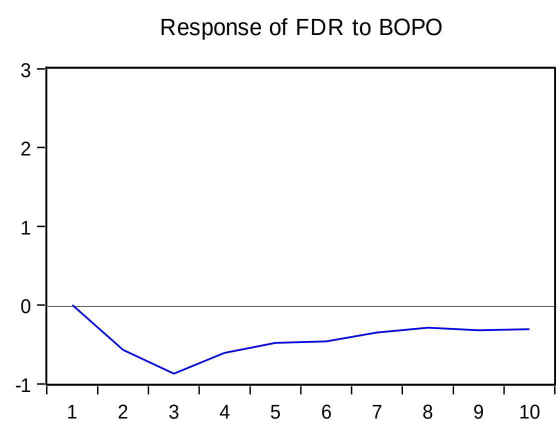

Figure 4.2 *Impulse Response* FDR to BOPO

It can be explained that the response of the FDR variable to shock from BOPO is negative (-), from the 1st period to entering the 3rd period it has decreased. Then in the 3rd period the response of the FDR variable to BOPO shock experienced an increase up to the 10th period. Based on the explanation above, it can be concluded that the negative (-) response of the FDR variable to the shock of the BOPO variable takes place throughout the period, namely from the 3rd period to the 10th period, this is indicated by the IRF line below the horizontal line.

c. Impulse Response Variable NPF to Variable FDR

The first IRF analysis will explain the response received by the NPF variable to the *shock* given by FDR. The NPF variable response to *shock* from the FDR variable 104 Monthly period as follows:

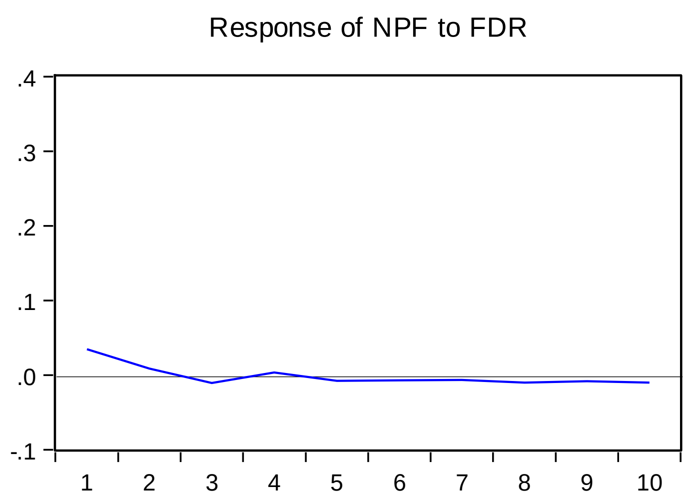

Figure 4.3 *Impulse Response* NPF to FDR

It can be explained that the NPF variable response there is a shock from FDR is positive (+), from the 1st period to entering the 3rd period has decreased. Then in the 3rd period the NPF variable response to FDR shock was stable until the 10th period. Based on the explanation above, it can be concluded that the positive (+) response of the NPF variable to shock from the FDR variable takes place throughout the period, namely from the 3rd period to the 10th period, this is indicated by the IRF line in the horizontal line.

d. Impulse Response Variable NPF to Variable BOPO

The first IRF analysis will explain the response received by the NPF variable to the *shock* given by BOPO. The NPF variable response to *shock* from the BOPO variable 104 in monthly period as follows:

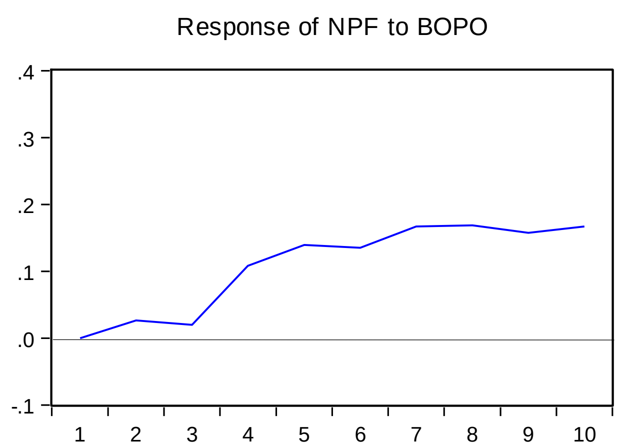

Figure 4.4 *Impulse Response* NPF to BOPO

It can be explained that the NPF variable response with shock from BOPO is positive (+), from the 1st period to entering the 10th period there is an increase. Based on the explanation above, it can be concluded that the positive (+) response of the NPF variable to shock from the BOPO variable takes place throughout the period, namely from the 1st period to the 10th period, it is shown from the IRF line above the horizontal line.

e. Impulse Response Variable BOPO to Variable FDR

The first IRF analysis will explain the response received by the BOPO variable to the *shock* given by FDR. The BOPO variable response to the *shock* of the FDR variable 104 Monthly period as follows:

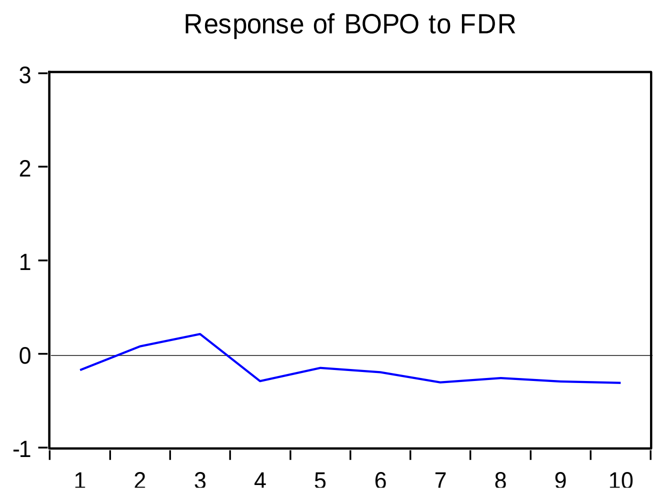

Figure 4.5 *Impulse Response* BOPO to FDR

It can be explained that the BOPO variable response there is a shock from FDR is positive (+), from the 1st period to entering the 3rd period has increased. Then in the third period the BOPO variable response to FDR shock decreased until the 10th period. Based on the explanation above, it can be concluded that the negative (-) BOPO variable's response to shock from the FDR variable lasts for the period, namely from the 3rd period to the 10th period, it is shown from the IRF line below the horizontal line Response variabel BOPO to variable NPF

f. Impulse Response Variable BOPO to Variable NPF

The first IRF analysis will explain the response received by the BOPO variable to the *shock* given by NPF. The BOPO variable response to the *shock* of the NPF variable 104 Monthly period as follows:

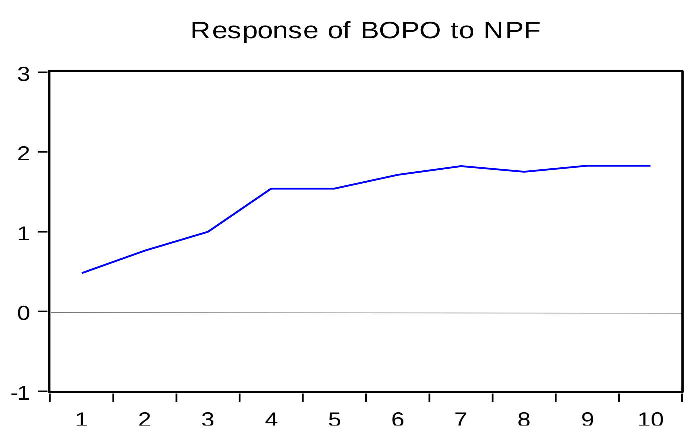

Figure 4.6 *Impulse Response* BOPO to NPF

It can be explained that the BOPO variable response there is a shock from NPF is positive (+), from the 1st period to entering the 10th period there is a significant increase. Based on the explanation above, it can be concluded that the negative (+) response of the BOPO variable to the shock of the NPF variable takes place throughout the period, namely from the 1st period to the 10th period, this is indicated by the IRF line above the horizontal line.

7. Variance Decomposition

This analysis aims to measure the composition or contribution of the influence of each variable. In this study, the analysis of Variance Decomposition (DC) was focused on looking at the influence of variables namely Financing to Deposite Ratio (FDR), Non Performing Financing (NPF) and The Operational Expenses to Operational Revenue (BOPO). The data used in this study are monthly data, from January 2010 to August 2018. This period is considered sufficient to explain the contribution of FDR, NPF and BOPO variables to Shariah Banking in Indonesia. The analysis of Variance Decomposition (VCD) can be shown in the table as follows:

Table 4.8

Variance Decomposition on FDR

Period	SE	FDR	NPF	BOPO
1	1.843409	100.0000	0.000000	0.000000
2	2.433074	93.07333	1.419375	5.507292
3	3.025591	86.88472	1.272146	11.84314
4	3.645556	88.13094	0.948149	10.92091
5	4.108004	89.21504	0.809155	9.975805
6	4.599803	89.21948	1.820409	8.960113
7	5.051028	89.96607	2.130988	7.902945
8	5.459 352	90.48151	2.479191	7.039295
9	5.876766	90.34842	3.281494	6.370083
10	6.257649	90.52347	3.623686	5.852848
Total Average	4.2300232	90.784298	1.7784593	7.4372431

Sources: Author's Calculation

From table 4.8, it can be explained that in the first period, the FDR variable was strongly influenced by the FDR shock itself by 100 percent. Meanwhile, in the first period, the NPF variable, and the BOPO variable have not given effect to the FDR variable. Furthermore, starting from period 1 to the 10th period, the proportion of shock of the FDR variable itself is still large. However, the FDR shock provides a proportion of the effect that gradually decreases against the FDR itself from the 1st period to the 7th period. The similar case happened ones again when by FDR against increased until the 10th period. This results in an average total on FDR is 4.2300232. Furthermore, the period of the two NPF variables contributed 1.41 percent and decreased until the 5th period. In the 6th period the NPF shock against FDR increased until the 10th period with a value of 3.62

percent. This yields the average on the NPF is 1.7784593. The results of the VCD analysis in the second period of the BOPO variable contributed to the FDR of 5.50 percent and experienced a significant decrease up to the 10th period with the average total in the BOPO variable was 7.4372431.

Table 4.9

Variance Decomposition on NPF

Period	SE	FDR	NPF	BOPO
1	0.301986	1.284774	98.71523	0.000000
2	0.375125	0.886743	98.61763	0.495627
3	0.416529	0.785144	98.59483	0.620030
4	0.517248	0.513238	94.73262	4.754143
5	0.579325	0.428273	90.02078	9.550951
6	0.624881	0.380940	86.74632	12.87274
7	0.691786	0.319991	83.37349	16.30652
8	0.742180	0.297634	80.39042	19.31195
9	0.784787	0.277975	78.41862	21.30341
10	0.834778	0.269536	76.93120	22.80826
Total Average	0.5868625	0.5444248	88.654114	10.8023631

Sources: Author's Calculation

From table 4.9 can be explained that in the first period, the variable FDR was influenced by the FDR shock itself at 1.28 percent. Meanwhile, in the first period, the NPF variable influenced by the NPF variable is 98.71. While in the first period the BOPO variable has not reflected the effect on the NPF variable itself yet. Continued on the 2nd period until the 10th period of the NPF variable influenced by the FDR variable shows a fairly decreasing value which is in the 10th period with a value of 0.26 percent with the overall average is 0.54 percent. Then in the second period until the

10th period of the NPF variable is influenced by the variable itself which has a significant decrease to produce an average value of 88.88 percent. Continued in the second period on the NPF variable is influenced by the BOPO variable which is equal to 0.49, then the second variable until the 10th period experiences a significant increase in effect to produce an average value of 10.8023631 percent.

Table 4.10

Variance Decomposition on BOPO

Periode	SE	FDR	NPF	BOPO
1	2.927100	0.357969	2.680542	96.96149
2	3.735015	0.265543	5.788679	93.94578
3	4.198097	0.466521	10.22600	89.30747
4	4.645547	0.781165	19.34129	79.87754
5	5.026835	0.754420	25.87602	73.36956
6	5.431698	0.777258	32.08065	67.14209
7	6.226521	0.940389	37.36899	61.69062
8	6.226521	1.003506	40.89494	58.10156
9	6.612534	1.089031	43.87340	55.03757
10	6.985251	1.172802	46.13966	52.68754
Total Average	5.2015119	0.7608604	26.4270171	72.812122

Sources: Author’s Calculation

Table 4.10, is explained that in the first period, the BOPO variable was affected by the FDR variable shock of 0.35 percent. Meanwhile in the first period, the BOPO variable is influenced by the NPF variable is 2.68 and the BOPO variable affects 96.96 percent. It then continued with the second period on the BOPO variable influenced by the FDR variable which increased sufficiently up to the 10th period to produce an average of

0.7608604 percent. The second period until the 10th period of the BOPO variable is influenced by the NPF variable which has a significant increase to produce an average value of 26.4270171 percent. Then compared to reversing with the second period on the BOPO variable influenced by the BOPO variable itself has a significant decline until the 10th period which produces an average value of 72.812122 percent

8. Granger Causality Test

The granger causality test is used to determine the causal relationship of each variable with each other. In this study the causality test is more shown in the causes of cointegration in the variables. The test level used in the granger causality test is the level of confidence (α = 0.05) with lag length 2, according to the optimal lag length that has been done. The results of the Granger causality test can be seen in the following table:

Table 4.11

Granger Causality Test

H0	Lag 2	
	f-statistic	Prob
NPF does not Granger Cause FDR	**5.44792**	**0.0057**
FDR does not Granger Cause NPF	1.67488	0.1927
BOPO does not Granger Cause FDR	**7.97421**	**0.0006**
FDR does not Granger Cause BOPO	0.16992	0.8440
BOPO does not Granger Cause NPF	2.40254	0.0959
NPF does not Granger Cause BOPO	**4.91669**	**0.0092**

Source: Author's Calculation

Based on table 4.11, research described the finding causality is happened variable with a probability value smaller than α 0.05. Based on the table above it can be seen that the NPF variable statistically significantly affects the FDR variable with a probability of 0.0057 <0.05, or in other words having a granger causality relationship. Different things are shown in the FDR variable statistically not significantly affecting the NPF variable with a probability of 0.1927> 0.05, it in other words there is no granger causality relationship. This means that it can be concluded that there is a one-way causality relationship between the NPF and FDR variables. Where the NPF variable affects the FDR variable, while the FDR variable does not affect the NPF.

Statistically, the BOPO variable has a significant effect on the FDR variable with a probability of 0.0006 <0.05 or in other words there is a granger causality relationship between BOPO and FDR. While the FDR variable does not significantly affect the BOPO variable with a probability of 0.8440> 0.05 in other words there is no causality between the FDR and BOPO variables. Where the variable BOPO affects the FDR variable while the FDR variable does not affect the BOPO variable.

It can be seen that statistically the BOPO variable has no significant effect on the NPF variable with a probability of 0.0959> 0.05 or in other words there is no granger causality relationship. While the NPF variable significantly affects the BOPO variable or in other words there is a granger causality relationship. This means that it can be concluded that there is a one-way causality relationship between the NPF and BOPO variables. Where the NPF variable significantly affects the BOPO variable, while the BOPO variable does not significantly affect the NPF variable.

The granger causality test also shows almost all variables are in a state of affairs, but only have a one-way relationship not two-way and significant with an alpha level of 5% for one-way relationships. There were a dominant variable in the granger causality test which is the NPF variable, because there were 2 consecutive times which have a significant effect on other variables. The NPF variable significantly affects the FDR variable with a probability of 0.0057 <0.05 and NPF significantly affects the BOPO variable with a probability of 0.0092 <0.05, which means that the NPF variable is the dominant variable in this granger causality test.

B. Discussion

Based on the results of the above research, the discussion the impact of Risks, namely Financing to Deposit Ratio (FDR) is a proxy of Liquidity risk, *Non Performing Financing* (NPF) is a proxy of Credit risk and The Operational Expenses to Operational Revenue (BOPO) is proxy of Operational risk. Therefore, the last 3 Test conducted in this research which are *Impulse Response Function* (IRF*) Test*, *Variance Decomposition Test* (VCD), and

Granger's Causality Analysis Test can determine the dominant risk on Shariah Banking:

1. Liquidity Risk

Table 4.12

Result Discussion of Liquidity Risk

IMPULSE RESPONSE FUNCTION		
Variable	Response	
FDR to NPF	Negative	
FDR to BOPO	Negative	
VARIANCE DECOMPOSITION (VCD)		
Variable	Total Average (%) (VCD)	
FDR	1.77	NPF
	7.43	BOPO
GRANGER'S CAUSALITY		
Variable	Prob.	Conclusion
FDR to NPF	0.1927	Not Significant
FDR to BOPO	0.8440	Not Significant

Sources: Author's Calculation

Based on Table 4.12, the results show that the Financing to Deposit Ratio (FDR) variable to the NPF variable has a negative effect on the IRF test by producing an average value in the Variance Decomposition test of 1.77% and in the Granger's Causality test the probability variable is more than 5% so it does not significantly affect the FDR variable towards NPF variables and Financing to Deposit Ratio (FDR) variable to the BOPO variable has a negative effect on the IRF test by producing an average value in the Variance Decomposition test of 7.43% and in the Granger's Causality test the probability variable is more than 5% so it does not significantly affect the FDR variable towards BOPO variables.

2. Credit Risk

Table 4.13

Result Discussion of Credit Risk

IMPULSE RESPONSE FUNCTION		
Variable	Response	
NPF to FDR	**Positive**	
NPF to BOPO	**Positive**	
VARIANCE DECOMPOSITION (VCD)		
Variable	Total Average (%) (VCD)	
NPF	0.54	FDR
	10.8	BOPO
GRANGER'S CAUSALITY		
Variable	Prob.	Conclusion
NPF to FDR	**0.0057**	**Significant**
NPF to BOPO	**0.0092**	**Significant**

Sources: Author's Calculation

Based on Table 4.13, the results show that the Non Performing Financing (NPF) variable on the FDR variable has a positive effect on the IRF test by producing an average value in the Variance Decomposition test of 0.54% and in the Granger's Causality probability variable is less than 5% so that it significantly influences the NPF variable on the variable FDR and Non Performing Financing (NPF) variable on the BOPO variable has a positive effect on the IRF test by producing an average value of 10.8% and in the Granger's Causality probability variable is less than 5% so that it significantly influences the NPF variable on the BOPO variable.

3. Operational Risk

Table 4.14

Result Discussion of Operational Risk

IMPULSE RESPONSE FUNCTION		
Variable	Response	
BOPO to FDR	Negative	
BOPO to NPF	**Positive**	
VARIANCE DECOMPOSITION (VCD)		
Variable	Total Average (%) (VCD)	
BOPO	0.76	FDR
	26.42	**NPF**
GRANGER'S CAUSALITY		
Variable	Prob.	Conclusion
BOPO to FDR	**0.0006**	**Significant**
BOPO to NPF	0.0959	Not Significant

Sources: Author's Calculation

Based on Table 4.14, the results show that the Operational Expenses to Operational Revenue (BOPO) variable on the FDR variable has a negative effect on the IRF test by producing an average value of 0.76%. The Granger's Causality probability variable is less than 5% so that it significantly influences the BOPO variable on the FDR variable. The Operational Expenses to Operational Revenue (BOPO) variable on the NPF variable has a positive effect on the IRF test by generating an average of 26.42% and in the Granger's Causality test the probability variable is more than 5% so it does not significantly affect the BOPO variable against NPF.

Based on the discussion of this research the *Impulse Response Function Test* or IRF explains that there are 3 positive significant responses, namely NPF variable to FDR variable, NPF variable to BOPO variable and BOPO variable to NPF variable. From the results of the IRF test, there are dominant variables affecting the other variables, the NPF variable is significant positive affecting the FDR variable and the BOPO variable. Therefore the IRF Test the dominant variable is NPF Variable or Credit Risk.

In the discussion we can also see the most dominant variable through the Variance Decomposition or VCD test, this can be seen from the percentage average. The first test, the NPF variable with a total average of 1.77% and BOPO variables with a total average of 7.43%. The second test, the FDR variable with an average total of 0.54% and the BOPO variable with a total average of 10.8%. The third test, produces the average total in the FDR variable which is 0.76 & and in the NPF variable the total yield is 26.42%. From the results of the Variance Decomposition test we can conclude that the variable that has the highest average is the NPF variable with a total average of 26.42%. Therefore in the Variance Decomposition or VCD test the dominant variable is the NPF variable or Credit Risk.

The last test can be proven through the Granger's causality test, in this test explaining that there are 3 significant variables affecting the other variables with probabilities below 5 percent, namely NPF variable to FDR variable, NPF variable to BOPO variable, and BOPO variable to FDR variable. The Granger’s Causality test can be proved that the dominant variable is the NPF variable because the variable significantly affects the FDR variable and the BOPO variable with a probability value below 5%. Therefore, it can ensured that the dominant from Granger's Causality test is Credit Risk.

Based on the three test above IRF, VCD and Granger's Causality tests, it can be seen that the most significant risk affecting liquidity risk and operational risk is credit risk. This can be supported by previous research, namely research conducted by Amalia (2018) that a significant NPF variable affects the variables FDR, ROA and CAR. The same thing is also supported by Purwanti (2016) that the NPF variable is significant for the BOPO variable. Evidently, in Laucereno (2017) Detik.com, the ratio of problem financing is the percentage of the delay in the return of credit to creditors or the default payment by customers to the lender in this case the bank that distributes the financing. According to him, the slow lending also occurs because banks are consolidating to reduce credit risk.

According to Setiawan (Setiawan, 2017) the risks faced by banks are due to the ratio of problem financing. Nevertheless, banking resilience is still in good condition. This can be seen from the capital adequacy ratio or capital adequacy ratio (CAR) which reached 23.3 percent. Therefore, from the results of the discussion in this study, the dominant risk among the other risks is credit risk, all of which can be proven from the previous research and some news that said the emergence of the ratio of problem financing to banking in Indonesia.