

# Financial Risk and Performance of National Private Foreign Exchange Commercial Bank: Moderating Effects of Bank Size

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## Abstract

This study aims to analyze the effect of risk on financial performance and the moderating effect of bank size on the relationship between risk and financial performance. This study uses seven Foreign Exchange National Private Commercial Banks listed on the IDX 2015-2019 as the samples. The analytical method used is a panel data regression model with STATA 16.0 software. Empirical results show that liquidity and credit risk don't affect financial performance. Market risk has a significant positive effect on financial performance, while operational risk has a significant negative effect. Bank size moderates the effect of liquidity and credit risk on financial performance but fails to moderate the effect of market and operational risk on financial performance. These findings imply that national foreign exchange private commercial banks listed on the IDX for the 2015-2019 period should pay attention to the market and liquidity risks as those risks affect banks' profitability, especially for large banks.

**Keywords** : Bank Size; Credit Risk; Liquidity Risk; Market Risk; Operational Risk

**JEL Classification** : G32, M21

## 1. INTRODUCTION

As the largest market-based national economy in Southeast Asia, the amount of credit disbursed is low. Furthermore, Bank Indonesia operates with a higher net profit than other ASEAN countries. In the second semester of 2017, financial institutions, especially banks, contributed greatly to achieving financial system stability. The asset market share data evidence this; banking has a larger percentage than other financial institutions, namely 69.75% of all financial institution assets, meaning that banks have a major contribution in improving financial stability. According to Bank Indonesia (2018), banking assets experienced an increase in the second semester of 2017, reaching IDR 7,387.60 trillion from the first semester of IDR 7,025.8 trillion. This means that the increase in banking assets positively affects profit earned by the bank, thus increasing banks' financial performance. Based on the 2019 Indonesian Banking Statistics data released by the Financial Services

Authority (OJK), Indonesia has 115 banks, dominated by 42 foreign exchange national private commercial banks.

Financial performance is described as the financial condition in a certain period which is assessed using several indicators such as capital adequacy, liquidity, and profitability (Jumingan, 2014). Financial performance can be influenced by internal factors, including cash flow, credit risk, operational risk, market risk, capital adequacy, and liquidity risk, and also by external factors, including inflation rate, exchange rate fluctuations, competition between banks or non-banks, and technological developments (Yulistiani and Suryantini 2016). Based on the regulation of Financial Services Authority Regulation (18/POJK.13/2016), there are eight types of risks, including liquidity risk, credit risk, operational risk, market risk, legal risk, strategic risk, compliance risk, and reputation risk (Financial Services Authority, 2016).

In addition to risk, the size of the bank is believed to affect financial performance because the larger the size of the bank, the more external and internal funding sources can more easily enter the market along with the amount of profit earned (Ningrum, 2017). Based on total bank assets in 2019, it was dominated by large-scale commercial banks such as BRI bank, which was ranked first as the bank with the largest assets of Rp. 1,416.76 trillion, while bank BCA, a private bank with the largest assets in Indonesia, was worth Rp. 918.99 trillion. (Richard, 2020). This shows that the bank size describes the size of the assets owned by the bank.

Kansil et al. (2017) found that NPL and BOPO had a significant negative effect on ROA, NIM had a significant positive effect on ROA, while LDR had no significant effect on ROA. However, in research, Stephanie et al. (2017) found that LDR, NPL, and NIM didn't affect ROA while BOPO had a significant negative effect on ROA. Furthermore, Jekwam and Hermuningsih (2018) found that liquidity has a positive effect on financial performance, and firm size can moderate it by strengthening the influence of liquidity on the financial performance of mining companies. Study Alsyahrin et al. (2018) suggest that liquidity, operational, and financing risks have a significant positive effect on Islamic financing with a positive moderating effect of bank size.

Based on the previous research above, it is known that there are inconsistencies in research results and the limited number of studies that add bank size as a moderating variable to measure the effect of risk on bank financial performance. This study uses bank size as moderation because it is believed to influence the relationship between risk and bank financial performance by shrinking risk's effect on financial performance (Muriithi and Waweru, 2017). Thus, this study focuses on four risks, namely liquidity, non-performing loans, market and operational risks to the financial performance of banks with moderation in bank size at National Private Foreign Exchange Commercial Banks listed on the IDX 2015-2019, because foreign exchange BUSN is a type of banks that has the authority to conduct transactions related to foreign exchange so that it has a high operating complexity,

This study aims to determine the effect of risk on financial performance and the impact of moderating variables on bank size on the relationship between risk and bank financial performance. This research is expected to be used as an effort by banks to minimize risks that occur by applying the principle of prudence in managing public funds and can be used as consideration in making decisions to improve financial performance in the future.

## **2. HYPOTHESES DEVELOPMENT**

### **Effect of Liquidity Risk on Financial Performance**

Liquidity risk is described as a risk that occurs since the distribution of funds in the form of credit is greater than public deposits, causing the bank's inability to meet short-term obligations (Rahmi, 2014). Bank Indonesia has set the standard limit for a healthy LDR to be 78%-100%. If the LDR is below the healthy category, the bank is less effective in channeling its credit so that the profits obtained are not maximal. Meanwhile, if the LDR value is above 100%, then the credit disbursed exceeds the deposited funds so that the bank will experience a shortage of funds to meet its short-term obligations. The higher the LDR value, the more profit the bank obtains increases, so it shows the bank has a good performance in distributing the credit effectively. This is following research by Rengasamy (2014), Pinasti and Mustikawati (2018), Lestari et al. (2018), who said that LDR had a positive influence on ROA. Based on those results, the following hypothesis can be formulated:

H1: Liquidity Risk Positively Affects the Financial Performance

### **The Influence of Credit Risk on Financial Performance**

Credit risk occurs due to the customer's inability to repay the loan and interest on time and the bank's inability to pay the customer's loan principal, potentially reducing the bank's financial performance. (Herman, 2012). Based on Bank Indonesia regulation Number 17/24/2015 concerning current accounts, the maximum limit for the NPL ratio is 5% of total loans (Bank Indonesia, 2015). If the NPL ratio < 5% indicates that the bank can manage credit risk well, financial performance is good. The higher the NPL, the worse the quality of bank credit, which causes the number of bad loans to increase and causes the profits to be not optimal or the bank's performance is disrupted; on the other hand, the NPL ratio is low, the bank earns high profits. This statement is in line with research by Raharjo et al. (2014), Ndoka and Islam (2016), Widnyana (2016), which says that NPL hurts the bank's financial performance. So the hypothesis is formulated as follows:

H2: Credit Risk has a Negative Effect on Financial Performance

### **Effect of Market Risk on Financial Performance**

Market risk is described as the risk that occurs due to changes in market conditions beyond control, such as fluctuations in market prices (Fahmi, 2013). The risk is measured by using the Net Interest Margin (NIM) ratio, with a standard NIM limit of 6% and above. The higher the NIM achieved, the greater the interest income on assets managed by the bank so that the bank's financial performance is good. This is in line with the research of Korompis et al. (2020), Pinasti and Mustikawati (2018); Bilian and Purwanto (2017); Widnyana (2016), which says that NIM has a significant positive effect on ROA. So that the hypothesis can be formulated as follows:

H3: Market Risk Positively Affects Financial Performance

### **The Effect of Operational Risk on Financial Performance**

Operational risk is caused by the malfunctioning of internal processes and problems that affect bank operations (Attar et al., 2014). The ratio used to measure this risk is BOPO, with a maximum limit of 90%. If the BOPO value is > 90%, the bank is in the inefficient category because the higher the BOPO value, the lower the profit earned by the bank, and vice versa. This statement is following research by Pinasti and Mustikawati (2018);

Stephanie et al. (2017); Bilian and Purwanto (2017); Widnyana (2016); Lukitasari and Kartika (2015), which suggests that BOPO has a significant negative effect on ROA so that the hypothesis is formulated as follows:

H4: Operational Risk has a Negative Effect on Financial Performance

**The Effect of Bank Size on Liquidity Risk and Financial Performance**

The bank size is indicated by the total assets owned. Jekwam and Hermuningsih (2018) show that the company's size (size) can moderate the effect of liquidity on the bank's financial performance. According to Shafi'i (2015). The bank size can be seen based on the total assets owned; the higher amount of the assets owned by the bank, the greater the bank's financial ability. Size is thought to influence the profit earned by the bank, where the larger the bank size, the greater the profit earned by the bank. Large banks tend to gain high trust from customers because large banks have many assets and provide a wider range of financial services. In addition, large-scale banks tend to minimize liquidity risk because banks can channel their credit effectively, thereby improving financial performance. The presence of a large bank size can strengthen the positive effect of liquidity risk on financial performance. Thus, the following hypothesis can be formulated:

H5: Bank Size Strengthens the Positive Effect of Liquidity Risk on Financial Performance

**The Effect of Bank Size on Credit Risk and Financial Performance**

Large-scale banks tend to experience high credit risk, resulting in decreased financial performance. This is because large-scale banks do not monitor in advance in distributing credit. Meanwhile, small banks tend to pay attention to risk by conducting loan screening and post-loan monitoring. So this will minimize credit risk in small banks, which can improve the bank's financial performance. The negative effect of credit risk on financial performance can be weakened if the size of the bank is large. This is supported by the research of Kumala and Suryantini (2015) that bank size has a negative effect on NPL, meaning that bank size has an impact on decreasing NPL. Therefore, the following hypothesis is formulated:

H6: Bank Size Weakens the Negative Effect of Credit Risk on Financial Performance.

**The Effect of Bank Size on Market Risk and Financial Performance**

Large banks tend to have large amounts of assets and are accompanied by large risks that occur, so banks will set high margins. Banks will reduce costs by cutting deposit rates so as to encourage an increase in NIM which can maximize the profits earned by the bank. This is in line with Ugur and Erkus's (2010) opinion that the bank will apply a high margin to minimize the bank's risk. The study of Wati et al. (2019) found that size can moderate the effect of NIM on financial performance (ROA), meaning that the larger the company's size, the higher the profit generated by the company. In addition, large banks tend to be easier to enter the market than small banks. Thus, large bank sizes can strengthen the positive effect of market risk on financial performance. Thus, the following hypothesis can be formulated:

H7: Bank Size Strengthens The Positive Effect Of Market Risk On Financial Performance

**The Effect of Bank Size on Operational Risk and Financial Performance**

Banks with a high level of operational risk tend to reduce customer confidence in the bank, which negatively impacts the bank's financial performance (Muriithi and Waweru, 2017). Large-scale banks tend to be more efficient than small-sized banks because large-scale banks tend to be able to implement economies of scale. So that large banks can

minimize operational risk where this can improve the bank's performance. Large banks can weaken the negative effect of operational risk on performance. Thus, the following hypothesis can be formulated:

H8: Bank Size Weakens the Negative Effect of Operational Risk on Financial Performance.

### 3. METHOD, DATA, AND ANALYSIS

#### Sampling and Data Collection

The population of this study uses Foreign Exchange National Private Commercial Banks listed on the IDX for the 2015-2019 period. Then, the sampling method was carried out by using a purposive sampling technique by applying the following criteria:

Table 1. Sample Selection Process Based on Criteria

No	Criteria	Bank Amount
1	Total foreign exchange BUSN and have complete financial report data listed on the IDX in 2015-2019	23
2	Banks with total assets below IDR 100 trillion/year	(16)
	Final Sample Quantity	7
	Observation Year	5
	Amount of data	35

Based on the sample selection criteria above. There are seven banks out of a population of 23 National Foreign Exchange Private Commercial Banks and have those listed on the Indonesia Stock Exchange. The type of research data used is panel data, a combination of time series and cross-section data. The source of this research data is secondary data are taken from [www.idx.co.id](http://www.idx.co.id) by looking at the annual reports of each bank. This research uses panel data regression analysis technique with interaction variables processed using STATA 16.0 software.

#### Descriptive Statistics and Pearson Correlation Test

The descriptive statistical test describes the variables in a study that can be seen from the mean, standard deviation, variance, maximum, minimum, sum, and range (Ghozali, 2018). The test can be used by analyzing descriptive statistics based on data that has been processed. *Pearson Correlation* ( $r$ ) is used to measure the strength of the linear interaction between two variables (Ghozali, 2013). The correlation value of  $r$  ranges from  $-1 < r < 1$ . If the correlation value of  $r$  is positive, the two variables have a unidirectional relationship. Conversely, if the correlation value of  $r$  is negative, then the relationship between the two variables is opposite. Testing the relationship between variables based on the following criteria: if the coefficient of  $r$  is between  $-1$  or  $1$ , then the correlation between the two variables is strong, but if the coefficient of  $r$  is  $0$ , then the correlation between the two variables is weak.

#### Panel Data Model Estimation Tests

##### 1. Chow Tests

This test is to choose the best model used between the Common Effect Model (CEM) and Fixed Effect Model (FEM). If the prob value  $< 0.05$ , the correct model to use is the Fixed Effect Model compared to the Common Effect Model, and vice versa.

## **2. Hausman Tests**

The Hausman test was carried out after the Chow test. This test chooses which panel data model is the most appropriate between the Random Effect Model and the Fixed Effect Model. If the prob Chi<sup>2</sup> value < 0.05, then the Fixed Effect Model is more relevant, and vice versa.

## **3. Lagrange Multiplier (LM) Tests**

The Lagrange Multiplier test determines the right model between Common Effect Model (CEM) or Random Effect Model (REM). This test is carried out if the results of the Chow test show that the right model is used; namely, the Common Effect Model (CEM), and the Hausman test shows the right model, the Random Effect Model (REM). The hypotheses are as follows: if probability both Breusch pagan > 0.05, then the Common Effect Model is used. But if the probability of both Breusch pagan < 0.05, then the Random Effect Model is used.

### **Classic Assumption Test**

Classical assumption test in linear regression with Ordinary Least Squared (OLS) approach includes normality, linearity, autocorrelation, multicollinearity, and heteroscedasticity tests. However, not all classical assumption tests should be performed on the regression model with the OLS approach because as follows: the linearity test does not need to be carried out because it is assumed that the model is linear, but if it is still carried out, it is only to see the extent of the linearity of the model. The normality test basically does not include the BLUE (Best Linear Unbias Estimator) requirement, so this requirement is not mandatory. Autocorrelation occurs only in time series data, while autocorrelation testing on cross-section or panel data is meaningless. Multicollinearity test needs to be done on regressions that use more than one independent variable. Symptoms of heteroscedasticity usually occur in cross-sectional data because panel data is closer to cross-sectional data, so it is mandatory to perform a heteroscedasticity test if panel data is used. Therefore, it can be concluded that in panel data regression, not all classical assumption tests in the OLS approach are used; only multicollinearity and heteroscedasticity tests are needed (Basuki and Prawoto 2015).

### **Multicollinearity Test**

A multicollinearity test was conducted to see a correlation between the regression model and the independent variables. A good regression equation is to avoid multicollinearity (Ghozali 2018, 107). To test multicollinearity by looking at the value of Tolerance and VIF (Variance Inflation Factor). The criteria for this test are if the Tolerance value > 0.1 and VIF < 10, it is stated that there are no symptoms of multicollinearity.

### **Heteroscedasticity Test**

The heteroscedasticity test is used to test whether there is a difference in residual variance between one observation and another. A good regression equation is no heteroscedasticity problem (Ghozali, 2018). If the significance value > 0.05 means that the model used does not occur heteroscedasticity (Lupiyoadi and Ikhsan 2015).

### **Panel Data Multiple Regression Analysis with Moderating Variables**

Moderate Regression Analysis is a special application of multiple linear regression that contains elements of interaction (multiplication of two or more independent variables). MRA aims to analyze the independent variables that can strengthen or weaken the relationship between the independent and dependent variables. If the probability value in this study is <0.05 and is adjusted to the hypotheses in this study, it can be said that bank

size can moderate by strengthening or weakening. The moderation hypothesis's multiple linear regression equation is as follows equation 1.

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 M + \beta_6 X_1 M + \beta_7 X_2 M + \beta_8 X_3 M + \beta_9 X_4 M \quad (1)$$

Information:

Y = Banking Financial Performance

$\alpha$  = Constant

$\beta$  = Coefficient

X1 = Liquidity Risk (LDR)

X2 = Credit Risk (NPL)

X3 = Market Risk (NIM)

X4 = Operational Risk (BOPO)

M = Bank Size

#### **Determinant Coefficient Test**

The coefficient of determination (R<sup>2</sup>) test is used to see how far the independent variable can explain the dependent variable. The value of the coefficient of determination is  $0 < R^2 < 1$ . If the value of R<sup>2</sup> is close to 1, it can be said that the independent variable can explain the dependent variable (Ghozali 2018. 97).

#### **F-test and T-test**

The F test estimates whether the independent variable has a simultaneous effect on the dependent variable. If the significance value of the F test  $< 0.05$  means that it is proven that there is simultaneously an influence between the independent and dependent variables (Priyatno, 2016). A T-test is used to see the effect of the independent variable on the dependent variable individually. If the significance value of T-test  $< 0.05$  means that part there is an influence of the independent variable with the dependent variable (Kuncoro, 2013).

## **4. RESULTS**

Only seven banks met the criteria following the sampling criteria selected from 23 foreign exchange BUSN banks listed on the IDX. The amount of data used is 35 data, but there are 3 data outliers, so the data used is only 32 data.

*Table 2.* Descriptive Statistical Results

Variable	Max	Min	Mean	Std. Dev
ROA	4.04	0.47	2.07	.9894997
LDR	98.83	72.1	90.25	6.961617
NPL	4.4	1.28	2.83	.939452
NIM	9.3	3.9	5.37	1.428651
BOPO	97.38	58.2	79.166	10.35436
SIZE	34.45	32.44	33.06	.553562

Source: Appendix 1 STATA software output results, 2021

The Table 2, (Descriptive Statistics) shows that the minimum ROA value of 0.47% owned by Bank CIMB Niaga in 2015 and the maximum ROA value of 4.04% owned by Bank Central Asia in 2018. The average ROA value of the Foreign Exchange BUSN Bank is 2.07% and ROA standard deviation of 0.99%. This shows that the ROA of Foreign Exchange BUSN Banks has met the standards set by Bank Indonesia, namely at least 1.5%.

The LDR obtained shows a minimum value of 72.1% owned by Bank Permata in 2015 and a maximum value of 98.83% owned by Bank Panin in 2015. The average LDR owned by BUSN Foreign Exchange Banks is 90.25% and a standard deviation of 6.96%, so it can be categorized that the LDR of the Foreign Exchange BUSN Bank has met the Bank Indonesia standards at least 78%.

NPL for foreign exchange BUSN banks from 2015 to 2019 had the lowest value of 1.28% owned by Bank Central Asia in 2015 and the highest value of 4.4% at Permata Bank in 2018. The average NPL value of foreign exchange BUSN banks was 2.83% and a standard deviation of 0.93%. According to Bank Indonesia, the standard value of Health NPL is < 5%. This shows that the NPL of Foreign Exchange BUSN Banks is healthy.

The NIM obtained shows a minimum value of 3.9% owned by Bank Permata in 2016 and a maximum value of 9.3% owned by Bank Danamon in 2017. The average value of the NIM of BUSN Foreign Exchange Banks is 5.33%, and the standard deviation is 5.37%. The average NIM value owned by BUSN Foreign Exchange Banks shows that there are still banks that have not reached the NIM standard applied by Bank Indonesia, which is 6%.

BOPO at BUSN Foreign Exchange Banks from 2015 to 2019 had a minimum BOPO value of 58.2% owned by Bank Central Asia in 2018 and a max value of 97.38% owned by Bank CIMB Niaga in 2015. The average BOPO value of Foreign Exchange BUSN Banks was 79.16%, and a standard deviation of 10.35%. Bank Indonesia set the BOPO at 90% of the percentage based on the average standard. This means that BUSN Foreign Exchange Banks are less efficient in managing their operational costs. The BUSN Foreign Exchange Bank size obtained a max value of 34.45 at Bank Central Asia in 2019 and a minimum value of 32.44 owned by Bank OCBC NISP in 2015. The average bank size of the Foreign Exchange BUSN was 33.06, and the standard deviation was 0.55.

**Pearson Correlation Test**

Table 3. Pearson Correlation Test Results

	ROA	LDR	NPL	NIM	BOPO	SIZE
ROA	1,000					
LDR	-0.4339*	1,000				
NPL	-0.7845*	0.3212	1,000			
NIM	0.5945*	-0.0236	-0.2339	1,000		
BOPO	-0.9730*	0.4124*	0.8396*	-0.4774*	1,000	
SIZE	0.7840*	-0.4351*	-0.5852*	0.3411	-0.7491*	1,000

Source: Appendix 2 STATA software output results, 2021

The table of data processing results related to the correlation test above shows that the correlation value between LDR and ROA is -0.4339, meaning that the relationship between the two variables is opposite, i.e. if LDR increases, it causes ROA to decrease, and vice versa. The correlation between NPL and ROA is -0.7845, meaning that if the NPL increases, the ROA decreases. The correlation coefficient between NIM and ROA is 0.5945,



which means that the relationship between the two variables is unidirectional; if the NIM increases, the resulting ROA increases. The correlation coefficient between BOPO and ROA is -0.973, meaning that the relationship between the two variables is in the opposite direction; that is, if the ROA increases, the ROA obtained decreases. The correlation coefficient between SIZE and ROA is 0.784, meaning that the relationship between the two variables is unidirectional; that is, if the size of the bank is large, the ROA obtained by the bank will increase vice versa. So it can be concluded that based on the results of the Pearson correlation test, it is known that all variables have a correlation with ROA.

### Panel Data Estimation Method Selection Test

#### Chow Test

*Table 4.* Chow Test Results

Effect Test	Prob.
F(6.16)	0.46
Prob > F	0.8264

Source: Appendix 3 STATA software output results, 2021

Based on the results of the chow test above, the prob > F value of 0.8264 where the probability value > 0.05 means that the best panel data estimation method based on the chow test is the Common Effect Model compared to the Fixed Effect Models.

#### Hausman Test

*Table 5.* Hausman Test Results

Effect Test	Prob.
Chi-squared (7)	2.19
Pros > Chi <sup>2</sup>	0.9488

Source: Appendix 4 STATA software output results, 2021

Based on the results of the Hausman test by comparing the Fixed Effect Model and Random Effect Model estimation methods, the value of prob > chi2 = 0.9488 is obtained. The prob. value > 0.05 means that the Random Effect Model estimation method is better than the Fixed Effect Model.

#### Lagrange Multiplier (LM) Test

*Table 6.* Test results *Lagrange Multiplier*

Effect Test	Prob.
Chibar <sup>2</sup> (01)	2.46
Prob > Chibar <sup>2</sup>	0.0584

Source: Appendix 5 STATA software output results, 2021

Based on the results of the LM test, the value of prob > chibar2 = 0.0584, where the value of prob > 0.05 means that the panel data estimation method chosen is the Common Effect Model compared to the Random Effect Model.

**Classic Assumption Test**

Based on the panel data estimation test results, it is known that the model chosen is the Common Effect Model. The CEM model combines cross-section data with time series and uses the OLS method to estimate the panel data model (Widarjono, 2009). Therefore, in this study, the classical assumption test used only multicollinearity and heteroscedasticity tests.

**Multicollinearity Test**

*Table 7.* Multicollinearity Test Results

Variable	VIF	1/VIF
LDR	1.34	0.141079
NPL	3.99	0.250751
NIM	1.58	0.413905
BOPO	7.09	0.634838
SIZE	2.42	0.747286
<b>Mean VIF</b>	<b>3.28</b>	

Source: Appendix 6 STATA software output results, 2021

Based on the table above, it can be seen that the mean VIF value is 3.28. So the results of the multicollinearity test above show that the data used in this research model is free from multicollinearity symptoms because the mean VIF value is < 10.

**Heteroscedasticity Test**

*Table 8.* Heteroscedasticity Test Results

Pagan Breusch/ Cook-Weisberg test	Prob.
Chi-square (1)	3.18
Pros > Chi <sup>2</sup>	0.0744

Source: Appendix 7 STATA software output results, 2021

Based on the table above, the results of the heteroscedasticity test with the Breusch Pagan/Cook-Weisberg test have a probability value of Chi2 of 0.1271 where this value is greater than the significance level of 5% or 0.05 (0.0744 > 0.05). So it can be concluded that this research model is free from heteroscedasticity symptoms.

**Panel Data Multiple Regression Analysis with Moderating Variables**

*Table 9.* Panel Data Regression Results Without Moderating Variables

Variable	Coef.	Std. Err.	T	P > [t]
_Cons	1.011	2,984	0.34	0.737
LDR	-0.008	0.004	-1.88	0.072
NPL	-0.021	0.059	-0.35	0.733
NIM	0.130	0.025	5.31	0.000
BOPO	-0.072	0.007	-9.98	0.000
SIZE	-0.208	0.078	2.65	0.014
R-Squared			0.9791	
Prob > F			0.000	

Source: Appendix 8 STATA software output results, 2021

Based on the results of panel data regression without moderating variables using the Common Effect Model method in table 9 shows that the R2 value is 0.9791 or 97.91%, meaning that the influence of the independent variables is liquidity risk (LDR), credit (NPL), market (NIM), operational (BOPO) and bank size on the bank's financial performance of 97.91%. In contrast, the remaining 2.09% is explained by other variables not included in the study, such as capital adequacy risk (CAR). The regression coefficient in Table 9 shows that partially liquidity risk (LDR) and market risk (NPL) do not affect financial performance (ROA). Market risk (NIM) has a significant positive effect on ROA, while operational risk (BOPO) has a significant negative effect on ROA. Bank size has a significant negative effect on ROA. However, simultaneously it is known that the probability value of F is  $0.000 < 0.05$ , meaning that it can be concluded that together the independent variables, namely liquidity risk (LDR), credit (NPL), market (NIM), operations (BOPO) and bank size have an effect on significant to the dependent variable, namely the bank's financial performance (ROA).

**Table 10.** Panel Data Regression Results with Moderating Variables

Variable	Coef.	Std. Err.	T	P > [t]
_Cons	8.9291	0.7304	12.22	0.000
LDR_SIZE	-0.0003	0.0002	-1.50	0.145
NPL_SIZE	-0.0006	0.0025	-0.24	0.812
NIM_SIZE	0.0043	0.0010	4.23	0.000
BOPO_SIZE	-0.0026	0.0003	-9.19	0.000
R-Squared			0.959	
Prob > F			0.000	

Source: Appendix 9 STATA software output results, 2021

Based on table 10 the results of panel data regression tests with moderating variables using the Common Effect Model method, it is known that the R2 value of 0.959 or 95.9% means that the influence of the independent variables is liquidity risk (LDR), credit (NPL), market (NIM), operational ( BOPO) which is interacted with the moderating variable of bank size on the bank's financial performance of 98.45%. In contrast, the remaining 4.1% is explained by other not included variables. The regression coefficient in Table 10 shows that bank size is able to moderate two variables, namely bank size is able to moderate by strengthening the influence of market risk on financial performance and bank size is able to moderate by weakening the influence of operational risk on bank financial performance because the prob value  $< 0.05$ . Meanwhile, for other variables, the size of the bank cannot moderate the influence of liquidity risk and credit risk on the financial performance of foreign exchange BUSN banks listed on the IDX for the 2015-2019 period. However, simultaneously, all variables significantly affect the bank's financial performance as indicated by the probability value of F of  $0.000 < 0.05$ .

## 5. DISCUSSION

### Effect of Liquidity Risk on Financial Performance

Based on the results of the calculations in table 9, it is known that the LDR regression coefficient shows a negative direction, which is 0.0003. Meanwhile, the t-test obtained sig of  $0.145 > 0.05$  means that LDR has no significant effect on ROA. So the first hypothesis is rejected which says that liquidity risk (LDR) has a positive effect on bank financial

performance. This means that if the LDR decreases, banks' profitability (ROA) increases but is not significant.

High LDR has an insignificant negative effect on ROA since the amount of credit was not supported by good credit quality. Poor credit quality will increase the risk, especially if the lending amount is carried out without applying the principle of prudence and expansion in lending that is not controlled so that banks will bear large risks. If the LDR is at the standard limit set by Bank Indonesia, the profit earned by the bank will increase, assuming the bank is able to channel its credit effectively. This research was supported by Illiyah et al. (2017) that LDR has no significant negative effect on ROA.

#### **The Effect of Credit Risk on Financial Performance**

The NPL ratio is used to see the ability of bank management to measure the level of risk of non-performing loans. Good management of non-performing loans is expected to increase the level of bank profitability. Based on table 9, it is known that the NPL coefficient is -0.021 with a significant level of  $0.773 > 0.05$ , meaning that NPL has no significant effect on ROA. NPL indicates the amount of credit faced by the bank, the smaller the NPL, the smaller the credit risk borne by the bank. Thus, it is expected that banks are required to monitor the use of credit as well as the ability and compliance of debtors in paying their obligations.

NPL does not have a significant effect on ROA, and this may occur because foreign exchange BUSN banks allocate liability capital for lending and saving, which will generate other income so that losses caused by NPLs can be covered with income from other sources. Therefore, NPL has no significant effect on ROA. These results align with research conducted by Maria (2015) and Damayanti and Musadieq (2017) that NPL has no significant negative effect on ROA.

#### **Effect of Market Risk on Financial Performance**

Based on table 9, the results of multiple linear tests using panel data, the third hypothesis is accepted because NIM has a positive and significant effect on ROA. This means that every increase in the NIM ratio will cause the net interest income managed by the bank to increase, thus allowing the bank to experience small problematic conditions and increase bank profitability. This is because banks can manage company assets effectively to generate net interest income obtained by generating interest such as securities and loans provided by banks. The ability of a bank's management to generate net interest can affect the bank's income level for its total assets. The results of this study are supported by Prasanjaya and Ramantha (2013), Prasetyo (2015); Bilian and Purwanto (2017); Dewi et al. (2017), which says that NIM has a positive and significant effect on ROA.

#### **Effect of Operational Risk on Financial Performance**

Based on the calculation results, it is found that operational risk (BOPO) has a negative and significant effect on ROA. This is shown in table 9 with a coefficient of -0.072 with a significant value of  $0.000 < 0.05$ . The results of this calculation show that the fourth hypothesis which states that BOPO has a negative effect on ROA is accepted. This research was supported by Raharjo et al. (2014); Widnyana (2016); Bilian and Purwanto (2017) and Stephanie et al. (2017) which states that BOPO has a negative and significant effect on ROA. However, this research contradicts the findings of Yusriani (2018) that BOPO has a positive effect on ROA.

The BOPO ratio is used to measure the efficiency level in managing its operational activities. Bank efficiency can be done in several ways, one of which is by reducing

operating costs to increase operating income so as to increase bank profitability. Thus the level of efficiency of the bank in carrying out its operational activities affects the income earned by the bank. If the bank is able to run its operating activities efficiently (in the sense of low BOPO), the income earned by the bank increases and increase bank's performance.

#### **Bank Size Moderates the Effect of Liquidity Risk on Financial Performance**

Based on table 10, it is known that the coefficient of interaction between liquidity risk and bank size as a moderating variable is -0.0003 and has a significant level of  $0.145 > 0.05$  (not significant), meaning that bank size cannot moderate liquidity risk on ROA so that the fifth hypothesis is not proven. . In this study, bank size is not able to moderate the effect of liquidity risk on financial performance because liquidity risk does not significantly affect bank size where banks with large total assets cannot be sure to be able to reduce liquidity risk because banks tend to fail in lending which causes loss of customer confidence. And cause affect the decline of bank performance.

#### **Bank Size Moderates the Effect of Credit Risk on Financial Performance**

Based on moderation test results, Table 10 shows that the coefficient of interaction between credit risk and size is -0.0006 with a significance level of  $0.812 < 0.05$ , meaning that bank size is not able to moderate the effect of credit risk (NPL) on bank financial performance (ROA). Hence, the sixth hypothesis is rejected. The total assets indicate the size of the bank in the form of current assets, fixed assets, investments, and credit. The greater the assets owned by the bank, the greater the wealth owned by the bank, meaning that the turnover of funds on loans that are channeled reflects some of the wealth owned by the bank. Thus, the size of the company's bank cannot affect credit risk (NPL) as long as the bank can manage current or fixed assets of the total assets owned by the bank.

#### **Bank Size Moderates Effect of Market Risk on Financial Performance**

Based on the results of table 10 related to the results of the interaction between market risk and size, a coefficient value of 0.0043 with a significance level of  $0.000 < 0.05$ . Moreover, the strengthening form could be seen on this equation:  $0,130 - 0,208 + 0,0043 = 0,0737$ , which means that bank size is able to moderate by strengthening the effect of market risk on financial performance as proxied by ROA so that the seventh hypothesis is accepted which states that bank size is able to moderate by strengthening the influence of market risk on financial performance.

Large-scale banks are able to increase the profits earned by banks because large-sized banks tend to enter the market more easily than small-sized banks. In addition, large banks tend to be able to apply high margins to reduce costs by cutting deposit rates to encourage an increase in NIM which can maximize bank profits. This is in line with research conducted by Wati et al. (2019) that size is able to moderate by strengthening the influence of NIM on bank financial performance (ROA).

#### **Bank Size Moderates the Effect of Operational Risk on Financial Performance**

Based on the results of table 10 related to the effects of the interaction between operational risk and bank size, the coefficient value is -0.002 with a significance level of  $0.000 < 0.05$ . This means that bank size can moderate by weakening the influence of operational risk on bank financial performance (ROA). The eighth hypothesis, which says that bank size is able to weaken the influence of operational risk on financial performance, is accepted. BOPO is used to measure the efficiency level of a bank in carrying out its operating activities. Large-scale banks are able to reduce the level of operational risk because banks are able to manage operational costs by implementing economies of scale so that bank performance will increase.

## 6. CONCLUSION, LIMITATIONS, AND SUGGESTIONS

### **Conclusion**

Based on the research which conducted by using a sample of 7 national foreign exchange private commercial banks listed on the IDX for the 2015-2019 period, it can be concluded that partially liquidity risk (LDR) and credit risk (NPL) do not effect on ROA so that the first and second hypotheses are rejected. It is hoped that banks can optimize third-party funds and pay attention to the quality of loans disbursed. The variable Net Interest Margin (NIM), which is proxied as market risk, has a significant positive effect on ROA, meaning that if the NIM increases, the ROA obtained by the bank increases, so the third hypothesis is accepted. Variable Operating Costs to Operating Income (BOPO), which is proxied as operational risk, has a significant negative effect on ROA. If the BOPO value increases, it causes the bank's performance as proxied by ROA to decrease, so the fourth hypothesis is accepted.

Based on the regression test results using the size moderating variable, it is known that the size of the bank in this study can be moderate by strengthening the influence of market risk on the bank's financial performance. Bank size is able to moderate by weakening the influence of operational risk on the bank's financial performance. Meanwhile, other variables, namely liquidity risk and credit risk, cannot be moderated by bank size. However, simultaneously all independent variables, namely liquidity risk (LDR), credit (NPL), market (NIM), operational (BOPO) and bank size interaction variables as moderating variables with bank risk (LDR, NPL, NIM and BOPO) have a significant effect against ROA. This result is evidenced by the probability value of  $F(0.000) < 0.05$ . This research implies that national foreign exchange private commercial banks listed on the IDX for the 2015-2019 period should pay attention to the market and liquidity risks as those risks affect banks' profitability, especially for large banks.

### **Limitation and suggestions**

The limitations of this study which could be taken into a consideration for further research in order to obtain better results from this research. The limitation of this research is that this research has not been able to prove that liquidity risk (LDR) and market risk (NPL) affect the bank's financial performance (ROA). In addition, this study shows that bank size is not able to moderate liquidity risk (LDR) and market risk (NPL) on bank financial performance (ROA). Suggestions for future research are expected to use a larger sample of companies listed on the Indonesia Stock Exchange so that the results obtained are more comprehensive, can add other independent variables that have not been discussed in this study, such as capital adequacy risk (CAR) since its role as an indicator to cover the asset impairment due to financial loss and can use the research period. The latest study is to examine the results of the interaction between bank size and independent variables (LDR, NPL, NIM and BOPO) on bank financial performance (ROA).

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