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The effect of a countercyclical Covid 19 policy on the main financial ratios in Islamic rural banks

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Abstract

Purpose – This study aims to evaluate the impact of financial services authority's regulation (POJK) regarding the implementation of Covid-19 Countercyclical in Islamic rural banks.

Methodology – This study uses time-series data taken from Financial Services Authority (OJK)'s database covering the period from March 2020 - March 2022. Cointegration test show that there is no cointeggration and the variable is not stationary at the same order/degree, therefore the VAR method is used.

Findings – This study reveals that POJK have significant impact on CAR, EAQ, and REO ratios and integrated in the long term. Moreover, this study also find that POJK have a causal or reciprocal effect on CAR and REO which occur in one direction. Futhermore, this study portrays that POJK have a positive impact in returning CAR, EAQ and REO ratios to a positive condition at least 10 months since POJK published, except for CR that before pandemic was in a positive condition.

Implications – It is necessary for the BPRS to conduct a stress test on the implementation of the said restructuring and its impact on the finances and ratios of the BPRS as the first step for the BPRS to carry out mitigation if things that are not desired by the BPRS occur.

Originality – This paper examines the effect of the implementation of POJK Number 11/POJK.03/2020 which is further amended through POJK Number 48/POJK.03/2020 concerning national economic stimulus as a countercyclical policy impact of the spread of coronavirus disease 2019 on the Islamic rural bank soundness level during Covid 19 pandemic.

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Introduction

Due to Covid 19 hit Indonesia in 2020, Islamic rural bank has experienced quite serious problems. One of them is many debtors have failed to pay their obligation cause of weakening their economy. Arianto (2020) stated that the Covid-19 pandemic has caused the economy in all countries to experience negative contractions. Those has a systemic impact on the condition of the Islamic rural bank, including deteriorating asset quality in line with increasing of NPF ratio,

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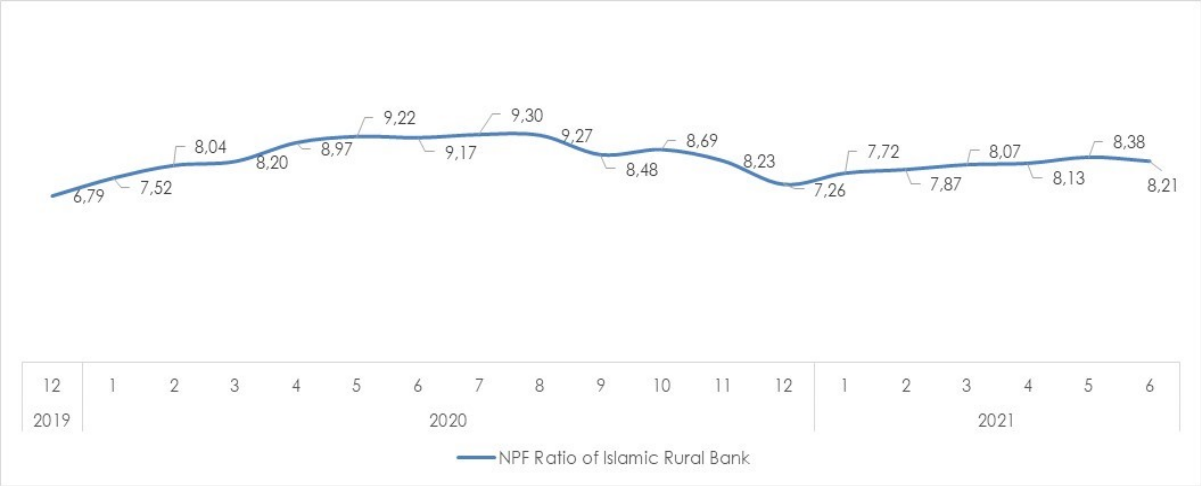
weakening income and even losses cause of no payment from debtors that can be impact to decrasing ROA ratio and declining capital as cause of the losses (Maghfiroh, 2021).

To response that condition, OJK issued several policies about Covid 19 countercyclical, one of them is POJK Number 11/POJK.03/2020 which is further amended through POJK Number 48/POJK.03/2020 concerning National Economic Stimulus as a Countercyclical Policy Impact of the Spread of Coronavirus Disease 2019 (Otoritas Jasa Keuangan, 2020). Those amandement because of Covid 19 pandemic still on going while validity period of POJK number 11 end on March 2021. One of the rules in the POJK is the determination of the financing quality/collectability as classified performing after being restructured even though there is a default, but on the condition that the debtor's business is affected by Covid 19.

Based on OJK's database, one year after the POJK was published, to be precise in April 2021, there were IDR 20,284 billion or 16.29% of the total bank loans throughout Indonesia that had been restructured. There was a significant increase in credit restructuring between before and after COVID-19 faced by the bank. The following is data of NPF ratio before and during the Covid 19 pandemic.



Source: Otoritas Jasa Keuangan database (2019, 2020, 2021).

Figure 1. Increasing of NPF ratio in Islamic Rural Bank

Based on the Figure 1, it can be concluded that with the issuance of POJK Covid 19 countercyclical succeeded in suppressing the growth rate of the NPF ratio. One month before the issuance of POJK, NPF ratio was recorded at 8.04%, and during the pandemic, the highest NPF ratio was recorded at 9.30%. Implementation of POJK No. 11/POJK.03/2020 at Bank Syariah Mandiri was able to control the NPF in 2020 to the lowest in the last 5 (five) years at 0.72%, from 2016 to 2020 and was categorized as very healthy (Dipoyanti et al., 2022).

In this study, the author wanted to know whether the implementation of the POJK which is proxied by NPF ratio can impact to Islamic rural bank main financial ratios in terms of integration, causality and dynamic aspects.

Literature Review

According Rachmad and Fitria (2021) that CAR during the Covid-19 pandemic is better than CAR before the Covid-19 pandemic in Islamic bank. In other study, during the pandemic CAR indicator of Sharia rural bank are still accordance with Financial Services Authority standar (Hassan, 2022). Nabila et al. (2022) stated that capital aspect is healthy and gets average composite rating of very healthy.

Based on observations and searches, there was no literature review that examined NPF ratio as a proxy of Covid 19 countercyclical policy to EAQ ratio. Although not found, referring to the Circular Letter of the Financial Services Authority (SEOJK) Number 28/SEOJK.03/2019 concerning the Rating System for the Soundness of Islamic Rural Banks, NPF ratio has a relation

with EAQ ratio. If the NPF ratio is low or the Islamic rural bank financing is dominated by the quality of Performing, then EAQ Ratio will improve. Conversely, if NPF ratio is high or Islamic rural bank financing is dominated by non-performing quality, then the EAQ ratio will deteriorate (Otoritas Jasa Keuangan, 2019).

Rolianah et al. (2021) stated that REO shows a significant impact before and during the pandemic. The conclusion is countercyclical policies have an effect on REO. There was a significant increase on REO during pandemic in Islamic rural bank. During the pandemic profitabilitas Islamic bank which proxied by ROA experinced significant decreasing (Effendi & Hariani, 2020). The healthy BOPO (REO) ratio is in the composite rating very healthy (Nabila et al., 2022).

After some observations and searches of previous research, no literature review or the same research that examined NPF ratio as a proxy of Covid 19 countercyclical policy to CR. The reason of the author included CR in this study as a variabel, because of CR was included in the main ratio of Islamic rural bank soundness as stated in SEOJK above.

Based on the studies mentioned above, there was no literature review or the same research title has been found as the title of the research conducted by the author. However, the results of the research above can be used as a literature for determination a hypothesis in this study.

Before determining the hypothesis of this study, the researcher would like to convey an explanation of the title of the research taken. One of the policies regulated in the POJK Covid 19 countercyclical is regarding the determination of the collectibility of restructured financing to be Performing or Col. 1 even though there are arrears or defaults, so this policy is closely related to the NPF ratio and therefore the author uses the NPF ratio as a proxy for the policy. Meanwhile main financial ratios in Islamic rural bank, refers to SEOJK Number 28 above including CAR, EAQ ratio, REO and CR.

Based on some of the literature above, many have researched the impact of the NPF ratio to CAR and the NPF ratio to REO (BOPO) during the pandemic in Islamic banks. However, there is no literature that examines the ratio of NPF to EAQ ratio and CR. As for the basis of the research literature carried out by the author, especially research on the NPF ratio to the EAQ ratio and the NPF ratio to CR during the pandemic, these two ratios are the main ratios in Islamic rural bank refers to SEOJK Number 28/SEOJK.03/2019 concerning the Rating System for the Soundness of Islamic Rural Banks (Otoritas Jasa Keuangan, 2019). Therefore the hypotheses in this study are:

H1: NPF ratio has a negative effect on CAR
H2: NPF ratio has a negative effect on EAQ
H3: NPF ratio has a positive effect on REO
H4: NPF ratio has a negative effect on CR

Research Methods

This study uses a quantitative model which is a replication of Africano (2016), Amelia and Hardini (2017), Ariffin et al. (2015), and Pravasanti (2018) then developed through modification by adding various relevant control variables in the model.

There are 4 (four) time series data tests which are modeled in the equation model as follows:

$$CAR_t = \alpha + NPF_t + \text{Core Capital}_t + \text{Supplementary Capital}_t + \text{Risk Weight Assets}_t + e_t \quad (1)$$

$$EAQ_t = \alpha + NPF_t + \text{Earning Assets}_t + \text{Classified Earning Assets}_t + e_t \quad (2)$$

$$REO_t = \alpha + NPF_t + \text{Operating Income}_t + \text{Operating Expences}_t + e_t \quad (3)$$

$$CR_t = \alpha + NPF_t + \text{Mudharabah Deposit}_t + \text{Savings at Other Banks}_t + e_t \quad (4)$$

In the above equation, each model has several additional variables as independent variables. This is due to the fact that the independent variables do not stand alone. The selection of these additional variables refers to SEOJK Number 28/SEOJK.03/2019 concerning the Rating System for the Soundness of Islamic Rural Bank. The following several additional independent variables are (see Table 1).

Table 1. Additional Independent Variables

Variable Dependent	Additional Independent Variables	SEOJK Number 28/SEOJK.03/2019
CAR	Risk Weighted Assets, Supplementary Capital, Core Capital	$\text{CAR} = \frac{\text{Core Capital + Risk Weighted Assets}}{\text{Risk Weight Assets}}$
EAQ	Earning Assets, Classified Earning Assets	$\text{EAQ} = \left(1 - \frac{\text{EAaR}}{\text{EA}}\right)$ EaaR is for Classified Earning Assets EA is for Earning Asset
REO	Operating Income, Operating Expenses	$\text{REO} = \frac{\text{Operating Expenses}}{\text{Operating Income}}$
CR	Mudharabah Deposit, Savings at Other Banks	$\text{CR} = \frac{\text{Cash and cash equivalents}}{\text{Current Liabilities}}$ Mudharabah Deposit is one of a Cash and cash equivalents component Savings at Other Bank is one of a Current Liabilites component

Source: Circular Letter of the Financial Services Authority (SEOJK) Number 28/SEOJK.03/2019 concerning the Rating System for the Soundness of Islamic Rural Banks. However, in this study the NPF ratio as an independent variable is the main factor to be studied.

Statistic Tests

The stationarity test used the unit root test with the Augmented Dickey Fuller Test (ADF Test) and Phillips-Perron models. Then, the cointegration test is one method to see how far the balanced relationship between economic variables is in the long run. The hypothesis used in this study is the Johansen Cointegration Test. Furthermore, the test used in this study is the Granger causality test, it is a statistical hypothesis test to determine whether one-time series is useful for predicting another time series. Granger causality is a "bottom-up" procedure, where the assumption is that the process of generating data in any time series is an independent variable; then the data sets are analyzed to see if they are correlated. Finaly, this research was conducted because of the Covid-19 pandemic which led to the implementation of a financing restructuring policy as a countercyclical to the health of the Islamic rural bank. Appropriate impulse responde function (IRF) test are used to track the current and future responses of each variable due to the shock of a variable. From the IRF test, we will also know the period until when the effects of the shock will disappear and the economy will recover.

VAR Method

The integration approach model is a partial adjustment model (Partial Adjustment Model) and an error correction model (Error Correction Model (ECM)). The error correction model is a technique for correcting short-term imbalances towards long-term equilibrium, and can explain the relationship between the dependent variable (dependent variable) and the independent variable (independent variable) in the present and the past. The ECM model has several advantages because it is able to cover many variables to analyze long-term economic phenomena and examine the consistency between econometric models and empirical models. Vector Error Correction Model (VECM) is a method derived from VAR (Widarjono, 2013; Sriyana, 2020). The assumptions that need to be met are the same as for VAR, except for the stationarity problem. In contrast to VAR, VECM must be stationary in the first differentiation and all variables must have the same stationary, i.e. differentiated in the first derivative. VECM was first popularized by Engle and Granger to correct short-term versus long-term imbalances. VECM is a Vector Autoregressive (VAR) designed to be used on non-stationary data which is known to have a cointegration relationship.

The cointegration of the VECM model makes the VECM model known as a restricted VAR. The assumption that must be met in the VECM analysis is that all variables must be

stationary at the same order/degree. This is indicated by all the residuals are white noise, which has a mean of zero, the variance is constant and there is no correlation between the dependent variables. The data stationarity test can be done by testing the presence or absence of a unit root in the variable with the Augmented Dickey Fuller (ADF) test (Sudarsono, 2017). The existence of cointegration or long-term relationships in the model should also be considered. Detection of the presence of this cointegration can be done by the Johansen or Engel-Granger method. If the variables are not cointegrated, then VAR can be applied. However, if the test proves that there is a cointegration vector, then VECM can be applied.

Results and Discussion

The Table 2 shows the group unit root test, according ADF that NPF to CAR model are most stationary at the first difference with intercept and first difference with intercept and trend, meanwhile according to Philips Perron are stationary at level intercept, first difference with intercept, level intercept and trend and first difference with intercepet and trend. For NPF to EAQ model, according ADF and Philips Perron that the most stationary at the first difference with intercept. Meanwhhile NPF to REO model and NPF to CR model, according ADF and Philips Perron both of them are stationary at the first difference with intercept and first difference with intercept and trend.

Table 2. Group Cointegration Test Model (NPF to CAR, EAQ, REO, and CR)

Variable	ADF				Phillips Perron			
	Level-Intercept	First Difference -Intercept	Level-Intercept and Trend	First Difference -Intercept and Trend	Level-Intercept	First Difference -Intercept	Level-Intercept and Trend	First Difference -Intercept and Trend
CAR, NPF, Risk Weighted Assets, Supplementary Capital, Core Capital	0.6297 (7.9916)	0.0000*** (83.5185)	0.0024** (27.186)	0.0000*** (63.301)	0.0002*** (34.154)	0.0000*** (112.409)	0.0000*** (43.3545)	0.0002*** (84.2523)
EAQ, NPF, APYD, Productive Assets	0.0927* (13.6044)	0.0003*** (28.9771)	0.3851 (8.51225)	0.0226** (17.8224)	0.1093 (13.0763)	0.0004*** (28.6243)	0.6576 (5.90737)	0.0260** (17.4212)
REO, NPF, Operating Expenses, Operating Income	0.2206 (10.6790)	0.0000*** (49.6936)	0.1315 (12.4674)	0.0003*** (36.3498)	0.4788 (7.54800)	0.0000*** (54.6390)	0.2747 (9.86448)	0.0001*** (44.9038)
CR, NPF, Mudharabah Deposits, Saving in Other Banks	0.2514 (10.1974)	0.0000*** (42.0292)	0.5030 (7.31521)	0.0001*** (31.4724)	0.2107 (10.8438)	0.0000*** (42.2474)	0.6047 (6.38011)	0.0002*** (30.4066)

The Table 3 shows that all models of NPF to CAR, NPF to EAQ and NPF to REO are cointegrated in the long run, meanwhile NPF to CR not cointegrated in the long run. Those result in line with the results of Rifaldi D. Kadir's research (2019) stated that there is cointegration between NPF to CAR and NPF to BOPO ratio (REO).

From the criteria for the length of the test lag above, NPF to CAR models, NPF to EAQ models and NPF to CR model, lag length 6 is the most optimum lag, meanwhile for NPF to REO model, lag length 2 is the most optimum lag.

Table 3. Group Cointegration Test Model (NPF to CAR, EAQ, REO, and CR)

Variable	No intercept or trend in CE or test VAR	Intercept (no trend) in CE- no intercept VAR	Intercept (no trend) in CE and no test VAR	Intercept and trend in CE no intercept in VAR	Intercept and trend in CE intercept in VAR
CAR, NPF, Risk Weighted Assets, Supplementary Capital, Core Capital	0.0041 *** (71.43363)	0.0012 *** (94.84585)	0.0058*** (80.27061)	0.0000*** (134.2418)	0.0000*** (130.5775)
EAQ, NPF, APYD, Productive Assets	0.0449** (40.63881)	0.0024** (66.96378)	0.0047 ** (57.59892)	0.0005*** (83.39401)	0.0000*** (82.53334)
REO, NPF, Operating Expenses, Operating Income	0.0000*** (115.7045)	0.0000*** (121.3164)	0.0000*** (101.8419)	0.0003*** (116.5034)	0.0003*** (112.6696)
CR, NPF, Mudharabah Deposits, Saving in Other Banks	0.7849 (0.110045)	0.6264 (36.95311)	0.4059 (35.81154)	0.1331 (50.03041)	0.1797 (56.45563)

Table 4. Granger Causality with Lag Optimum

Null Hypothesis:	**Obs**	**F-Statistic**	**Prob.**
CAR does not Granger Cause NPF	14	66.5964	0.0935
NPF does not Granger Cause CAR		1.55164	0.5473
EAQ does not Granger Cause NPF	14	8.16294	0.2617
NPF does not Granger Cause EAQ		0.69544	0.7243
REO does not Granger Cause NPF	18	16.5443	0.0003
NPF does not Granger Cause REO		10.3164	0.0021
CR does not Granger Cause NPF	14	0.98749	0.6469
NPF does not Granger Cause CR		0.27087	0.8969

Based on the Table 4, it can be explained that the variables that have a Granger quality relationship are variables with a probability value less than = 10% or 0.10. Thus the results of the Granger quality test for all models are the NPF variable significantly affects the CAR variable (0.0935), which means rejecting the null hypothesis and the CAR variable does not affect the NPF variable (0.5473) so this means accepting the null hypothesis. Therefore, it can be concluded that there is a one-way causality relationship between the NPF and CAR variables, namely only the NPF variable which statistically affects the CAR variable, but not vice versa. The NPF variable does not significantly affect the EAQ variable (0.2617), which means that accepting the null hypothesis, and the EAQ variable statistically do not significantly affect the NPF variable (0.7243), so this means accepting the null hypothesis.

Based on this, the respective probabilities are greater than 0.10 and accept the null hypothesis, so it can be concluded that there is no causal relationship between the NPF and EAQ variables. It should be stated that although the two ratios are financing ratios, based on the test results, it is found that there is no relationship between the NPF ratio and the EAQ ratio. This can happen considering that the NPF ratio cannot be determined by the high or low EAQ ratio. As for what caused this to happen, namely the involvement of the value/nominal Placement with other Banks (ABA) which are BRPS productive assets as a component of the calculation of the EAQ ratio, while the NPF ratio only occurs in Islamic rural bank productive assets in the form of financing.

In addition, in the NPF ratio, the quality of non-performing financing ranges from Substandard (Col.3) to Loss (Col. 5), so the nominal non-performing financing will be accumulated from Col. 3 to Cabbage. 5, while the quality of non-performing financing in the

EAQ ratio will affect the value of APYD, considering that the value of APYD is determined by the percentage of the quality of non-performing financing, including Col. 3 by 50%, Col. 4 by 75%, Col. 5 by 100%. The NPF variable significantly affect the REO variable (0.0003), which means rejecting the null hypothesis and the REO variable statistically affects the NPF variable (0.0021) so this means rejecting the null hypothesis. Based on this, it can be concluded that variable of NPF ratio and variable of REO have causality relationship, and The NPF variable does not significantly affect the CR variable (0.6469), which means that accepting the null hypothesis, and the CR variable statistically do not significantly affect the NPF variable (0.8969), so this means accepting the null hypothesis. Based on this, the respective probabilities are greater than 0.10 and accept the null hypothesis, so it can be concluded that there is no causal relationship between the NPF and CR variables.

Based on the test results above, it can be concluded that the countercyclical policy proxied by the NPF ratio has a causal or reciprocal effect on several major financial ratios of the Islamic rural bank, including CAR and REO, while EAQ and CR do not have a reciprocal relationship. However, the causality relationship for NPF ratio to CAR ratio only occurs in one direction, it is NPF ratio affects the CAR, while NPF ratio to REO both of them have a causality relationship. There is a difference of CAR between before and during the pandemic, during the pandemic CAR of Islamic bank increased trough 1.85%.

VAR Estimation Results

VAR estimation was used to determine the significance, so a comparison was made between the t statistic value and the t table value. The formula for t-statistics is (Alpha/2, n-1) = (0.05, 17)= 1.74. The interpretation of the VAR model is not the main focus in using the VAR model approach for a study that only wants to see the relationship (not the effect). Thus, the main focus in VAR is the analysis of the results of the Impulse Response Function and its Variance Decomposition.

Table 5 shows that first estimation results of the NPF to CAR model: dNPF = 2.49545 dNPF(-1). If the change in non-performing financing last month increased by 1%, it will cause non-performing financing this month to increase by 2.4%. Then, second estimation results of the NPF to CAR model: dCore_Capital = -2.18944 dNPF(-2) -1.84349 dSupplementary_Capital(-1). If the change in non-performing financing two months ago increased by 1%, it would cause core capital to decrease by 2.1 % this month. If the change in supplementary capital last month increased by 1%, it would cause this month's core capital to decrease by 1.8%.

Table 6 shows that first estimation results of the NPF to REO model: dREO = 1.89505 - 1.96510 dREO(-1) - 3.19596 dNPF(-1) – + 2.69046 dNPF(-2)+ 2.10915 dOperating_Expences(-1) -2.13195 dOperating_Income(-1). If last month's REO change increased by 1%, it would cause the REO change to decrease by 1.9%. If the change in non-performing financing last month increased by 1%, it will cause the change in REO to decrease by 3.1%. If the change in non-performing financing two months ago increased by 1%, it would cause the change in REO to increase by 2.6%. If the change in operating expenses last month increased by 1%, it would cause the change in REO to increase by 2.1%. If the change in operating income last month increased by 1%, it would cause the change in REO to decrease by 2.1%. Then, second estimation results of the NPF to REO model: dNPF = 2.29177 dNPF(-1). If the change in non-performing financing last month increased by 1%, it will cause the change in non-performing financing this month to increase by 2.2%.

Third estimation results of the NPF to REO model: dOperating_Income = 1.95911 dREO(-1) + 2.59442 dNPF(-1) -2.97548 dNPF(-2) – 1.92978 dOperating_Expences(-1) + 2.03502 dOperating_Income(-1). If the change in REO last month increased by 1%, it would cause the change in operating income for this month to increase by 1.9%. If the change in non-performing financing last month increased by 1%, it will cause the change in operating income to increase by 2.5%. If the change in non-performing financing two months ago increased by 1%, it would cause the change in operating income to decrease by 2.9%. If the change in operating expenses last month increased by 1%, it would cause changes in operating income to decrease by 1.9%. If the change in operating income last month increased by 1%, it will cause the change in operating income for this month to increase by 2%.

Table 5. NPF to CAR Model VAR Estimation Results

	CAR	NPF	CAR_RWA	CAR _Supplementary _Capital	CAR_Core _Capital
CAR(-1)	-4.314066[1] (5.49267)[2] [-0.78542][3]	85940662 (4.7E+08) [0.18341]	2.16E+09 (3.0E+09) [0.71767]	7510053. (3.5E+07) [0.21502]	1.49E+08 (3.8E+08) [0.39204]
CAR(-2)	0.580230 (1.35776) [0.42734]	-23936776 (1.2E+08) [-0.20665]	1.26E+08 (7.4E+08) [0.16953]	4668797. (8633740) [0.54076]	74349362 (9.4E+07) [0.79086]
NPF(-1)	-6.22E-09 (4.3E-09) [-1.44239]	0.918756 (0.36817) [2.49545]	2.571817 (2.36582) [1.08707]	0.010970 (0.02744) [0.39976]	0.116618 (0.29882) [0.39027]
NPF(-2)	-2.50E-09 (5.3E-09) [-0.47071]	-0.209283 (0.45296) [-0.46203]	-2.426073 (2.91066) [-0.83351]	-0.010388 (0.03376) [-0.30768]	-0.804908 (0.36763) [-2.18944]
CAR_RWA(-1)	-1.15E-08 (1.6E-08) [-0.74137]	0.282148 (1.32884) [0.21233]	6.332339 (8.53892) [0.74159]	0.023656 (0.09905) [0.23883]	0.524061 (1.07851) [0.48591]
CAR_RWA(-2)	1.68E-09 (4.6E-09) [0.36332]	-0.120293 (0.39546) [-0.30418]	0.866545 (2.54118) [0.34100]	0.014356 (0.02948) [0.48701]	0.333296 (0.32097) [1.03842]
CAR_Supplement ary_Capital(-1)	-6.66E-08 (6.6E-08) [-1.00453]	-5.5616 (5.65492) [-0.98350]	-10.41899 (36.3376) [-0.28673]	0.423741 (0.42150) [1.00531]	-8.460947 (4.58964) [-1.84349]
CAR_ Supplementary_Ca pital (-2	5.72E-08 (8.3E-08) [0.69189]	3.513241 (7.05425) [0.49803]	-50.69389 (45.3295) [-1.11834]	-0.382909 (0.52580) [-0.72823]	-6.655945 (5.72537) [-1.16254]
CAR_Core_Capita l(-1)	4.74E-08 (6.4E-08) [0.73876]	-1.199197 (5.47331) [-0.21910]	-25.90671 (35.1706) [-0.73660]	-0.122861 (0.40797) [-0.30116]	-2.098487 (4.44225) [-0.47239]
CAR_ Core_Capital (-2)	-1.27E-08 (2.0E-08) [-0.64140]	0.477525 (1.69260) [0.28213]	-1.54751 (10.8764) [-0.14228]	-0.072627 (0.12616) [-0.57567]	-1.394499 (1.37375) [-1.01511]
C	135.6815 (119.069) [1.13952]	-1.05E+09 (1.0E+10) [-0.10336]	-4.96E+10 (6.5E+10) [-0.75982]	-1.75E+08 (7.6E+08) [-0.23091]	-2.34E+09 (8.2E+09) [-0.28360]
R-squared	0.677227	0.625981	0.846346	0.694066	0.923619
Adj. R-squared	0.216122	0.091669	0.626840	0.257018	0.814503
Sum sq. resids	2.619466	1.91E+16	7.87E+17	1.06E+14	1.26E+16
S.E. equation	0.611727	52186600	3.35E+08	3889844.	42355672
F-statistic	1.468704	1.171565	3.855682	1.588078	8.464569
Log likelihood	-8.194282	-336.9068	-370.3927	-290.1706	-333.1498
Akaike AIC	2.132698	38.65631	42.37696	33.46340	38.23886
Schwarz SC	2.676814	39.20043	42.92108	34.00751	38.78298
Mean dependent	23.33930	9.09E+08	8.24E+09	63396092	1.86E+09
S.D. dependent	0.690928	54756661	5.49E+08	4512768.	98342928

Note: (1) Variable coefficient value, (2) This value indicates the standard error; and (3) This value indicates the partial t-statistic value

Impulse Response Function (IRF) Test

The paper employs impulse response functions (IRFs) to determine what impacts of the shock would have on the variables in the model, how long such effects would last, and when the maximum repercussions could be expected (Aziz & Dalahan, 2015). A shock in the variable can directly affect the variable itself and will spread to other endogenous variables through the dynamic VAR structure. In addition, IRF provides direction of the relationship of magnitude

influence between endogenous variables. Thus, the shock of a variable in the presence of new information will affect the variable itself and other variables in the VAR. An IRF analysis is performed to assess the dynamic response of CAR, EAQ, REO, and CR variables against the shocks of certain variables. If a variable cannot be affected by shock, then the specific shock can not be known but shock in general (Zuhroh et al, 2017). This result is similar to the finding from a study of Rehman (2017) which shows that the impulse response function confirms the NPL impacted on main bank indicators, one of them is ROE, ETA, and LG. The impacts to bank indicators even bigger than macroeconomic indicators.

Table 6. NPF to REO Model VAR Estimation Results

	REO	NPF	REO_Operating_Expences	REO_Operating_Income
REO(-1)	-11.86474 (6.03773) [-1.96510]	50903421 (1.4E+08) [0.36157]	4808496. (9.2E+07) [0.05249]	2.04E+08 (1.0E+08) [1.95911]
REO(-2)	-8.491365 (6.89645) [-1.23127]	-1.70E+08 (1.6E+08) [-1.05952]	-1.24E+08 (1.0E+08) [-1.18363]	325398.4 (1.2E+08) [0.00274]
NPF(-1)	-2.93E-08 (9.2E-09) [-3.19596]	0.489719 (0.21369) [2.29177]	-0.071559 (0.13905) [-0.51463]	0.409912 (0.15800) [2.59442]
NPF(-2)	2.27E-08 (8.4E-09) [2.69046]	0.091542 (0.19659) [0.46566]	-0.037165 (0.12792) [-0.29053]	-0.432498 (0.14535) [-2.97548]
REO_Operating_Expences(-1)	8.87E-07 (4.2E-07) [2.10915]	-3.241964 (9.80402) [-0.33068]	0.732999 (6.37960) [0.11490]	-13.98907 (7.24904) [-1.92978]
REO_ Operating_Expences (-2)	5.23E-07 (4.7E-07) [1.10990]	10.29661 (10.9913) [0.93680]	8.497096 (7.15217) [1.18804]	0.997612 (8.12690) [0.12275]
REO_Operating_Income (-1)	-7.45E-07 (3.5E-07) [-2.13195]	3.103087 (8.15121) [0.38069]	-0.197074 (5.30409) [-0.03716]	12.26499 (6.02696) [2.03502]
REO_ Operating_Income (-2)	-4.33E-07 (4.0E-07) [-1.08422]	-8.767402 (9.32196) [-0.94051]	-6.849044 (6.06591) [-1.12910]	-0.606102 (6.89261) [-0.08794]
C	1791.893 (945.563) [1.89505]	1.00E+10 (2.2E+10) [0.45411]	1.03E+10 (1.4E+10) [0.71878]	-1.67E+10 (1.6E+10) [-1.02723]
R-squared	0.873068	0.912224	0.910790	0.926194
Adj. R-squared	0.760239	0.834200	0.831492	0.860589
Sum sq. resids	8.228888	4.47E+15	1.89E+15	2.45E+15
S.E. equation	0.956201	22296087	14508333	16485603
F-statistic	7.737994	11.69168	11.48568	14.11773
Log likelihood	-18.49641	-323.8612	-316.1268	-318.4265
Akaike AIC	3.055156	36.98457	36.12520	36.38073
Schwarz SC	3.500342	37.42976	36.57038	36.82591
Mean dependent	83.02282	9.09E+08	1.25E+09	1.51E+09
S.D. dependent	1.952810	54756661	35343321	44152652

Morakinyo et al (2018) using the impulse response function (IRF) of the structural autoregressive model and find a long-run impact of an impulse to non-performing loans on the banking system and the macroeconomy in Nigeria. Non-performing loans also respond to the innovation of all macro-banking variables. Shocks to bank total credit, return on assets, bank liquidity ratio and lending rate, however, evoke a significant response from NPLs. Similarly, the innovation to return on assets (ROA) significantly reduces the level of NPLs. Turning to the shock to the bank liquidity ratio, this evokes a significantly flat response of NPLs. However,

shock to NPLs did not show a significant impact on bank credit until later in the time horizon. Further, an innovation to non-performing loans has a significant impact on ROA for only a period. However, a non-performing loans' shock increases bank liquidity over a period. In addition, a shock to NPLs slowly but significantly reduces the lending rate but reverses later in the time horizon. To be concluded, the impulse response function (IRF) shows a long-run impact of an impulse to NPLs on the banking system and the macroeconomy.

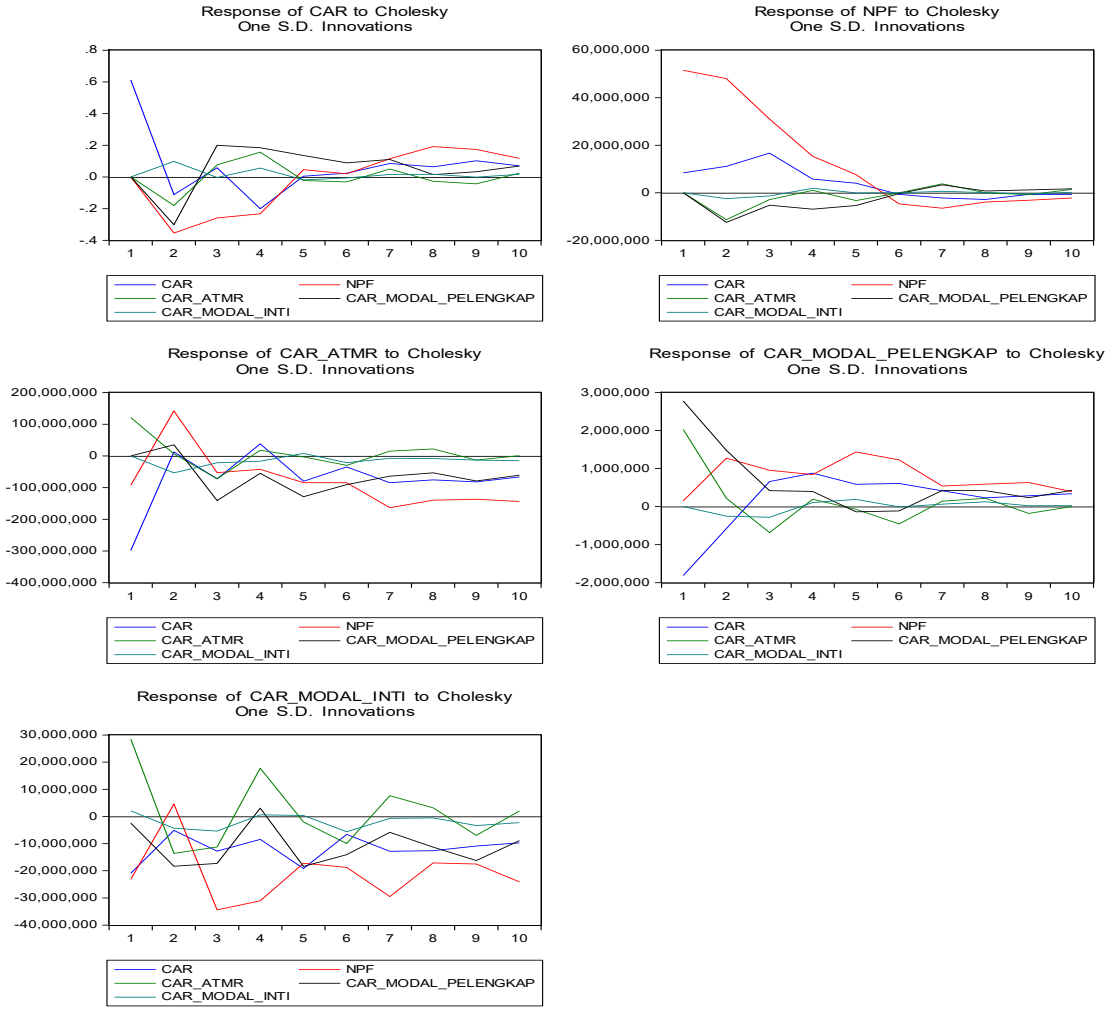


Figure 2. NPF to CAR Model IRF Test

Figure 2 shows that CAR fluctuated from the first month to the fifth month where it was seen that the CAR was at a negative point, especially in the second and fourth months but could return to positive in the third and fifth months. After the fifth month. In the sixth month, CAR has started to recover back to the point of balance or equilibrium as before the shock in the economy. The NPF was in a positive condition from the first to the fifth month but experienced a negative condition in the sixth month. This is due to a large number of financing defaults due to pandemic conditions where many people have failed to pay. In the tenth month, the NPF has started to recover towards the point of balance or equilibrium as before the shock in the economy. A one standard deviation shock to NPF causes significant decreases in CAR for four months (determined by the length of period for which the Standard Error bands are above 0 or below 0 in case of decrease) after which the effect dissipates.

EAQ is in a positive condition from the first month to the fifth month as shown in the chart above, while after the fifth month it returns to negative (see Figure 3). In month 10, EAQ has not fully recovered to the point of balance or equilibrium as before the shock in the economy. Meanwhile, NPF was in a positive condition starting from the first month to the fifth month as shown in the graph above, while after the fifth month it returned to negative. In the

tenth month, the NPF has not fully recovered to the point of balance or equilibrium as before the shock in the economy. A one standard deviation shock to NPF causes significant decreases in EAQ for four months starting from sixth month after which the effect dissipates.

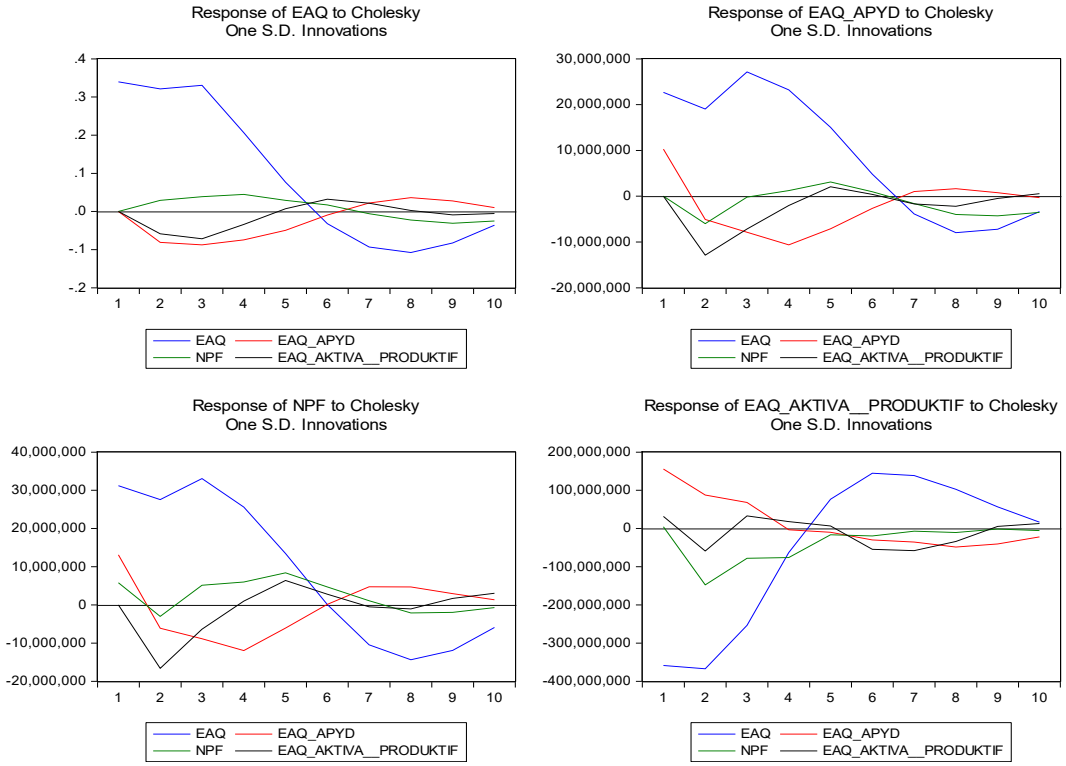


Figure 3. NPF to EAQ Model IRF Test

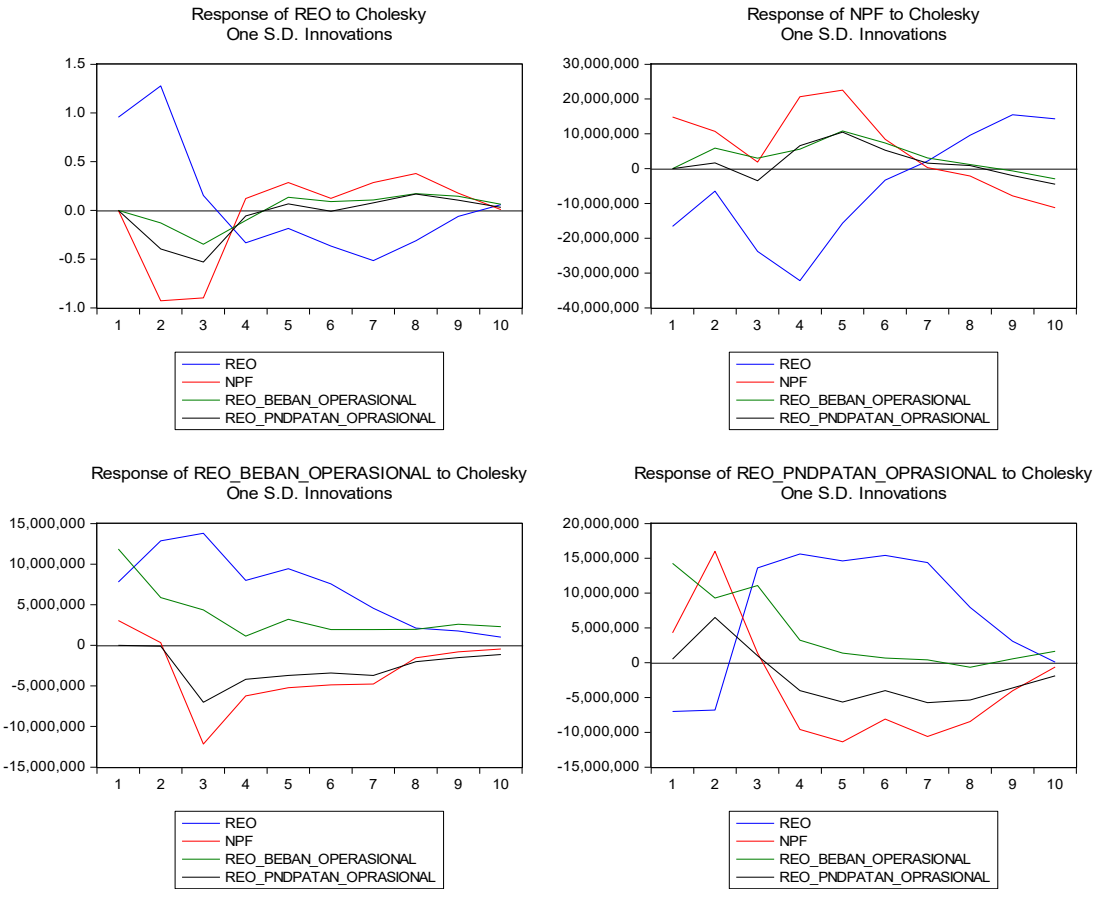


Figure 4. NPF to REO Model IRF Test

Figure 4 shows that REO fluctuated from the first to the tenth month. In the first to third months, REO was still positive but continued to decline. In fact, REO was at a negative point from the fourth month to the tenth month. In the tenth month, REO is already at the point of balance or equilibrium as before the shock in the economy. Meanwhile, NPF was in a negative position from month 1 to month 7. At month 8, the NPF is positive but is moving away from the equilibrium or equilibrium point. This also shows an increase in the number of non-performing financing due to the shock in the economy, namely the pandemic. A one standard deviation shock to NPF causes significant increases in REO for four months starting from seventh month after which the effect dissipates.

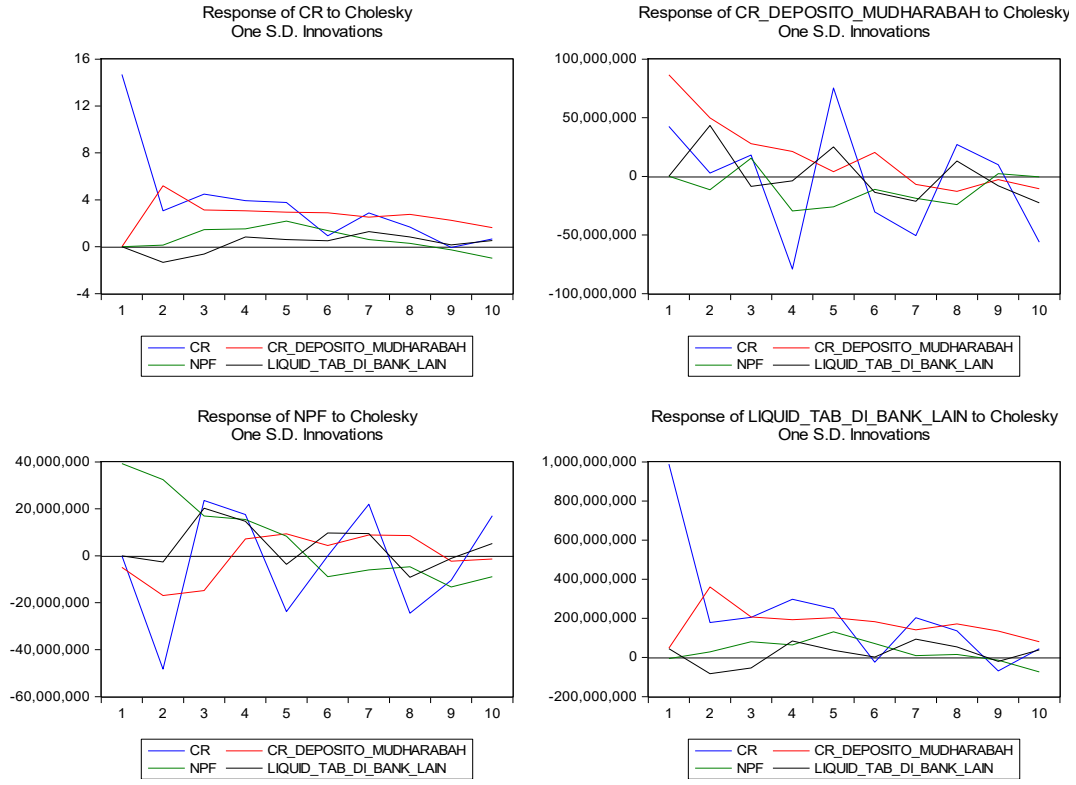


Figure 5. NPF to CR Model IRF Test

Based on the Figure 5, it is known that CR is always in a positive condition starting from the 1st month to the tenth month. In the ninth month, CR had headed to the point of balance or equilibrium. Meanwhile, NPF was in a fluctuating condition, where the graph showed positive starting from the 1st month, while after the second month it turned negative. In the tenth month, the NPF has not fully recovered to the point of balance or equilibrium as before the shock in the economy. A one standard deviation shock to NPF causes significant increases in CR for two months starting from the eighth month after which the effect dissipates.

From the results of the IRF test, it also can be concluded that the countercyclical policy has a positive effect, namely recovering or restoring some of the main financial ratios of the Islamic rural bank in a positive condition, except for the CR, which since the implementation of the countercyclical policy has always been in a positive condition. Meanwhile, in CAR, the EAQ and REO ratios fluctuated although at a certain point some of the ratios recovered and returned to a positive condition. The time required to return in a positive/recovery condition is at least 10 months since the policy was implemented.

Conclusion

The implementation of countercyclical policies is considered to have a positive impact on the soundness of Islamic rural bank in term 3 (three) aspects, including integration, causality and dynamic aspects. The positive influence from the integration side is that the implementation of

countercyclical policies will create a long-term equilibrium in the CAR, EAQ and REO ratios. Meanwhile, in terms of causality, the implementation of countercyclical policies can affect CAR and also affect REO. As for the dynamic aspect, namely CAR, the EAQ and REO ratios can recover or be in a positive condition at least 10 (ten) months after the policy is implemented.

Author Contributions

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Investigation: Rizki Maulana
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Validation: Jaka Sriyana
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References

Africano, F. (2016). Pengaruh NPF terhadap CAR serta dampaknya terhadap profitabilitas bank umum syariah di Indonesia, *Jurnal Ilmiah STIE MDP*, *6*(1), 61-70. http://forbiswira.stie-mdp.ac.id/wp-content/uploads/2016/09/6.-Jurnal-Fernando.pdf

Amelia, E., & Hardini, E. F. (2017). Determinant of *mudharabah* financing: A study at Indonesian Islamic rural banking. *Etikonomi, 16*(1), 43–52. https://doi.org/10.15408 /etk.v16i1.4638.

Ariffin, N. M., Kassim, S. H., & Razak, D. A. (2015). Exploring application of equity-based financing through *musharakah mutanāqiṣah* in Islamic banks in Malaysia: Perspective from the industry players, *International Journal of Economics, Management and Accounting, 2,* 241-261. https://journals.iium.edu. my/enmjournal/index.php/enmj/article/view/338.

Arianto, B. (2020). Dampak pandemi Covid-19 terhadap perekonomian dunia. *Jurnal Ekonomi Perjuangan*, *2*(2), 106-126. https://doi.org/10.36423/jumper.v2i2.665

Aziz, M. I. A., & Dahalan, J. (2015). Oil price shocks and macroeconomic activities in Asean-5 countries: A panel VAR approach. *Eurasian Journal of Business and Economics*, *8*(16), 101-120. https://www.ejbe.org/index.php/EJBE/article/view/156

Dipoyanti, M. P., Fasa, M. I., & Suharto, S. (2022). Pengaruh implementasi POJK No.11/POJK.03/2020 terhadap non performing financing (NPF) di bank syariah Mandiri. *JIHBIZ: Global Journal of Islamic Banking and Finance,* 4(1), 51-52. http://dx.doi.org/10.22373/jihbiz.v4i1.12430

Effendi, I., & Hariani, P. R. S . (2020). Dampak Covid 19 terhadap bank syariah. *Ekonomikawan: Jurnal Ilmu ekonomi dan Studi Pembangunan. 20*(2), 221-230. https://doi.org/ 10.30596/ekonomikawan.v%vi%i.5553

Hasan, N. F. (2022). Performance of Indonesian sharia rural bank during Covid-19 pandemic: A descriptive analysis, *Velocity: Journal of Sharia Finance and Banking. 2*(1), 25-33. https://doi.org/10.28918/velocity.v2i1.5192

Kadir, R. D. (2019). Estimasi jangka pendek dan jangka panjang risiko pembiayaan BPR Syariah di Indonesia. *Nisbah: Jurnal Perbankan Syariah*, *5*(2), 100–105. https://doi.org/10.30997/jn.v5i2.2166

Maghfiroh, R. N. (2021). *Analisis dampak covid-19 terhadap kinerja keuangan bank di Indonesia.* Thesis, State University of Islam Maulana Malik Ibrahim. http://etheses.uin-malang.ac.id/29093/1/17540025.pdf

Morakinyo, A., Muller, C. & Sibanda, M. (2018). Non-performing loans, banking system and macroeconomy. *Studia Universitatis Babes-Bolyai Oeconomica*, *63*(2) 67-86. https://doi.org/10.2478/subboec-2018-0009

Nabila, S., Buchari, N. S., & Suprapto, E. (2022). Analysis on the soundness level of shariah commercial banks using RGEC during the Covid-19. *Jurnal Ekonomi dan Perbankan Syariah,* 10(1), 66-85. https://doi.org/10.46899/jeps.v10i1.316

Otoritas Jasa Keuangan. (2020). Peraturan Otoritas Jasa Keuangan Nomor 11/POJK.03/2020 yang diubah lebih lanjut melalui POJK Nomor 48/POJK.03/2020 tentang stimulus perekonomian nasional sebagai kebijakan countercyclical dampak penyebaran coronavirus disease 2019. https://www.ojk.go.id/id/berita-dan-kegiatan/siaran-pers/Pages/Siaran-Pers-OJK-Keluarkan-Peraturan-Perpanjangan-Kebijakan-Stimulus-Covid-19.aspx

Otoritas Jasa Keuangan. (2019). Surat Edaran Otoritas Jasa Keuangan nomor 28/SEOJK.03/2019 tentang sistem penilaian tingkat kesehatan bank perkreditan rakyat syariah. https://ojk.go.id/id/regulasi/Pages/-Sistem-Penilaian-Tingkat-Kesehatan-Bank-Pembiayaan-Rakyat-Syariah.aspx

Pravasanti, Y. A (2018). Pengaruh NPF dan FDR terhadap CAR dan dampaknya terhadap ROA pada Perbankan Syariah di Indonesia. *Jurnal Ilmiah Ekonomi Islam, 4*(3), 156. http://dx.doi.org/10.29040/jiei.v4i03.302

Rachmad, M. H. F., & Fitria, S. (2021). Analisis perbandingan kinerja bank pembiayaan rakyat syariah (BPRS) sebelum dan selama pandemi Covid- 19. Undergraduate thesis, Universitas Diponegoro. https://repofeb.undip.ac.id/9940/

Rehman, O. U. (2017). Determinants of non-performing loan in South Asia: The role of financial crisis. *Eurasian Journal of Business and Economics*, *10*(20), 105-124. https://doi.org/10.17015/ejbe.2017.020.07.

Rolianah, W. S., Miftahurrahman, M., & Sari, D. P. (2021). Analisis rasio keuangan bank pembiayaan rakyat syariah sebelum dan selama pandemi Covid-19. *Iqtishaduna*, *12*(2), 136–149. https://doi.org/10.20414/iqtishaduna.v12i2.3457

Sriyana, J., (2020). *Metode Regresi Dinamik*, Ekonesia, Yogyakarta.

Sudarsono, H. (2017). Modelling respon rasio keuangan terhadap pembiayaan pada bank syariah di Indonesia, *Jurnal Ekonomi Syariah Indonesia*, *7*(1), 1-13. http://dx.doi.org/10.21927/jesi.2017.7(1).1-13

Widarjono, A. (2013). *Pengantar ekonometrika dan aplikasinya dengan panduan untuk Eviews* (ed. ke-4). UPP STIM YKPN.

Zuhroh, I., Kusuma, H., & Kurniawati, S. (2017). An approach of vector autoregression model for inflation analysis in Indonesia. *Ventura: Journal of Economics, Business, & Accountancy*, *20*(3), 261-268. http://dx.doi.org/10.14414/jebav.v20i3.1019