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DETERMINANT FINANCING RISK ON ISLAMIC RURAL BANKS IN INDONESIA: ARDL APPROACH

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Abstract

This study aims to analyze internal and external factors that affect Financing Risk as proxied by NPF at Islamic People's Financing Banks in Indonesia. By using the Auto Regressive Distributed Lag (ARDL) analysis, it was found that the CPI has a positive and significant effect, the exchange rate does not have a positive effect on the NPF, the Industrial Production Index (IPI) as a proxy for GDP in this study has a positive and significant effect, ROA has no negative effect on the NPF Sharia BPR in Indonesia, Bank Size has a negative and significant effect, CAR has no effect on NPF, FDR has a positive and significant effect, BOPO has a negative and significant effect on NPF as a proxy for Financing Risk at Sharia BPR in Indonesia.

Keywords: *NPF, Financing Risk, Islamic Rural Bank (BPR)*

INTRODUCTION

According to Law no. 10 of 1998, bank is a business entity collecting funds from the public in the form of savings and distributing them to the public in the form of credit or other forms in order to improve the standard of living of the community at large. Banks in Indonesia consist of Conventional Banks and Islamic Banks that operate according to Islamic values.

Islamic banks in Indonesia have existed since the establishment of the first Islamic bank, Mualamat Bank of Indonesia in 1992. Until now, Islamic banking continues to grow, although its market share is still far below that of conventional banks, which is 5.3 percent (OJK, 2016). The current development of Islamic Banking can be seen in the following table:

Table 1. The Development of BUS (Islamic Commercial Bank) and UUS (Islamic Business Unit)

Data	2011	2012	2013	2014	2015	2016
Assets (billion Rp)	145,467	195,018	242,276	204,961	213,243	224,283

CAR	16,63	14,13	14,42	15,74	15,02	15,95
ROA	1,79	2,14	2,00	0,49	0,49	0,63
NPF	2,52	2,22	2,62	4,95	4,84	4,42
FDR	88,94	100,00	100,32	109,02	104,88	96,70
BOPO	78,41	74,97	78,21	80,19	83,41	82,85

Source: *Financial Services Authority, Data are reprocessed.*

The data above reveal that the assets of BUS and UUS fluctuate. There was an increase in 2013 although it decreased in 2014 and increased until 2016. However, the development of these assets was not accompanied by returns on assets used to create profits for BUS and UUS. It can be seen where in the last three years the ROA of BUS and UUS was less than one; in 2014-2016, when compared to the previous year which was at more than one. Another interesting thing is that in 2014-2016 the NPF values of BUS and UUS increased compared to the previous three years. The increase in the NPF of BUS and UUS could be one of the reasons why ROA tends to decrease from the previous three years. In the table above, it can also be seen that the BOPO in 2014-2016 increased from the previous three years where the costs used by BUS and UUS to earn profits were at 80 percent.

In Indonesia, apart from BUS and UUS, there is also an Islamic Rural Bank (BPR). The development of Sharia BPR in Indonesia can be seen in the following table.

Table 2. The Development of Sharia BPR in Indonesia

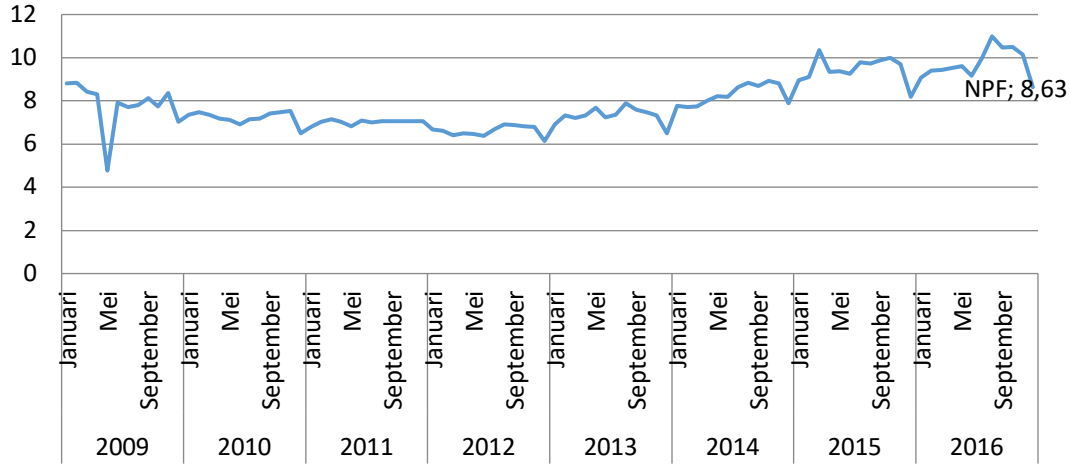
Year	NPF	ROA	ASSET (in Rp)	CAR	FDR	BOPO
2009	7,82	2,97	2.123.581.000.000	31,18	126,53	73,79
2010	7,23	2,95	2.402.492.000.000	29,40	131,97	74,40
2011	7,57	2,69	3.114.373.166.667	26,29	132,47	77,05
2012	6,61	2,68	4.129.625.750.000	24,62	125,83	79,30
2013	7,32	2,68	5.219.543.250.000	21,20	124,40	79,64
2014	8,28	2,50	6.071.911.750.000	22,65	128,12	81,06
2015	9,48	2,22	7.010.178.666.667	22,14	127,63	100,78
2016	9,74	2,27	7.688.276.500.000	21,27	120,28	88,88

Source: *Financial Services Authority, Data are reprocessed.*

In the table above, it can be viewed that the Bank Size, in this case the assets of Islamic Rural Bank, is increasing from year to year. The Return on Assets (ROA) of Sharia BPR over the last eight years has shown an average of two percent. The ROA of Sharia BPR when compared to BUS and UUS can be assumed better. The Capital Adequacy Ratio (CAR) of BPR Sharia has decreased slightly from year to year although the decline is not very significant, while the FDR of BPR Syariah from 2014-2016 has decreased slightly, although it is still relatively constant. Meanwhile, the BOPO shows that the efficiency of Sharia BPR is relatively good. However, a serious problem for Sharia BPR in Indonesia is the high non-performing financing (NPF) which

is quite high beyond the healthy size of a bank set by Indonesia Bank (BI), where the NPF value of a bank cannot exceed 5%.

Chart 1. Non-Performing Financing of Sharia BPR



Source: *Financial Services Authority, Data are reprocessed.*

The chart above indicates that since June 2009 the NPF at Sharia BPR has continued to experience a very high increase. In June 2009 the NPF of Sharia BPR was 4.35 percent and continued to increase in the following years. Based on the above, it is important to re-examine the factors that cause the NPF of Sharia BPR in Indonesia. Problem financing at BPR Syariah is a serious problem still happening today. Seeing this, this study will examine the factors that can affect the NPF level of Sharia BPR in Indonesia.

Credit risk is defined as the risk that the portfolio value changes due to unexpected changes in the credit quality of the issuer or trading partner (AJ McNeil R. F., 2005). In the case of Islamic banks, trading partners can be classified as customers or borrowers or investors. A decrease in credit quality such as a decrease in the rate of return on financing can result in losses to the bank.

Banks as financial intermediary institutions are very concerned about this. Because of the possibility of bank losses, one of which is caused by the high non-performing financing at the bank. The higher the amount of financing disbursed to the public, the greater the chance of non-performing financing, because not all of the financing disbursed to the community is in a healthy condition, but there is also bad financing and can trigger non-performing or problematic financing.

Non-performing financing (NPF) in Sharia Banking can be seen in the non-performing financing (NPF). NPF is the amount of financing that is problematic and may not be collectible (Fahmi, 2014). The greater the NPF value, the worse the performance of the Sharia Bank, non-performing financing can result in a loss of opportunity to earn income from the financing

disbursed, thus affecting profit. NPF reflects financing risk, the higher this ratio indicates the poorer quality of Sharia Bank financing.

The factors causing the occurrence of NPF are seen from two sides, internal and external banking. From the internal side, it is seen from the financial performance, internal bank and internal debtor. As for the external side, it can be seen from macro-economic conditions. This study applies internal and external factors that can be the cause of the occurrence of NPF (Non-Performing Financing) in Sharia BPR in Indonesia.

Research on the factors affecting Non-Performing Financing (NPF) in Islamic Banking has been widely carried out, but of all these studies, not many have used Islamic Rural Banks (BPR) as objects or are still limited to Islamic Commercial Banks (BUS) and the Islamic Business Unit (UUS). As for several studies employing Sharia BPR as objects, case studies are still limited to one or several Sharia BPR. Therefore, this study tries to examine the factors influencing the NPF of all Islamic BPR in Indonesia

Some previous studies on NPF in Islamic Banking have been done by Asnani (2014); Brilia Wulantika (2015); Firmansyah (2014); Misman (2012); Setiawan & Putri (2013); Yono Haryono (2016) explaining the factors affecting the NPF. The factors used are ROA, CAR, FDR, BOPO, Inflation, GDP, Production Index, Exchange Rate, Inflation, and others. From the several studies above, it reveals different results related to the influence of each variable on NPF in Islamic Banking.

Regarding to the explanations above, it is important to do research again about the factors affecting the NPF in Islamic Banking. In this study, all Sharia BPR in Indonesia will be used as objects in the observation period during 2010-2016.

LITERATURE REVIEW

Effect of Inflation on NPF

Inflation is the tendency of prices to rise in general and continuously. An increase in the price of one or two goods is not called inflation, unless the price increase extends to (or causes an increase in) most of the other goods (Boediono, 1990). Inflation is a process of increasing prices in general continuously resulting in changes in people's purchasing power which will decrease because in real terms the level of income also decreases with the assumption that the income level is constant (Putong, 2013).

Financial risk also arises due to inflation; if there is an unexpected increase in inflation, it will cause purchasing power risk. Purchasing power risk is the real value of money lent plus interest payments to be smaller than expected (Diulio, 1993). The indicator often used to measure the

inflation rate is the Consumer Price Index (CPI). In this study, the CPI is used as a proxy for inflation.

High inflation will cause a decrease in people's real income so that people's living standards also fall. Before inflation, a debtor is still able to pay his installments, but after inflation occurs, prices increase, but the ability of the debtor does not increase, so the debtor's ability to pay installments is weakened because most or even all of his income has been used to meet household needs as a result of rising prices (Soebagia, 2005).

Thus, it can be concluded that the higher the inflation rate, the higher the opportunity for NPF to occur (Ahmad & Widodo, 2018). Inflation can affect non-performing loans, while high and unstable inflation will give a negative impact on the socio-economic conditions of the community (D. Sari, 2021). First, high inflation will cause a decline in people's real income so that people's living standards will also fall. Second, unstable inflation will create uncertainty for economic actors in making decisions. Third, the domestic inflation rate which is higher than inflation in neighboring countries makes the real interest rate uncompetitive so that it can put pressure on the rupiah exchange rate. Based on the description, the formulation of the hypothesis proposed in this variable is:

H_1: Inflation has a positive effect on NPF

Effect of Exchange Rate on NPF

The foreign exchange rate is the unit price of a currency in another currency. Foreign exchange rates are determined in the foreign exchange market, the market in which different currencies are traded (Samuelson, 2004). Meanwhile, according to Hasibuan (2009), the exchange rate is the comparison of the exchange rate of a country's currency with foreign currencies or the comparison of exchange rates between countries. Exchange rate is the domestic price of foreign currency or foreign currency (Mankiw, 2006).

One of the theories discussing the exchange rate is the theory of purchasing power parity, indicating two meanings, namely absolute and relative versions. In absolute terms, it states that the foreign exchange rate is expressed in terms of prices in two countries, meaning that the spot rate is determined by the relative countries of the same number of goods. Meanwhile, it is relatively clear that the percentage change in the nominal exchange rate will be the same as the difference in inflation between the two countries. Stated in the future context (ex ente terms), the expectation of changes in the foreign exchange rate is the same as the expected difference in inflation. The main assumption underlying the Purchasing Power Parity theory is that the commodity market is an efficient market in terms of allocation, operations, pricing and information (Kuncoro, 2001).

In accordance with the Purchasing Power Parity theory, it relates the foreign exchange rate to commodity prices in local currencies in the international market, namely that the foreign exchange rate will tend to decrease in the same proportion as the rate of price increase. In essence, Purchasing Power Parity emphasizes the long-run relationship between foreign exchange rates and relative commodity prices.

In the flexible price version of the monetary model, this model is the theory of quantity, price flexibility, and the concept of purchasing power parity. In this model, the foreign exchange rate is obtained by combining the quantity theory of money and the theory of purchasing power parity. The assumption of this model is the condition of the balance of the money market; the money demand (md) is equal to the money supply (ms). The money demand is influenced by real income (y), the price level (p), and the interest rate (r). With the money supply is certain (given).

Kuncoro (2001) explains that one of the dynamics of the crisis is the exchange rate. When there is a recession or even a crisis will cause the outflow of foreign capital due to the speculative behavior of investors, as a result the value of the currency in the country depreciates. The depreciation of the exchange rate will be followed by a large increase in the domestic cost of foreign debt. The increase in the risk premium and the monetary contraction that occurred to support the exchange rate causes interest rates to rise and created problems in repaying loans.

Changes in exchange rates are vulnerable to non-performing external credit and a fall in the exchange rate due to panic among market participants. The relationship between non-performing loans or financing and the exchange rate can have an impact on economic activity, especially producers who use imported raw materials, so that with the depreciation of the exchange rate, the price of imported raw materials increases and this burdens production costs, in the end it will have an impact on producers' profits and income. So producers, as debtors, will be affected by loan payments to banks.

Islamic banking as an institution engaged in the financial industry is certainly affected by fluctuations in exchange rates. So that it will affect the change in customer capital to return financing to Islamic banking. In the end, this resulted in the return of financing from customers. Based on research by Brilia Wulantika (2015), it claims that the exchange rate has a positive effect on non-performing financing in banking. Then the hypothesis proposed in this study is:

H_2: Exchange rate has a positive effect on NPF

Effect of Industrial Production Index (IPI) on NPF

Based on the theory of economic growth with Harrord Domar's model, economic growth in a certain area is the level of capital productivity owned by the region multiplied by the level of investment. If it is assumed that capital productivity is constant, it can be concluded that economic

growth has a direct effect on investment. Banking financing is one of the sources of funds used by business actors in running their business.

The Industrial Production Index (IPI) is used as a proxy for GDP in this study due to the unavailability of GDP data in the form of monthly time series data. The Industrial Production Index (IPI) is a measure of the real monthly change in the total production of large and medium-sized industries which is calculated nationally and measures the actual volume of output in the production of goods regardless of price. The higher the IPI of a country indicates that the production of goods and services in that country is increasing, so this also indicates that the country's economic growth is increasing.

The condition of the IPI decline, which is also an indication of an economic downturn, indicates that there has been a decline in the production of goods produced. This decline may occur due to decreased production demand and supply. Both indicators of supply and demand show a decline in income levels from both the producer and consumer side. The decline in income, especially for business actors and as debtors, can affect the level of ability to pay their obligations to banks and can lead to NPF. Therefore, the hypothesis proposed in this study is as follows:

H_3: IPI has a negative effect on NPF

Effect of ROA on NPF

Return on Assets (ROA) is one of the profitability ratios. In the analysis of financial statements, this ratio is most often highlighted, because it is able to reveal the success of the company in generating profits. ROA is able to measure the company's ability to generate profits in the past and then projected in the future. The assets in question are the entire assets of the company obtained from own capital or from foreign capital which have been converted by the company into company assets used for the survival of the company.

The greater the ROA of a bank, the greater the level of profit achieved by the bank and the better the position of the bank in terms of the use of the assets taken into account. The higher the ROA value, the higher the profitability of a bank. The high profitability of a bank indicates the financing disbursed can be paid by customers so it benefits the bank. The high ROA value also indicates that the bank's profits obtained from financing to customers are also high or in other words, the financing disbursed can be repaid by the customer so that it becomes the bank's income. Thus, if the ROA value is high, it is expected to reduce the opportunity for non-performing financing or NPF. According to research by Setiawan & Putri (2013) ROA has a negative and significant effect on non-performing financing. Therefore, the hypothesis on this variable is:

H_4: ROA has a negative effect on NPF

Effect of Bank Size on NPF

Bank size is defined as the size of a bank. Bank size can be expressed in terms of total assets, sales, and capitalization. The greater the sales, assets, and market capitalization, the larger the size of a company is. The size of the company can be seen from the total assets it has. The greater the assets owned by the company, the greater the size of the company. The company's assets are in a balance sheet position reflecting wealth which is the result of sales in various forms.

Company size is basically an important thing in a company. This is because the company size describes the big or small company that can be shown by total assets, total sales, average sales levels and average total assets (R. T. Sari, 2012). Meanwhile, bank size is the amount of total assets owned by the company. On the bank's balance sheet, assets indicate the position of the use of funds (Suharjono, 2002).

This variable describes the bank's assets. The greater the bank's assets, the greater the credit that can be channeled by the bank is. Total assets describe the ability to fund profitable investments. Utilization of assets to be productive at the bank such as providing credit and others can also generate large profits for the bank. Large asset size is likely to reduce the occurrence of non-performing loans or financing. According to research by Setiawan & Putri (2013) it is concluded that bank size has a negative effect on non-performing financing. Therefore, the hypothesis proposed in this study is:

H_5: Size has a negative effect on NPF

Effect of CAR on NPF

Capital Adequacy Ratio (CAR) is a ratio revealing how far all assets containing risk (credit, investments, securities, claims from other banks) are also financed by own capital in addition to obtaining funds from sources outside the bank, such as community's fund, loans and others.

In this research, CAR represents the capital component in banking. Capital is one of the important factors for banks in developing their business and accommodating the risk of loss (Bakti, 2018; Taswan, 2006). Basically, the capital owned by a bank must be sufficient to cover all business risks faced by the bank.

CAR indicates how big the total bank assets containing risk, financed by their own capital. According Dendawijaya (2005) he claims that CAR is a ratio that shows how far all bank assets containing risks (credit, investments, securities, claims on other banks) are also financed by own capital funds in addition to obtaining funds from sources outside the bank.. CAR is a capital ratio revealing the bank's ability to provide funds for business development purposes and accommodate the risk of loss of funds caused by bank operations (M Ali, 2004). Therefore, it can be concluded that the capital adequacy ratio (CAR) is a bank performance ratio to measure the capital adequacy

of the bank, to support assets containing or generating risks financed by own capital funds or sources of funds originating from outside the bank. Based on Asnani (2014) it is stated that CAR has a negative and significant effect on NPF. Therefore, the hypothesis proposed in this research is:

H_6: CAR has a negative effect on NPF

Effect of FDR on NPF

Financing to Deposit Ratio (FDR) is one of the liquidity ratios to measure the ability to repay withdrawals made by depositors by relying on financing as a source of liquidity. The higher this ratio, the lower the liquidity is.

Distribution of financing is the main activity of the bank, therefore the activity of collecting credit funds from the public will determine the size of the bank's profits as well as the risks that will be taken by the bank. Therefore, the size of this ratio greatly affects the existence of non-performing financing (NPF).

This ratio is also an indicator of the amount of credit extended by banks, the higher the FDR ratio, the more likely the amount of financing to be provided will increase. This also indicates that when the amount of financing provided is high, it is likely that the profit earned by the bank through income will also be high. On the other hand, the greater the amount of financing provided will pose a fairly high risk to the distribution of such financing. With a time limit on the return of financing, the financing will become problematic. Based on research by Setiawan & Putri (2013) and Yono Haryono (2016), it is stated that FDR has a positive and significant influence on non-performing financing.

H_7: FDR has a positive effect on NPF

Effect of BOPO on NPF

BOPO is the ratio of operating costs on operating income. Operational costs are costs incurred by banks in carrying out their main business activities. The higher the BOPO, the more likely the bank is in trouble. BOPO defines the level of efficiency of a bank, so the smaller this ratio, the more efficiency. With efficiency, banks can maximize profits which of course will have an impact on bank liquidity. This means that the smaller the BOPO, the greater the bank's liquidity. In other words, banks get income from financing that is channeled to customers efficiently without causing the risk of default or non-performing financing (Jannah & Gunarso, 2020). The small BOPO indicates that the bank is inefficient and means that the costs used to generate revenue from customers are not efficient. According to Firmansyah (2014) BOPO has a negative but not significant effect on non-performing financing. In this study, the hypothesis proposed is:

H_8: BOPO has a negative effect on NPF

METHOD

This study applied a quantitative approach in the form of ratios and was based on time series data. This type of research was explanatory research. Explanatory research or explanatory research that explains the causal relationship between variables through hypothesis testing and explanation is more focused on the nature of the analysis (Tanjung, 2013). In this study, it will be tested whether there is an effect between Inflation, Exchange Rate, Industrial Production Index, ROA, Size, CAR, FDR and BOPO on the ratio of Non Performing Financing at Sharia BPR in Indonesia. The data in this study employed samples from the financial statements of all Sharia BPR in Indonesia in the period of 2010-2016.

The data used in this study were Panel Data. The type of data in this study was in the form of ratios obtained from the financial statements of Sharia BPR in Indonesia during the observation period obtained from the Financial Services Authority (OJK) and Bank Indonesia (BI).

This study also applied macroeconomic data such as inflation, Industrial Production Index and Exchange Rate. The Industrial Production Index was used in this study to replace GDP/GDP, because the GDP report in Indonesia has not been yet available in the form of monthly time series data. Therefore, the Industrial Production Index is used as a substitute for GDP. In addition, inflation in this study was proxied by the Consumer Price Index (CPI). The macroeconomic data above was obtained from the Central Statistics Agency (BPS). The method or approach used in analyzing the data employed Auto Regressive Distributed Lag (ARDL). Before being analyzed using ARDL, the data stationarity test, cointegration Bound Testing and Coefficient Testing were carried out. The ARDL equations used in this study are:

$$\Delta NPF_t = \beta + \beta_1 \sum_{i=1}^{p} \Delta INF_{t-i} + \beta_2 \sum_{i=1}^{p} \Delta IPI_{t-i} + \beta_3 \sum_{i=1}^{p} \Delta KURS_{t-i} + \beta_4 \sum_{i=1}^{p} \Delta ROA_{t-i} +$$

$$\beta_5 \sum_{i=1}^{p} \Delta SIZE_{t-i} + \beta_6 \sum_{i=1}^{p} \Delta CAR_{t-i} + \beta_7 \sum_{i=1}^{p} \Delta FDR_{t-i} + \beta_8 \sum_{i=1}^{p} \Delta BOPO_{t-i} + e_t$$

NPF is Non Performing Finacing, INF is Inflation, EXCHANGE is the Exchange Rate/Exchange Rate of Rupiah to Dollar, ROA is Return On Assets, CAR is Capital Adequacy Ratio, FDR is Finance to Deposit Ratio, and BOPO is Comparison of Operating Expenses to Operating Income. Meanwhile, β_1, β_2, β_3, β_4, β_5, β_6, β_7, β_8 show the dynamics of each variable. The Δ operator represents the difference (change) between two values of a variable in successive time periods and e is the standard error.

RESULTS AND DISCUSSIONS

Result

Statisonerity is one of the important prerequisites in econometric models for time series data. Stationary data is data indicating the mean, variance, and autovariance (on lag variations) remain the same at any time the data is formed or used, meaning that with statistical data the time series model can be said to be stable. If the data used in the model is not stationary, then the validity and stability of the data is reconsidered, because the regression results from non-stationary data will cause spurious regression, which means that the R^2 of the data is high, but there is no significant relationship between the two.

The results of unit root test of the Augmanted Dickley-Fuller (ADF) in this study can be seen in the following table:

Table 3. The Result of Unit Root Test

Variable	Statisonerity Level			
	Level	Description	1st Difference	Description
NPF	0.37	Not Stationary	0.00	Stationary*
IHK	0.92	Not Stationary	0.00	Stationary*
IPI	0.86	Not Stationary	0.00	Stationary*
LnKURS	0.90	Not Stationary	0.00	Stationary*
ROA	0.10	Not Stationary	0.00	Stationary*
LnSIZE	0.38	Not Stationary	0.00	Stationary*
CAR	0.04	Stationary**	0.00	Stationary*
FDR	0.78	Not Stationary	0.56	Not Stationary
BOPO	0.11	Not Stationary	0.00	Stationary*

Note: MacKinnon Critical Value * : α = 1%, **: α = 5%, ***: α = 10%

The table of unit root test results above reveals that there is one variable, CAR, which is stationary at the level and there is also one that is not stationary at the first difference, namely FDR. This means that the possibility of regression is spurious. Because the data is not integrated in the same order, it uses Autoregressive Distributed Lag (ARDL).

Cointegration test is to notice whether exogenous variables have a relationship with endogenous variables (Gujarati, 2006). Variables that are not stationary in a model can be seen for their long-term relationship through linear combinations, so in the long run they can become stationary. A stationary linear combination or also called a long-run equilibrium relationship between variables is called cointegration. This study applies the cointegration of Bounds Testing.

In the Bounds Testing cointegration test, if the calculated F-statistic value is smaller than the lower bound values, then the null hypothesis is not rejected and we conclude that there is no long-term (non-cointegrated) relationship between non-performing financing and the determinant variables used in this study. On the other hand, if the calculated F-statistic value is greater than the upper bound value, then the null hypothesis is rejected, in other words, there is a long-term

(cointegrated) relationship between the NPF and the determinant variables used in this study. On the other hand, if the calculated F-statistical value lies between the lower bound and upperd bound, it cannot be concluded whether there is a long-term relationship or not. The results of the bounds testing cointegration test can be seen in the following table:

Table 4. The Result of Cointegration Test of Bounds Testing

Test of Statistic	Value	Significance	I(0)	I(1)
F-statistic	4.550495	10%	1.85	2.85
k	8	5%	2.11	3.15
		2.5%	2.33	3.42
		1%	2.62	3.77

Based on the results of the cointegration test above, it can be seen that the F-statistic value of 4.550495 is greater than the upper limit values of I(0) and I(1) with a significance level of 1%. Thus, it can be seen that there is a long-term relationship between the eight determinant variables on the NPF of Sharia BPR in Indonesia.

This study applied the Autoregressive Distributed Lag (ARDL) model to examine the effect of each variable on the NPF of Sharia BPR in Indonesia. Selection of the best ARDL model with the optimal combination of lag, selected based on the Akaike Info Criterion (AIC). Based on AIC selection, the best ARDL model for this research is ARDL (1, 1, 4, 4, 0, 2, 0, 0, 4). The R-squared and Adjusted R-squared values of the ARDL model are relatively high, with an average of 0.94 and 0.92. The Adjusted R-squared value of 0.92 states that 92 percent of the dependent variable NPF can be explained by each of the independent variables of the selected ARDL model. This is an early indication that this research model is good enough to be analysed. The short-term estimation results of the ARDL model can be seen in the following table:

Table 5. ARDL Estimation Results of Short-Term Coefficient

Variable	Coefficient	Std. Error	t-statistic	Prob.*
NPF(-1)	0.394084	0.902715	4.250470	0.0001
IHK	-0.143728	0.106597	-1.348340	0.1831
IHK(-1)	0.212913	0.103093	2.065253	0.0436
IPI	-0.006405	0.010673	-0.600079	0.5509
IPI(-1)	0.012842	0.014813	0.866695	0.3897
IPI(-2)	0.009792	0.016395	0.597243	0.5528
IPI(-3)	0.028440	0.019427	2.481335	0.0162
IPI(-4)	0.026910	0.019427	1.385217	0.1716
LNKURS	2.795655	2.873162	0.973024	0.3348
LNKURS(-1)	-4.855573	2.666985	-1.820623	0.0741
LNKURS(-2)	3.033082	1.597909	1.898157	0.0614
LNKURS(-3)	-3.939732	2.062727	-1.909963	0.0614

LNKURS(-4)	3.661880	1.547290	2.366640	0.0215
ROA	-0.080070	0.156572	-0.511394	0.6111
LNSIZE	0.041199	0.107801	0.382174	0.7038
LNSIZE(-1)	0.604768	0.086522	6.989788	0.0000
LNSIZE(-2)	-2.471187	1.222979	-2.020629	0.0482
CAR	0.033958	0.053896	0.630053	0.5313
FDR	0.023972	0.013321	1.799591	0.0774
BOPO	0.002008	0.004696	0.427682	0.6706
BOPO(-1)	-0.003302	0.009400	-0.351255	0.7267
BOPO(-2)	-0.002811	0.008043	-0.349563	0.7290
BOPO(-3)	-0.025164	0.008222	-3.060646	0.0034
BOPO(-4)	0.014831	0.008391	1.767540	0.0827
C	33.67074	32.32855	1.041517	0.3002
R-Squared	0.946794	Mean dependent var		7.983125
Adjs R-Squared	0.923576	S.D dependent var		1.250177
S.E of regression	0.345610	Akaike info criterion		0.963292
Sum squared resid	6.569530	Schwarz criterion		1.707676
Log likelihood	-13.53171	Hannan-Quinn criter.		1.261737
F-Statistic	40.77958	Durbin-Watson stat		1.994579
Prob (F-Statistik)	0.00000			

Based on the short-term ARDL estimation results, it can be seen that the short-term inflation variable (CPI) has a negative coefficient of -0.143 and is significant at α = 10%. This means that if there is an increase in inflation of 1 percent, it will reduce the NPF level by 0.143. Meanwhile, in the first lag, inflation has a positive coefficient of 0.21 and is significant at α = 5%. This means that in the first lag or the previous one month period, if inflation rises 1 percent, it will be followed by an increase in the NPF level of 0.21.

The IPI variable in the short term has a negative coefficient of -0.006 but it is not significant, meaning that in the short term it has no effect on the NPF. Meanwhile, the first, second and fourth lags (lag 1,2,4) have a positive but not significant or no effect on NPF. In the third lag or the previous three-month period, IPI has a positive coefficient of 0.02 and is significant at α = 5%. This means that in the previous three months, if the IPI rises 1 percent, the NPF will also increase by 0.02.

Exchange Rate variable in the short term has a positive coefficient of 2.79 but it is not significant or has no effect. The exchange rate in the first lag has a negative coefficient of -4.85 and is significant at α = 5%, meaning that in the first lag if the exchange rate increases by 1 percent, it is followed by a decrease in NPF by 4.85. In the second lag, the exchange rate has a positive coefficient of 3.03 and is significant at α = 10%. This means that in the second period or two months earlier the exchange rate rose 1 percent, which would be followed by an increase in the

NPF of 3.03. In the third lag or the previous three months, the exchange rate has a negative coefficient of -3.939 and is significant at α = 10%. This means that in the previous three-month period, if there is an increase in the exchange rate by 1 percent, the NPF level will decrease by 3,939. Meanwhile, in the fourth lag the exchange rate has a positive effect of 3.66 and is significant at α = 5%. This indicates that in the previous four months, if the exchange rate rises 1 percent, it will be followed by an increase in NPF by 3.66.

The short-term ROA variable has a negative coefficient of -0.08 but it is not significant or has no effect on NPF. Bank Size variable in the short term has a positive coefficient of 0.04 but it is not significant or has no effect. The first lag has a positive effect of 0.60 and is significant at α = 1%. This means that in the previous month, if Bank Size increases by 1 percent, it will increase the NPF value by 0.60. Meanwhile, in the second lag, Bank Size has a negative coefficient of -2.47 and is significant at α = 5%. This means that in the previous two-month period, if Bank Size increases by 1 percent, the NPF will decrease by 2.47.

The CAR variable in the short term has a positive coefficient of 0.03 but it is not significant or has no effect on the NPF. The FDR variable in the short term has a positive coefficient of 0.023 and is significant at α = 10%. This means that if the FDR increases by 1 percent, it will increase the NPF by 0.023. The BOPO variable in the short term has a positive coefficient of 0.002 but it has no significant or no effect on NPF. In the first, second and third lags, it has a negative effect of -0.003, -0.002 and -0.02, but in the first and second lags it is not significant or has no effect on NPF, while in the third lag it is significant at α = 5%. This means that in the previous three-month period, if the BOPO increases by 1 percent, it will be followed by a decrease in NPF of 0.02. As for the fourth lag, the BOPO has a positive coefficient of 0.014 and is significant at α = 10%. This means that if in the previous four months the BOPO rises 1 percent, it will increase the NPF level by 0.014.

The short-term ARDL estimation results above are not sufficient to prove the hypothesis; therefore it is necessary to do a long-term estimation. The results of the long-term ARDL coefficient test can be seen in the following table:

Table 6. The Result of Long-Term Coefficient ARDL Estimation

Variable	Coefficient	Std. Error	t-Stat.	Prob.
IHK**	0.114182	0.065557	1.741721	0.0435
LnKURS	1.147538	2.234644	0.513522	0.3048
IPI*	0.118134	0.036558	3.231403	0.0010
ROA	-0.132147	0.258438	-0.511330	0.3056
LnSIZE**	-3.012333	1.561862	-1.929680	0.0294
CAR	0.056043	0.091020	0.615726	0.2703
FDR***	0.039563	0.023821	1.660819	0.0512

BOPO**	-0.023828	0.011062	-2.154080	0.0178

Note: Significance * : α = 1%, **: α = 5%, ***: α = 10%

In the table of long-term ARDL results above, it can be seen that the CPI variable as a proxy for long-term inflation has a positive coefficient of 0.11 and is significant at α = 5%. This means that if inflation increases by 1 percent, it will increase the NPF level by 0.11. The Exchange Rate Variable in the long run has a positive but insignificant coefficient, meaning that the exchange rate has no effect on the NPF.

The IPI variable in the long term has a positive coefficient of 0.11 and is significant at α = 1%. This means that IPI has a positive influence on NPF. If the IPI increases by 1 percent, it will increase the NPF level by 0.11. ROA, in this study, has a negative coefficient but it is not significant or has no effect on NPF. Bank Size variable in the long term has a negative coefficient of -3.01 and is significant at α = 5%. This means that the size of the bank has a negative effect. If the size of the bank increases by 1 percent, it will decrease the NPF level by 3.01.

The CAR variable in the long term has a positive coefficient of 0.05 but has no significant or no effect on the NPF. The long-term FDR variable has a positive coefficient of 0.03 and is significant at α = 10%. Thus it can be stated that FDR has a positive effect on NPF. If the FDR increases by 1 percent, it will increase the NPF level by 0.03. Furthermore, the BOPO variable in the long term has a negative coefficient of 0.02 and is significant at α = 5%, thus BOPO has a negative effect on NPF. This means that if the BOPO increases by 1 percent, it will reduce the NPF level by 0.02.

This test is to investigate whether the independent variables combined have an effect on the NPF, so in this study the independent variables are grouped into two different groups, namely the external and internal bank variables. The external group consists of inflation, exchange rate and IPI variables. Meanwhile, the internal variables consist of ROA, Bank Size, CAR, FDR, and BOPO. The results of the combined test of external variables are displayed in the following table:

Table 7. Test Results of External Variable Combined Regression Coefficient

Test Statistic	Value	df	Profitability
F-Statistic	16.15592	(3, 55)	0.000
Chi-square	48.46775	3	0.000

Based on the results of the combined test above, it can be proven that the p-value is significant at α = 5%. This shows that the variables of CPI, IPI as well as the Exchange Rate have an influence on the NPF of Sharia BPR in Indonesia.

Table 8. Test Results of Internal Variable Combined Regression Coefficient

Test Statistic	Value	df	Profitability
F-Statistic	2.620539	(5, 55)	0.0339
Chi-square	13.10270	5	0.0224

In the table above, it can also be revealed that the ROA, Size, FDR, CAR, as well as BOPO variables have a significant effect on the significance level of α = 5%. This also shows that a combination of internal variables namely ROA, Size, FDR, CAR and BOPO affect the NPF of Sharia BPR in Indonesia.

Discussion

From this study results, in the short term, if inflation increases it will reduce the level of NPF. However, the first lag shows different results where if the inflation value increases it will be followed by an increase in the NPF value. Meanwhile, in the long term, increasing inflation will increase the NPF value of Sharia BPR in Indonesia.

The results of the study accept the hypothesis stating that inflation has a positive effect on the NPF of Sharia BPR. This is because the high value of inflation will reduce or depreciate the real money owned by the public, so that it will affect the ability of the community to return financing to Sharia BPRs in Indonesia. This should be considered by the government or regulators to maintain the stability of commodity prices in the long term so that it does not affect the increase in non-performing financing or the NPF of Sharia BPR in Indonesia.

This study rejects the hypothesis claiming that the exchange rate has a positive effect on NPF. The exchange rate has no effect on the NPF of Sharia BPR in Indonesia because the majority of inputs from Sharia BPR come from local or domestic sources. This means that customers who have financing at BPR Syariah are not much affected by the exchange rate that occurs due to changes in the price of imported commodities.

Changes in the exchange rate will only have an impact on economic activity, especially producers using imported raw materials, so that with the depreciation of the exchange rate, the price of imported raw materials increases and this burdens production costs, in the end this will have an impact on producers' profits and income. So the producers as debtors will be affected by loan payments to banks.

The results of this study are not in accordance with the theory or reject the hypothesis which states that if the IPI value increases, the NPF value will decrease. This indicates that it is not necessarily when high economic growth can reduce the NPF level of Sharia BPR. This can happen due to the consumptive tendency of the Indonesian people, so that most of their income is prioritized for their consumption needs rather than returning financing (Chasanah, 2012). The

high level of public consumption can be noticed from the high value of Murabahah financing at Shariah BPR when compared to other financing. In the following, a comparison of the composition of financing based on contracts at Sharia BPR in Indonesia can be seen.

Table 9. Financing Composition of Sharia BPR

Agreement	Year (thousand of Rp)				
	2012	2013	2014	2015	2016
Mudharobah	99.361	106.851	122.467	168.516	167.954
Musyarakah	321.131	426.528	567.658	652.316	736.028
Murabahah	2.854.646	3.546.361	3.965.543	4.491.698	4.819.687
Salam	197	26	16	15	14
Istishna	20.751	17.614	12.881	11.135	9.726
Ijarah	13.552	8.318	5.179	6.175	6.928
Qardh	81.666	93.325	97.709	123.588	138.197
Multijasa	162.245	234.469	233.456	311.456	420.081
Total	3.553.520	4.433.492	5.004.909	5.765.171	6.298.616

Source: SPS OJK, Data are reprocessed

In addition, it can also be caused by the fact that the real value of the rupiah is decreasing day by day, that is in this study inflation has a positive long-term effect on the occurrence of NPF. So, even though there is economic growth, if the inflation rate is unstable, it will affect the increase in the NPF of Sharia BPR in Indonesia.

The results of this study reject the hypothesis claiming that ROA has a negative effect on the NPF of Sharia BPR in Indonesia. ROA is a bank's income ratio. The high value of ROA indicates that the bank's profits obtained from financing to customers are also high, or in other words, the financing disbursed can be repaid by the customer so that it becomes the bank's income. The ROA has no effect in suppressing the NPF value due to the non-maximum income obtained from the disbursed financing. This is indicated by the high value of non-performing financing or NPF BPR Syariah from year to year.

The estimation results above reveal that in the short term if the size of the bank increases it will increase the NPF value but it is different in the long term where if the NPF value increases it will decrease the NPF in Sharia BPR in Indonesia. The results of this study accept the hypothesis claiming that Size has a negative effect on the NPF of Sharia BPR in Indonesia. Bank size in the long term has a negative effect, or the larger the size of a company as reflected in the value of assets will suppress the NPF value of Sharia BPR in Indonesia.

Total assets describe the ability to fund profitable investments. Utilization of assets to be productive at the bank such as providing credit and others can also generate large profits for the bank. A large asset size is likely to reduce the occurrence of non-performing loans or financing.

In this research, the short-term and long-term CAR variable has no effect on the NPF of Sharia BPR in Indonesia. The results of this study reject the hypothesis stating that CAR has a negative effect on the NPF of Sharia BPR. This means that the capital adequacy of Sharia BPR in Indonesia is not sufficient to accommodate the risk of losses faced by banks due to high non-performing financing or NPF.

The results of this study accept the hypothesis explaining that FDR has a positive effect on the NPF of Sharia BPR in Indonesia. FDR is one indicator of the amount of credit or financing disbursed by banks, the higher the FDR ratio, the more likely the amount of financing to be provided will increase. This also indicates that when the amount of financing provided is high, it is likely that the profit earned by the bank through income will also be high. On the other hand, the greater the amount of financing provided will pose a fairly high risk to the distribution of such financing. With a time limit on the return of financing, the financing will become problematic. Based on research by Setiawan & Putri (2013) dan Yono Haryono (2016), it is revealed that FDR has a positive and significant influence on non-performing financing.

Meanwhile, in the long term, the BOPO variable has a negative effect, which is -0.023 and is significant at the significance level $\alpha = 5\%$. These results are in accordance with the research hypothesis explaining that BOPO has a negative effect on the NPF of Sharia BPR in Indonesia. Thus, it can be concluded that if the BOPO value increases in the long term, it will decrease the NPF value of Sharia BPR in Indonesia. This also shows that if Sharia BPR in Indonesia can operate efficiently, it will prevent the occurrence of NPF.

This study also tested the coefficients of the combined variables divided into two groups, namely external or macroeconomic variables and bank internals. Based on the combined coefficient test, it can be concluded that external or macroeconomic variables such as inflation, IPI and the Exchange Rate have an effect on the NPF of Sharia BPR in Indonesia. The same thing also happens to internal variables such as ROA, Bank Size, CAR, FDR, and BOPO that combined these variables affect the NPF of Sharia BPR in Indonesia.

CONCLUSION

Based on the results of the analysis and discussion above, it can be concluded that inflation as proxied by CPI has a positive and significant effect, the Exchange Rate does not have a positive effect on NPF, Industrial Production Index (IPI) as a proxy for GDP in this study has a positive and significant effect, ROA has no negative effect to the NPF of Sharia BPR in Indonesia, Bank Size has a negative and significant effect, CAR has no effect on NPF, FDR has a positive and

significant effect, BOPO has a negative and significant effect on NPF as a proxy for Financing Risk at Sharia BPR in Indonesia.

In this study, it can be concluded that Sharia BPR should be more careful, especially in managing financing risk, which may continue to increase due to fluctuations in the inflation rate in Indonesia. In addition, in the long term, all Sharia BPR in Indonesia must continue to increase their assets so that the bank size gets bigger, where in the long term if the bank size gets bigger it will reduce the level of NPR in Sharia BPR in Indonesia.

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