
The Role of Firm Size on Bank Liquidity and Performance: A Comparative Study of Domestic and Foreign Banks in Indonesia

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Abstract:

Purpose: *The purpose of this study is to find out the effects of Non-Performing Loans (NPL), Net Interest Margin (NIM), Non-Interest Income, and Loan to Deposit Ratio (LDR) to Return on Assets (ROA) with size as a control variable and to compare whether there is a difference in these effects between domestic and foreign banks in the study period.*

Design/Methodology/Approach: *The sample of this study is 228 domestic and foreign banks listed in Indonesia Stock Exchange (IDX) in the same period.*

Findings: *The results show that in domestic banks, NPL has a negative effect on ROA while NIM has a positive effect on ROA. In foreign banks, NPL has a negative effect on ROA, NIM has a negative effect and LDR has a negative effect on ROA also. Furthermore, when size becomes a control variable there is no difference between domestic and foreign banks.*

Practical Implications: *The results can be used by the banking sector for policy options in foreign and domestic banks using the above mentioned indices as control variables.*

Originality/Value: *The study makes the distinction between domestic and foreign banks examining an issue which is typical in financial analysis however the results are giving some new insights regarding liquidity and performance.*

Keywords: *Non-Performing Loans (NPL), Net Interest Margin (NIM), Non-Interest Income, Loan to Deposit Ratio (LDR), Return on Assets (ROA).*

JEL classification: *F44, F65, G15.*

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1. Introduction

The banking industry has an important position in the financial system. It facilitates the payment, the monetary decision process, and the realization of a stable financial system. The entry of foreign banks in Indonesia has several advantages. The lending of foreign banks in Indonesia tends to the multinational corporations that also get financing from their head office (Hersugondo *et al.*, 2016). The presence of foreign banks in Indonesia will lead to competition with domestic banks, which will lead to differences in profitability between domestic and foreign banks. Profitability of domestic and foreign banks will be compared to find out which banks are more profitable in terms of profit. The presence of foreign banks in Indonesia will lead to competition with domestic banks in obtaining profit. There is a decrease in the number of domestic banks in the period 2013-2015. The same thing happens to foreign banks where in 2013-2014 there was a decline in ROA but in the period 2014-2015 ROA increases again in foreign banks.

The data of Banks' Annual Reports in the period 2012-2017 in Indonesia shows that ROA of both domestic and foreign banks has fluctuated from 2012 to 2017. When compared with the foreign banks, the decrease of ROA occurs at the domestic bank in the period 2016-2017. Domestic banks in the period 2012-2013 show an increase with credit problems. ROA should decrease due to increased non-performing loans, but ROA shows the same improvement. NIM holds fluctuations in domestic banks in 2012-2013, but the fluctuation is inversely proportional to ROA. NIM on foreign banks in period 2012-2013 experienced an increase in ROA when NIM decreased. On the operating income side, Non-Interest Income at domestic banks decreased from 2013 to 2015. This is not appropriate because banks' operating income should increase ROA. The same thing happened in the period 2016-2017 where the increase in Non-Interest Income actually lower ROA. Non-Interest Income on Foreign Banks also decreased during the year 2012-2014 which is precisely the increase in ROA. LDR at domestic banks shows an increase during 2016-2017. It indicates that the improvement of intermediation function is expected to increase ROA, but ROA in 2016-2017 has decreased.

2. Research Methodology

The data set is obtained from Banks' Annual Reports in Indonesia. Data period in this study is from December 2012 to December 2017. This study took the population of all commercial banks listed in the Indonesia Stock Exchange for the period 2012-2017, which is as many as 42 banks. Based on the criteria of bank selection, the total population is 37 commercial banks, while the number of samples in this study are as much as 228 (38 banks x 6 years). Multiple regression analysis aims to test the proposed hypotheses.

3. Results

3.1 Testing Size as Control Variable at Domestic Banks

Testing size as control variable at domestic banks is done by the regression of size to ROA. Regression results are presented in Table 1.

Table 1. Regression Size as Control Variable

Model	Unstandardized		Standardized	t	Sig.
	B	Std. Error	Beta		
1 (Constant) LnSize	-5.498	.956		-5.754	.000
	.428	.056	.523	7.662	.000

Note: a. Dependent Variable: ROA.

The result of regression size to ROA shows significance level of 0.000, therefore size can be used as a control variable in the domestic bank category.

3.2 Testing Size as Control Variable at Foreign Bank

Testing size as a control variable in foreign banks is done by the regression of size to ROA. Regression results are presented in Table 2.

Table 2. Regression Size as Control Variable

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	-1.328	1.250		-1.062	.293
Lnsize	.164	.075	.299	2.192	.033

Note: a. Dependent Variable: ROA.

The result of regression size to ROA shows a significance value of 0.033 or less than 0.05. Therefore size can be used as a control variable in foreign bank category.

3.3 Coefficient of Determinant (R²) at Domestic Bank

The determinant coefficient value (R²) of domestic bank is shown in Table 3.

Table 3. Coefficient of Determinant (R²) at Domestic Bank

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.912a	.832	.827	.7131	2.064

Note: Predictors: (Constant), LnSize, LDR, NPL, NII, NIM. Dependent Variable: ROA.

The results show the value of adjusted R^2 to be 0.827 so that ROA is influenced by NPL, NIM, Non-Interest Income, LDR and Size of 82.7%. Meanwhile, the remaining 17.3% is explained by other variables.

3.4 Coefficient of Determinant (R^2) at Foreign Bank

The foreign bank has the value coefficient of the determinant (R^2) shown in Table 4.

Table 4. Coefficient of Determinant (R^2) at Foreign Bank

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.720a	.518	.465	.6334	2.070

Note: Predictors: (Constant), Lnsize, NIM, NII, NPL, LDR. Dependent Variable: ROA.

The results show the value of adjusted R^2 being 0.465 so ROA is influenced by NPL, NIM, Non-Interest Income, LDR and Size of 46.5%. Meanwhile, the remaining 53.5% is explained by other variables.

3.5 F Test at Domestic Bank

The SPSS output influence simultaneous test of domestic banks is shown in Table 5.

Table 5. Simultaneous Effect (F-Test) at Domestic Bank

Model	Sum of Squares	Df	Mean Square	F	Sig.
1 Regression	383.595	5	76.719	150.851	.000b
Residual	77.303	152	.509		
Total	460.898	157			

Note: Dependent Variable: ROA. Predictors: (Constant), LnSize, LDR, NPL, NII, NIM.

The value of F-test on regression at the domestic bank is 150.861 and significant at 0.000 so that NPL, NIM, Non-Interest Income, LDR and size simultaneously affect ROA.

3.6 F Test at Foreign Bank

The results of simultaneous test of the foreign bank is shown in Table 6.

Table 6. Simultaneous Effect (F-Test) at Foreign Bank

Model	Sum of Squares	Df	Mean Square	F	Sig.
1 Regression Residu	19.427	5	3.885	9.685	.000b

Total	18.053	45	.401		
	37.480	50			

Note: Dependent Variable: ROA. Predictors: (Constant), Lnsiz, NIM, NII, NPL, LDR.

The value of F-test on regression foreign bank is 9.685 and significant at 0.000 so that NPL, NIM, Non-Interest Income, LDR and size simultaneously influence ROA.

3.7 T-Test at Domestic Bank

The results show that NPL and NIM are significant at 0.05. However, the Non-Interest Income and LDR were not significant at 0.05. Size as a control variable significant at 0.05. The constant value of the regression equation is -4.121 indicating ROA has a value of -4.121 if the affecting variable (NPL, NIM, Non-Interest Income, LDR, and Size) are considered constant. Analysis of the effect of independent variables on dependent variables is:

1. Non-Performing Loan (NPL) has a negative and significant effect on Return on Assets (ROA), so Hypothesis 1a is accepted.
2. Net Interest Margin (NIM) has a positive and significant impact on Return on Assets (ROA), so Hypothesis 2a is accepted.
3. Non-Interest Income (NII) has a negative and insignificant effect on Return on Assets (ROA), so Hypothesis 3a is rejected.
4. Loan to Deposit Ratio (LDR) has a negative and insignificant effect on Return on Assets (ROA), so Hypothesis 4a is rejected.

3.8 Test at Foreign Bank

The results show the NPL and NIM and LDR variables are significant at 0.05. Non-Interest Income variable has no significant effect at 0.05. Size variable as a control variable is significant at 0.05. The constant value of regression equation is -3.218 which shows ROA has a value of -3.218 if the affecting variable (NPL, NIM, Non-Interest Income, LDR, and Size) are considered constant. Non-Performing Loan (NPL) has a negative and significant effect on Return on Assets (ROA), so Hypothesis 1b is accepted.

1. Net Interest Margin (NIM) has a positive and significant impact on Return on Assets (ROA), so Hypothesis 2b is accepted. Non-Interest Income (NII) has a negative and insignificant effect on Return On Assets (ROA), so that Hypothesis 3b is rejected.
2. Loan to Deposit Ratio (LDR) has a negative and significant effect on Return on Asset (ROA), so Hypothesis 4b is rejected.

3.9 Comparative Results of T-Test (Partial) Domestic and Foreign Banks

NPL of domestic and foreign banks showed negative and significant value at 5% level. NIM of domestic and foreign banks showed positive and significant value at 5% level. Non-Interest Income in domestic and foreign banks shows negative and insignificant value. LDR in domestic banks shows negative value is not significant. However, the LDR in foreign banks shows a significant negative value at the 5% level.

3.10 Chow Test

This study examines the effect of NPL, NIM, Non-Interest Income and LDR on domestic and foreign banks' ROA in 2010-2015. The testing of the fifth hypothesis is done by comparing the sum of square residual values with each model of domestic and foreign banks separate. The calculation results note that the value of F arithmetic is 0.733 and the known value of F table with $df = 199$ and $k = 5$ on 0.05 significance obtained F table value of 2.26. Therefore, the value of F arithmetic $<$ F table, indicating there is no difference of effect of NPL, NIM, Non-Interest Income, and LDR to ROA between domestic and foreign banks.

3.11 Effect of NPL on ROA at Domestic Banks

T-test obtained value of -0.277 with a significance value of 0.000. Therefore, the hypothesis NPL has a significant negative effect on ROA for the category of Domestic Banks is accepted. Negative influence indicates that the higher the level of bad credit or credit risk owned by domestic banks will further lower the profitability reflected on the ROA. The results of this study support the theory of risk which states that the risk in the viewpoint of the bank is a risk that occurs due to the failure of the debtor to meet the obligations. A non-performing loan is the amount of default risk experienced by the bank. The largest proportion of bank income comes from loans. Therefore, the greater the bank suffered credit failure, it will have an impact on bank profitability. OJK as regulator agency has determined the amount of non-performing loans that can be tolerated is 5%, if domestic banks want to maintain profitability, domestic banks should select more tightly the debtor so as to minimize the occurrence of a default. Researchers Albulescu (2015), Socol (2013) and Rahman *et al.* (2015) support the results of this study which states the magnitude of NPLs, has a significantly negative effect on ROA.

3.12 Effect of NIM on ROA at Domestic Banks

T-test obtained the value of 0.250 with a significance value of 0.000 or smaller than 0.05, so Hypothesis 2a, NIM has a significant positive effect on ROA for the category of Domestic Banks is accepted. The NIM increase occurs because interest costs are lower than interest income, so an increase in NIM will increase ROA. The results of this study support the efficiency theory of managerial profits stating

that banks are capable of running operations efficiently than competitors will get high profits. The results of this study support previous research conducted by Azam & Siddiqui (2012) stating that NIMs have a positive and significant impact on ROA.

3.13 Effect of Non-Interest Income on ROA at Domestic Banks

T-test results obtained the value of -0.038 with a significance value of 0.339 or greater than 0.05 which means Non-Interest Income does not affect the ROA so that Hypothesis 3a, Non-Interest Income effect on ROA at Domestic Banks is rejected. The average Non-Interest Income is only 1.20260 with the standard deviation of 1.51464, indicating that the Non-Interest Income variation and the average is small so that the Non-Interest Income does not change the effect that is, if ROA increases it decreases Non-Interest Income and the higher non-interest income will actually lower ROA. Negative influence indicates that banks' Non-Interest Income negatively affects ROA due to the opposite direction. The results of this study explain the provision of services and this is evidenced by the small average value of Non-Interest Income at domestic banks. Although the negative impact on the bank does not affect ROA at Domestic Banks. The results of this study are in accordance with the research conducted by Lee, Yang, & Chang (2014).

3.14 Effect of LDR on ROA at Domestic Banks

T-test obtained the value of -0.006 with a significance value of 0.235 or greater than 0.05 which means no effect so Hypothesis 4a, LDR affect the ROA for the category of domestic banks, is rejected. The results of this study are not in accordance with the theory of financial intermediation which states banks that perform their intermediary function are channeling funds to the public. The problem with this intermediation is that banks will face the potential of moral hazard and information asymmetry from debtors. Negative influence is caused by the opposite relationship between LDR to ROA. The results of this study explain that LDR has an increasing trend, but the increase in LDR actually lower the ROA. LDR is insignificant to ROA indicating that inefficient performance of domestic banks maximizes the value of funds income lent to the public, the number of bad debts faced by banks, thus adding to the burden for banks, the LDR does not affect ROA. The results of this study are in accordance with research conducted by Alper & Anbar (2011) which states there is no influence of LDR on ROA.

4. Discussion

4.1 Effect of NPL on ROA at Foreign Banks

T-test obtained the value of -0.155 with significance p value 0.016 which is smaller than 0.05 so Hypothesis 1b, that states NPL negatively affects ROA for

foreign banks is accepted. Negative influence indicated by NPL indicates that the higher level of bad credit or credit risk owned by the foreign banks will further decrease profitability which is reflected on ROA. Risk theory explains that bank earnings will be reduced if the bank cannot overcome the credit risk of failure of the debtor who is unable to pay off its obligations (Laksana and Hersugondo, 2016). The risk will have an impact on the bank's profitability, since most of the bank's revenues are derived from the lack of profit for the bank which then decreases the bank's ROA. OJK as regulator agency has determined the number of bad debts that can be tolerated is 5%. Albuлесcu (2015), Socol (2013) and Rahman *et al.* (2015) support the results of this study where the magnitude of NPLs, has significantly and negatively affected ROA.

4.2 Effect of NIM on ROA at Foreign Banks

T-test obtained the value of 0.335 with a significance p value of 0.000 which is smaller than 0.05, so Hypothesis 2b, NIM has a significant positive effect on ROA for foreign banks is accepted. The positive value of NIM indicates that NIM as net interest margin can increase bank's ROA. The results of this study are in accordance with managerial efficiency theory which states that the bank needs to make efficiency to get above average earnings. Efficiency is an important step for the bank to take. Banks that are unable to perform efficiencies will lose a number of opportunities to increase profitability which will then decrease ROA. Comparison between the amount of interest given by the customer and the interest earned from the credit needs to be considered. If the interest earned from the credit is greater than the interest given to the customer, the bank is increasingly profitable, thus increasing its profitability. Azam & Siddiqui (2012) support the results of this study which states that NIM has a positive and significant effect on ROA.

4.3 Effect of Non-Interest Income on ROA at Foreign Banks

T-test obtained the value of -0.125 with a significance p value of 0.216 which is greater than 0.05 meaning no significant effect so Hypothesis 3b, Non-Interest Income effect on ROA at Domestic Banks is rejected. Average Non-Interest Income of 1.20 with a standard deviation of 0.973 indicating that the variation of Non-Interest Income and the average is small so Non-Interest Income has no effect on ROA. Bank operating income derived from the non-interest sector is more fluctuating compared to interest income. The negative effect of Non-Interest Income on ROA indicates the lack of services provided by the bank. This lack of services then generates small Non-Interest income.

4.4 Effect of LDR on ROA at Foreign Banks

T-test obtained the value of -0.017 with a significance p value of 0.026 which is smaller than 0.05 meaning a negative effect so Hypothesis 4b, LDR has a positive

effect on ROA for the category of foreign banks is rejected. The results of this study explain that the increase in LDR actually lowers ROA. The results of this study are in accordance with the research conducted by Aburime (2008), Vlad & Vlad (2014), Boadi *et al.* (2016) which state that LDR negatively affects ROA. The results of this study are not in accordance with the theory of bank intermediaries. This theory states that in order to gain more profit, banks should perform the intermediary function by channeling funds to the public and in return will get the loan principal and interest. EBT is the relationship (earnings before tax) to the average size of foreign banks. EBT increased in the period 2012-2014 but there is a decrease in the period 2015-2017. However, the size has increased the trend from 2012 to 2017. Increase in size actually decreases EBT causing a negative effect.

4.5 Differences in Effect of NPL, NIM, Non-Interest Income and LDR on ROA at Domestic and Foreign Banks

The fifth hypothesis states that there are differences in the effect of NPL, NIM, Non-Interest Income and LDR to ROA between domestic and foreign banks which has been rejected. The results of this study indicate that changes in NPL, NIM, Non-Interest Income, and LDR values do not affect the difference between domestic and foreign banks' ROA. Partial test explains that at domestic banks, the affecting variables are NPL and NIM. Meanwhile, the variables affecting foreign banks are NPL, NIM, and LDR. T-test conducted in this study explains that the independent variables are not different in domestic and foreign banks. Although domestic banks and foreign banks have different legal entities, different strategies and policies, the results of this study show that there is no difference between domestic and foreign banks. The results of this study can be attributed to domestic and foreign banks operating in Indonesia while they have the same provisions regulated by BI. As regulator in Indonesia, BI stipulates the same requirements that must be obeyed by domestic and foreign banks.

5. Conclusion

This study concludes that (1) for domestic banks, NPL has a negative effect on ROA; NIM has a positive effect on ROA; and (2) for foreign banks, NPL has a negative effect on ROA; NIM has a negative effect on ROA; LDR has a negative effect on ROA. Furthermore, when size becomes a control variable there is no difference between domestic and foreign banks. Based on Chow-Test, the performance of domestic banks is the same as the performance of foreign banks.

Return on Asset (ROA) at domestic banks is influenced by the most dominant variable that is NPL with a coefficient value equal to 0.678, then NIM with coefficient value 0.323. NPLs have the greatest and negative impact on ROA on domestic banks. This study explains that the NPL has a negative and significant influence, so bank management needs to select more strictly prospective

borrowers, in order to obtain debtor with current credit so as to decrease NPLs and make ROA to increase. This aims to enable the bank to reduce the risk of default due to creditors who are unable to pay off the principal loan and the NIM interest has a positive influence on ROA of domestic banks.

NIM has a positive and greatest influence on the profitability of foreign banks. NIM has a positive and significant influence on ROA. The bank management needs to focus on interest income and reduce unnecessary interest expenses. Bank Indonesia sets a good NIM standard above 2%. An unnecessary increase in interest expense will only reduce the NIM required by Bank Indonesia. This reduction of interest expense can be done by forming a portfolio of fund sources that provide minimal funding costs.

References:

- Beck, T., Demirguc-Kunt, A., Martinez-Peira, M.S. 2011. Bank financing for SMEs: evidence across countries and bank ownership types. *Journal of Financial Services Research*, 39, 35-54.
- Berger, A.N., Klapper, L.F., Martinez-Peria, M.S. & Zaidi, R. 2008. Bank ownership and banking Relationships. *Journal of Financial Intermediation*, 17, 37-62.
- Chang, C., Liao, G., Yu, X. & Ni, Z. 2014. Information from lending relationship: evidence from loan defaults in China. *Journal of Money, Credit and Banking*, 46(6), 1225.
- Hersugondo, H., Robiyanto, R., Wahyudi, S., Irene, R.D.P. 2016. The test of day of the week effect and turn-of-month effect by using a garch approach: Evidence from Indonesia capital market. *International Journal of Economic Research*, 13(1).
- Jimenez, G., Salas, V., Saurina, J. 2006. Determinants of collateral. *Journal of Financial Economics*, 81, 255-281.
- Khajar, I., Hersugondo, H. & Udin, U. 2018. Antecedents and Outcomes of Corporate Governance: Evidence from Indonesia. *European Research Studies Journal*, 21(4), 480-492.
- Khajar, I., Hersugondo, H. & Udin, U. 2019. Comparative Study of Sharia and Conventional Stock Mutual Fund Performance: Evidence from Indonesia. *Wseas transactions on business and economics*, 16, 78-85.
- La Porta, R., Lopez-de-Silances, F. & Shleifer, A. 2002. Government ownership of commercial banks. *Journal of Finance*, 57(1), 265-301.
- Laksana, R.D., Hersugondo, H. 2016. Does economic value added influence the shareholder value in Indonesia? *International Journal of Applied Business and Economic Research*, 14(3), 1547-1560.
- Laksana, R.D., Hersugondo, H., Wahyudi, S., Muharam, H. 2017. The new decomposition asset growth effect. An empirical evidence of Indonesia. *Journal of Applied Economic Sciences*, 12(4), 977-984.
- Wahyudi, S. & Udin, U. 2019. Capital Adequacy Ratio, Profit-Sharing and Return On Asset: Case Study of Indonesian Sharia Banks. *Wseas transactions on business and economics*, 16, Inpress.
- Yunanto, A., Daryono, Wahyudi, S., Ghozali, I. & Udin, U. 2017. The Value Relevance on Retail Trade Industry: Evidence from Southeast Asian Countries. *International Journal of Civil Engineering and Technology*, 8(12), 519-526.