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Determinants of Financial Performance of Commercial Banks: Evidence from Indonesia

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ABSTRACT

Objective – The purpose of the study was to examine the determinants of banks' profitability at commercial banks listed on the Indonesia Stock Exchange.
Methodology – This study employs a quantitative approach that emphasizes objective measurements. The Return on Assets is the dependent variable in this research. In addition, there are four independent variables, namely Loan to Deposit Ratio, Non-Performing Loan, Cost to Income ratio, and Bank Size. The data on Return on Assets was retrieved from Otoritas Jasa Keuangan. In addition, the LDR, NPL, CIR, and Bank Size were also obtained from the bank annual report and Otoritas Jasa Keuangan. The number of samples used in this study was 115 data retrieved from 23 commercial banks during five years of cross-time data.
Findings – The test results show that Cost to Income ratio and Bank size significantly influence ROA negatively, while Loan to Deposit ratio and Non-Performing Loans insignificantly influence ROA.
Novelty – The suggested study will contribute to the growing body of Return on Assets knowledge in the context of commercial banks in Indonesia.
Keywords: *return on assets, loan to deposit ratio; non-performing loans; cost to income ratio; natural logarithm of total assets*

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I. INTRODUCTION

A commercial bank is an entity or corporation that collects funds from parties that have extra monies in the form of demand deposits, savings deposits, other deposits, and then distributes them to those who need money through financial services (Elliyana et al., 2022). Commercial banks in Indonesia have a big role in the country's development in terms of economy and wealth, encouraging saving habits in the community and channel funds for productive use (Bhegawati & Utama, 2020). The growth of any country is possible only after the establishment of a healthy banking system (Nguyen, 2022). Therefore, banks are carriers of economic development vehicles. Identifying the profitability determinants is important to the bank's owner as well the regulatory maker as they can assess and adjusts the performance of banks and regulation to maximize profit (Abdallah, 2019). Thus, to find the determinants that affect bank stability is critical in identifying their financial performance.

Predictions about a business's financial success are typically made by both internal (management) and external (investors, creditors, and the government) individuals who have a relationship with the company (Hanggraeni et al., 2019). Moreover, bank's profitability is a function of internal and external factors, (Athanasoglou et al, 2008). In this case, the level of bank profitability is addressed by internal factors of

the bank. Internal factors are aspects that have a direct impact on bank management's ability to make money. In assessing profitability, an internal factor is a bank-specific factor, while external factors are variables that do not have a direct relationship with bank management. They do have an indirect impact on the economy and law, which will affect bank financial institution performance.

The variables used in this research are several internal determinants that have a direct impact on determining the bank's ability to create profits. This refers to PBI No.13/1/PBI/2011 which regulates a method and soundness of commercial banks, which is called the RGEC. RGEC method consists of Risk Profile, Good Corporate Governance, Earnings, and Capital. For the risk profile, Non-Performing Loans (NPL) can be used to assess credit risk, whereas Loan to Deposit Ratio can be used to assess liquidity risk (LDR). Moreover, Cost to Income ratio can be measure banks' efficiency and bank size to measure the capital. Therefore, there are four variables used in this research. The ratio consists of Loan to Deposit Ratio (LDR), Non-Performing Loan (NPL), Cost to Income Ratio (CIR), and Banks Size (LNTA).

The bank size affects the bank in earning profits. In general, the larger the size of the company, the more profitable the bank because a larger bank size has a higher level of resources to generate profit. Table 1 shows the average ratio of ROA, LDR, NPL, CIR, and Bank Size from 2016-2020.

Table 1. Average Value of ROA, LDR, NPL, CIR, LNTA

RATIO	2016	2017	2018	2019	2020
ROA	1.70	1.71	1.72	1.72	1.73
LDR	85.46	85.67	86.18	86.64	87.28
NPL	1.40	1.41	1.42	1.41	1.38
CIR	83.49	83.36	83.22	83.15	82.95
LNTA	18.17	18.18	18.18	18.19	18.19

The fluctuations average value of NPL that occurred based on the data in Table 1 shows that the data is not consistent with ROA. In 2016 to 2018, NPL continued to increase by 1.402%, 1.410%, 1.420%, respectively. However, the ROA is in positive growth. Moreover, the NPL value ratio started to decline from 2019 until 2020 from 1.414% to 1.375%. This is directly proportional to ROA from 2019 to 2020 which continues to increase. Furthermore, the average value between the Cost to Income ratio and ROA is consistent because the CIR has a negative relationship with ROA. From 2016 to 2020, the CIR average value is declining. In 2016 it was 83.493%, 2017 was 83.359%, in 2018 it was 83.218%, 2019 was 83.153% and last in 2020 was 82.951%. This contrasts with ROA which increased in average value from 2016 to 2020. To know the real relationship and significance, it is important to conduct further analysis to know the real relationship and condition between those variables.

This research tries to look at the effect of LDR ratio, NPL, CIR, and Bank Size on commercial banks ROA that are listed on the Indonesia Stock Exchange between 2016-2020. Following the research background and research problems, the objectives of this study are to analyze the influence of LDR on commercial bank ROA listed in Indonesia Stock Exchange between 2016-2020, the influence of NPL on commercial bank ROA listed in Indonesia Stock Exchange between 2016-2020, the influence of CIR on commercial bank ROA listed in Indonesia Stock exchange between 2016-2020, and analyse the influence of LNTA on commercial bank ROA listed in Indonesia Stock Exchange between 2016-2020.

II. LITERATURE REVIEW

Loan to Deposit Ratio (LDR)

Liquidity is having sufficient sources of funds to meet all of the banks' short-term or long-term obligations. One of the liquidity indicators used to evaluate a bank's liquidity ratio is the Loan to Deposit ratio (LDR).

The LDR indicates the bank's ability to repay depositor payments utilizing credit as a liquidity source. The purpose is to evaluate how far the bank's commitment is to accommodate depositors' requests to withdraw money that has been used to grant the loan. Moreover, LDR is an indicator of the seriousness and capability of a bank. The safe limit of a good LDR for a bank is around 80%, with a tolerance limit ranging from 85% to 100%. In assessing the soundness of banks, Bank Indonesia has also stipulated the following provisions. First, a credit score of 0 is assigned to an LDR of 110 percent or above, indicating that the bank's liquidity is considered unhealthy. Next, a credit score of 100 is assigned to LDRs less than 110 percent (this suggests that the bank is considered healthy).

Non-Performing Loan (NPL)

One aspect to determine the credit risk ratio is the Non-Performing Loan. Credit risk may reflect changes in the health of a bank's loan portfolio (Le & Diep, 2020). Moreover, a bank's credit risk is one of its business threats, coming from uncertainty in its returns or non-payment of credit granted by the bank to debtors. Non-Performing Loans are currently limited to 5% by Bank Indonesia. Higher NPL indicates that banks are unprofessional in managing their credit management. As a result, it will make bad loans or event bank losses. The bank will suffer as the number of Non-Performing Loans rises. One of the negative consequences is that banks' capital is reduced.

Cost to Income Ratio (CIR)

Cost to Income ratio is used to measure the level of efficiency and the ability of banks to carry out operational activities (Apriyanti et al., 2021). By subtracting operational income from operating costs, this ratio can be calculated. Furthermore, the bank's operating income is derived from interest rates on loans (Prasanjaya and Ramantha, 2013).

The lower the ratio, the better the bank management's performance, as it indicates that management is more efficient in utilizing their existing resources. Bank Indonesia estimated a Cost to Income ratio of 93.5%. If the ratio is above 90% and near 100%, it indicates that the bank's performance is inefficient. However, a low ratio such as close to 75% indicates that banks efficiently manage the operational activities.

Bank Size

A bank's size is usually classified into 3 categories: large banks, medium banks, and small banks, based on their total assets (Aladwan, 2015). The ability of a bank to earn profits is influenced by their size. Banks with a large size have a special attraction for consumers because large banks tend to have a smaller bankruptcy risk. It is because the total assets owned by banks tends to be high (Hendrayanti & Muharam, 2013).

Loan to Deposit Ratio on Return on Assets (ROA)

The LDR is a comparison proportion of cash delivered by banks to their customers and money collected from the public (Yatiningsih, 2015). A good LDR figure is in the range of 80% and 100% (Hasna et al., 2020). The LDR of a bank determines its profitability: the more credit given to customers, the less money is left idle, and the amount of interest revenue received rises (Soesetio et al., 2022). As a result, the LDR will increase, resulting increase in bank profitability. LDR has a positive influence on profitability can be achieved with a note that the loans disbursed by the bank can be run productively, so that the problematic bad loans will be insignificant. The LDR is a comparison between the total loans granted and the amount of third-party funds (Hasna et al., 2020). Therefore, banks act as an intermediary for parties who have extra funds from Third Party Funds and those who require loans. By channeling credit, bank can get a profit in the form of the difference between income and interest expense (spread). According to financial intermediation theory, the higher a bank's LDR, the better the bank's potential to produce profits (Muawanah & Imronudin, 2021). As a result, LDR can be stated to have a favourable impact on ROA.

Non-Performing Loans on Return on Assets (ROA)

Bad loans are referred to as Non-Performing Loans in the banking industry. NPL is a credit risk metric. Credit risk is a risk resulting from a customer's failure or inability to repay the loan amount and the interest within a predetermined or scheduled time frame (Spuchľáková et al., 2015). The larger the non-performing loan, the higher the chance of credit default, resulting in decreased interest revenue and profitability.

In the theory of financial intermediation, the bank has a function as an intermediary in collecting funds and distributing public funds in the form of credit. However, not all loans disbursed by banks to the public run smoothly. There are also some borrowers who fail to return the loan amount and interest in accordance with a predetermined period of time, which is known as Non-Performing Loan. If a bank has a high NPL, it means that the bank is not able to manage its credit properly so that it has the potential to reduce the profits earned by the bank. Based on this explanation, NPL negatively affecting ROA.

Cost to Income Ratio on Return on Assets (ROA)

Cost to Income Ratio (CIR) has an impact on banking performance because it demonstrates how efficient the bank with its operating costs. According to Dendawijaya (2003), any rise in operational costs will result in lower profit before taxes. As a result, it will lower the bank's profitability. A lower CIR means the bank's operational costs are more efficient, meaning that the bank is more likely to produce more profits and is not in jeopardy.

Having a high level of efficiency indicates that the bank has optimally used its resources. If the bank has a high Cost to Income ratio, it indicates that the bank has operating costs that are greater than its operating income or can be said to be less efficient in carrying out its operational activities. In short, Cost to Income ratio negatively affects the ROA.

Bank Size on Return on Assets (ROA)

Bank size in this study is seen based on the total assets owned by the company. Large banks, in general, have larger total assets and able to create more profits. A bank with a larger asset size is more profitable than a bank with a small asset size, because a larger bank has a higher level of efficiency (Prasanjaya and Ramantha, 2013).

In this case, the size used is the total asset of the bank. The larger banks size is used as a way to create a competitive advantage (Onour et al., 2019). In addition, it will enhance public trust in saving their money in the bank, resulting in a rise in ROA (Chernykh et al., 2019). Based on this statement, it can be concluded that Size has a positive effect on ROA.

III. METHODOLOGY

The research focused on banking sectors, especially commercial bank sectors that are listed in the Indonesia Stock Exchange below 2016. The researcher conducts the research from January 2022 until April 2022 in Jakarta, Indonesia. Primary and secondary data sources are the two categories of data usually used in research. Primary data is data gathered directly by the researcher from observational studies, surveys, questionnaires, case studies, and interviews.

In addition, secondary data is readily available but not genuine because it has gone through several statistical methods. Secondary data sources can be found from several open database sources such as government reports, websites, journals, or past research. This study uses secondary data from the Otoritas Jasa Keuangan, Bank Annual Reports, and IDX. Moreover, the databases comprise (1) Selected commercial bank that started IPO before 2016, (2) All commercial banks that publish complete financial statements report according to the variables used in this study (ROA, LDR, NPL, CIR, and Bank Size) for five consecutive years during the period 2016 to 2020, (3) Commercial banks that have a positive value of ROA

from 2016 to 2020. After using the purposive sampling with those criteria, researchers found there are 23 banks that suit the criteria. Moreover, since the researcher is using yearly data from 2016 to 2021, there are 115 sample data.

The population of this research are all commercial bank that that listed in Indonesia Stock Exchange. The result show that there are 46 commercial banks listed. From the existing population, a certain number will be taken and used as a sample in this study. The sample for the research is taking from the population commercial bank listed. Due to the scope and limitation, this research uses purposive sampling and come up with sample size of 23 banks. Purposive sampling allows a researcher to choose a sample based on specified criteria, which supports researchers by allowing to generalize or justifications and selecting a wide variety of data (Sharma, 2017). The criterias of the sampling are as follows: (a) All banks listed in Indonesia Stock Exchange, (b) The commercial banks that launched their IPO before 2016, (c) The commercial banks that had published their financial performance report in 2016-2021, (d) Yearly data of commercial bank financial performance ended 31 December 2016, 2017, 2018, 2019 and 2020, and (e) Commercial banks that had a positive return on assets five years in a row.

Multicollinearity Test

If there is a substantial inter-correlation or inter-association between the independent variables, it was determined using multicollinearity (Pangaribuan et al., 2020). Independent variables need to be independent, so this association is questionable. However, a good dataset must be free from any multicollinearity. If there is a high correlation between independent variables, which is generally > 0.90, then this indicates the existence of multicollinearity.

Heteroscedasticity Test

The heteroscedasticity test determines whether there is an inequality of variance between the residuals of one observation and the residuals of another observation in the regression model (Hardanti, 2016). The data should be free from heteroscedasticity.

Multiple Regression Analysis

To determine the relationship of the variables used in this research, Multiple linear regression should be performed. Multiple linear regression aims to know the value of the dependent variable based on the value of the independent variables. Moreover, ROA is the dependent variable in this study, while LDR, NPL, Cost to Income ratio, and Bank size as the independent variable. The following is the regression that was utilized in this study:

$y=\beta 0+\beta 1LDR+\beta 2NPL+ \beta 3CIR+\beta 4LNTA +error$

y = $\beta 0+ \beta 1X1+ \beta 2X2+ \beta 3X3+\beta 4X4+ error$

IV. RESULTS AND DISCUSSION

The research object that became the population in this study were all banks listed on the Indonesia Stock Exchange for the period 2016 to 2020. Based on data obtained from the Indonesia Stock Exchange, there were 46 banking companies listed in the study period. This research used the purposive sampling method and found that 23 banks meet the criteria. Observational data collected in this study was obtained by multiplying the number of samples by the number of years under observation, 23 banks times 5 years so there are 115 data.

Descriptive Statistics

Descriptive statistics is a method of analyzing statistical data in a clear and succinct way that includes the data's mean, median, average, range, standard deviation, and other statistical metrics (Cooksey, 2020). In

one table of descriptive statistics, all of the samples and findings are summarized. The result of descriptive statistics shows the statistical data about ROA, LDR, NPL, CIR, and Bank Size. Table 2 shows a descriptive statistical table of the research variables.

Table 2. Descriptive Statistics

Variable	Mean	Std.Dev	Max	Min
ROA	1.71	1.05	4.02	0.00
LDR	87.32	19.96	171.32	39.33
NPL	1.39	0.93	4.86	0.00
CIR	83.14	10.91	119.43	58.24
LNTA	18.14	1.73	21.20	14.67
Observations	115			
Bank	23			
Year	5			

Table 2 shows that the number of research data or n used in this study is 115 research data. Based on descriptive statistical data above, the minimum ROA value is 0% which is found at Bank Raya Indonesia (then Bank Rakyat Indonesia Agroniaga) in 2020. This change has been effective since November 2021. Moreover, the maximum value for the ROA variable is 4.02% which is owned by Bank Central Asia in 2019. Then the average value (mean) of ROA is 1.714%, and the standard deviation is 1.049%.

A standard deviation is a proportional measure of data dispersion. The high number of standard deviations indicates that data is spread out and more inaccurate to the mean. However, a low number of standard deviations indicates data are concentrated to the mean and more accurate the mean. Therefore, the standard deviation that is less than the mean indicates that the level of distribution of the ROA data used in this study is looking good.

The minimum value of the LDR (Loan to Deposit Ratio) variable is 39.33% which is the LDR of Bank Capital Indonesia in 2020. In addition, the maximum LDR value is 171.32% owned by Bank BTPN in 2019. The LDR value of Bank BTPN was exceed the normal LDR range determined by Bank Indonesia. Meanwhile, the average of the LDR variable is 87.323%, which is greater than the standard deviation value of 19.955%. These results represent that the LDR variable data used in this research is good.

The minimum value of the NPL (Non-Performing Loan) variable of 0.00% originating from Bank National Nobu in 2020 and also Bank Capital Indonesia 2020. Meanwhile, the maximum value is 4.86% which is the NPL ratio of Bank Raya Indonesia in 2019. The average (mean) value for the NPL variable is 1.39% and the standard deviation is 0.93%. From the results of this analysis, the standard deviation of the NPL variable is smaller than the average value, indicating that the NPL variable data used in this study can be said to be good.

The Cost to Income Ratio (CIR) variable's minimum value is 58.24%, which corresponds to Bank Central Asia's CIR in 2018. In 2019, Bank Sinarmas owns 119.43% value, as the maximum CIR value in this research. Cost to Income ratio average value is 83.14%, with a standard deviation of 10.91%. The data on the CIR variable utilized in this study is good because the average value is greater than the standard deviation, according to the result.

Variable Size or Bank Size has a minimum value of 14.67 % which comes from Bank Ina Perdana in 2016. The maximum value of the Size variable is 21.20% owned by Bank Mandiri in 2020. Meanwhile, the average value is 18.14%, where this value is greater than the standard deviation, about 1.73%. The results of this analysis indicate that there is no large gap between the lowest and highest bank size ratios.

Multicollinearity Test

Based on the multicollinearity test findings in Table 3, it can be stated that the four independent variables employed in this study are free of multicollinearity. This indicates that correlation between independent variables would not cause any instability in the following regression analysis (Pangaribuan et al., 2019).

Table 3. Multicollinearity Test

Var	LDR	NPL	CIR	LNTA
LDR	1.00	-0.08	-0.19	0.22
NPL	-0.08	1.00	0.41	-0.19
CIR	-0.19	0.41	1.00	-0.50
LNTA	0.22	-0.19	-0.50	1.00

Heteroscedasticity Test

Heteroscedasticity is a classical assumption test that searches for differences in the assumptions of the regression model. This disparity is due to the variance of the residuals for all of the data in the regression model. The heteroscedasticity should not be found in the data. Based on Table 4, all the independent variables have a p-value > the significant level of 5%. Therefore, the H1 rejected. Therefore, there is no heteroscedasticity in the variables.

Table 4. Heteroscedasticity Test

Variables	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.67	0.31	-2.12	0.04
LDR	0.00	0.00	-0.70	0.49
NPL	0.01	0.02	0.49	0.63
CIR	0.01	0.00	3.46	0.30
LNTA	0.02	0.01	1.40	0.17

Regression (Common Effect Model)

The simplest basic estimating model or method in panel data regression is the common effect model. This model applies the principle of Ordinary Least Squares (OLS). As a result, this method is often referred to as the Pooled Least Squares method. Because the common impact model ignores both the time dimension and the individual dimension or cross section, it may be assumed that data do not change across time.

Table 5. Common Effect Model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	8.07	0.62	13.03	0.00
LDR	0.00	0.00	-1.49	0.14
NPL	0.05	0.04	1.32	0.19
CIR	-0.09	0.00	-23.17	0.00
LNTA	0.06	0.02	2.74	0.01
Effect Specifications				
R-squared	0.89			
Adjusted R-squared	0.89			
Prob(F-statistic)	0.00			
F-statistic	222.51			

The result of Common Effect Model shows that LDR and NPL insignificantly affecting ROA with p-value more than 0.05 (see Table 5). LDR value is 0.14, while NPL is 0.19. Additionally, CIR and Bank Size significantly affect ROA. The adjusted R-square in this study is 0.89%, indicating that this model can explain 89% variation in the ROA.

Table 6. Fixed Effect Model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	15.47	2.30	6.72	0.00
LDR	0.00	0.00	-0.43	0.67
NPL	0.01	0.04	0.40	0.69
CIR	-0.08	0.01	-15.05	0.00
LNTA	-0.40	0.13	-3.03	0.00
Effects Specification				
Cross-section fixed (dummy variables)				
R-squared	0.95			
Adjusted R-squared	0.94			
Prob(F-statistic)	70.13			
F-statistic	0.00			

Regression (Fixed Effect Model)

This model is designed to overcome the drawbacks of utilizing the common effects method to analyze panel data. The usage of common effects panel data is impractical since it will result in a lope on the panel data that is constant across individuals (cross section) and time (time series). The difference in the intercept can accommodate differences between people in the data, according to this model. A dummy variable strategy is used in the Fixed Effect model to represent intercept differences between companies when estimating panel data. The slope, though, is identical on both banks.

The result of Fixed Effect Model shows that the LDR and NPL insignificantly affect ROA with p-value more than 0.05 (the LDR value is 0.672, while NPL is 0.693). Moreover, CIR and Bank Size significantly affect ROA. The adjusted R-square in this study is 0.94, indicating that this model can explain 94% variation in the ROA (see Table 6).

T-test

The t-test attempts to evaluate effect and importance of each independent variable on the dependent variable (Nawawi, 2020), by examining the significance of each independent variable. Table 7 shows the effect of each variable LDR, NPL, CIR, and Size on ROA which can be seen from the direction of the sign and the level of significance. The LDR, CIR, and Bank Size variables have a negative effect on ROA. Meanwhile, the NPL variable shows a positive effect. Then for the level of significance, the results of the t-test show that there are only two independent variables that have a significance below 0.05 which means they have a significant effect on the dependent variable (ROA), namely CIR and Bank Size. While other variables, namely LDR and NPL, have a significance value above 0.05, which means that they do not have a significant effect on the dependent variable (ROA).

Discussion

The t-test results demonstrate that just two independent variables, Cost to Income Ratio and Bank Size have a significance below 0.05. It is indicating that they have a substantial impact on the dependent variable (ROA). Other variables, such as LDR and NPL have a significance value of greater than 0.05, indicating that they have no effect on the dependent variable (ROA).

The LDR has an insignificant negative influence on ROA, according to the results of the t-statistical test in Table 7. This indicates that H1 is rejected. Looking at the coefficient, LDR has a negative relationship with ROA, meaning that the larger the LDR, the lower the ROA. However, the findings of this study show that the H1 is rejected, implying that LDR has no effect on ROA. This is because there is a fairly high gap between each bank that provides credit or loan. There are banks that have a low LDR because they are not optimal in using their third-party funds. On the other hand, there are banks that are excessive in providing credit so that their LDR is extremely high. This results in a high gap between banks every year. As can be seen in Table 7, the minimum LDR value is 39.33% while the maximum value is 171.32%. In addition, it is also shown by the standard deviation value of the LDR, which is quite high, 19.95%. The results of this hypothesis are in line with the research conducted by Manikam and Syafruddin (2013) which states that LDR has no significant effect on ROA.

Table 7. t-Test

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	15.47	2.30	6.72	0.00
LDR	0.00	0.00	-0.43	0.67
NPL	0.01	0.04	0.40	0.69
CIR	-0.08	0.01	-15.05	0.00
LNTA	-0.40	0.13	-3.03	0.00
Effects Specification				
Cross-section fixed (dummy variables)				
R-squared	0.95			
Adjusted R-squared	0.94			
Prob(F-statistic)	70.13			
F-statistic	0.00			

The second variable, NPL, has a positive and insignificant influence on ROA, according to the results of the t-statistical test shown in Table 7, indicating that H2 is not significant. These results show that although the NPL level increases, it does not influence ROA. NPL is a non- performing loan or bad credit at a bank. Based on the theory, the results of this study do not support the theory which states that the higher the NPL level will have an impact on bank losses. However, this study shows that NPL has no significant effect on ROA. This can be caused by the value of Allowance for Earning Assets losses still being able to cover non-performing loans. In addition, to reduce the impact of credit risk, fee-based income has a very important role in providing a relatively high impact on ROA. High income from asset management can cover losses arising from credit risk. Sukarno and Syaichu's (2006) study found that NPL had no significant impact on ROA. Table 7 demonstrates that the CIR has a significant negative impact on ROA. This makes H3 acceptable, which states that the CIR considerably impacts ROA. The CIR has a considerable negative impact on ROA, implying that any increase in the CIR would result in a reduction in ROA.

According to Sukarno and Syaichu (2006), a high CIR implies that the bank has been unable to effectively utilize its resources or carry out its operational tasks, resulting in a reduction in ROA. This is also explained in Table 1 that show from 2016 to 2020, the CIR average value decreasing respectively. In a relationship with ROA, the ROA value from 2016 to 2020 is continuing to increase. Therefore, this research is in line with the theory that CIR and ROA have a negative significant relationship. The results of this hypothesis are in line with research conducted by Manikam and Syafruddin (2013), Prasanjaya and Ramantha (2013), and Yatiningsih (2015) who found that CIR had a significant negative effect on ROA.

Finally, the t-statistical test results in Table 7 reveal that bank size has a significant negative impact on ROA. This indicates that H4, which asserts that the size of the bank influence banks ROA, is acceptable. The size of the bank has a considerable negative impact on ROA, meaning that as the size of the bank grows, the ROA decreases. This conclusion contradicts the idea that suggests that the size of a bank has a strong beneficial impact on ROA. This result indicates that in comparison to small banks, large banks tend to perform inefficiently, resulting lower value of return on assets. This finding is supported by Sufian and Chong's (2008) study.

This finding also supported by the descriptive statistics in Table 2. The maximum value of Cost to Income ratio is 119.43%, which this ratio is exceed the maximum CIR determined by Bank Indonesia. Large number of CIR indicates that banks are inefficiently operated. In addition, the findings depict that large bank are not guarantee that they will perform better in the form of ROA value. It is because the finding show that the maximum bank size is owned by Bank Mandiri, but the highest ROA ratio is owned by Bank Central Asia, not Bank Mandiri.

Furthermore, the inefficiency that occurs in large banks is in line with the Agency theory. This theory claims the difference in priorities and interests between agents and principals will result agency problems. Moreover, the agency problems will give unfavorable impact to the organization since it is resulting to poor management system.

In addition, this finding is supported by the "Too Big to Fail" (TBTF) theory. Large banks have a tendency to relax their credit or loans checking and money lending policy in order to provide loans to borrowers. It is because in TBTF theory, government have responsibility to support banks when they are facing the failure by considering the bailout. Furthermore, larger banks may have broader access to additional financing sources, but they must contend with liquidity and credit risk. This is most likely since larger banks benefit from fail-safe strategies and are regarded to have a better chance of surviving than smaller banks.

V. CONCLUSION

The impact of Loan to Deposit Ratio, Non-performing Loans, Cost to Income ratio, and Bank Size on return on assets is investigated in this study. Hypothesis testing utilizing Eviews 12 statistics software and the multiple regression analysis method. This study used 23 commercial banks that listed on Indonesia Stock Exchange between 2016 until 2020.

The LDR variable statistically shows that do not reject the null hypothesis with a probability value more than (0.67 > 0.05), based on the output result access in Table 7. It can be concluded that the loan to deposit ratio has no major impact on Return on Assets, (ROA). A negative relationship has been found in between based on the coefficient that LDR has through the ROA. The ROA will decrease by 0.001 points if LDR increases by one point.

The NPL variable statistically shows that do not reject the null hypothesis with a probability value greater than (0.69> 0.05) based on the output result shown in Table 7. It can be determined that the NPL has no substantial impact on ROA. A positive association has been discovered between LDR and the ROA based on the coefficient that LDR has. The ROA will grow by 0.01 points if NPL increases by one point.

The CIR variable statistically reveals that the null hypothesis is rejected with a probability value less than (0.00 < 0.05), based on the output result presented in Table 7. The CIR has a considerable impact on ROA by having a negative association based on the coefficient. It means that when CIR rises by one point, the ROA will fall by 0.07 points.

The Bank Size variable statistically reveals that the null hypothesis is rejected with a probability value less than (0.00 < 0.05) based on the output result presented in Table 7. It may be deduced that the size of a bank has a major impact on its ROA. A negative association has been found in between based on the

coefficient that Bank size has through the ROA. The ROA will decline by 0.4 points if the bank size is increased by one point.

Suggestions

The results showed that the CIR variable had a significant negative effect on ROA. It means that as the Cost to Income ratio rises, the bank's profitability would decrease. Therefore, it is recommended for banks to manage or reduce their operational costs so that the CIR costs can be lowered. A high CIR also indicates that the bank is working inefficiently, while a small CIR indicates that the bank is efficient in its operations.

Second, the Bank Size factor had a significant negative impact to the ROA. It shows that banks with high asset values actually bring in low profits. This indicates that large banks cannot use their privileges as banks with large assets to generate higher profit. Therefore, it is recommended for the large banks to evaluate their credit assessment or credit terms when lending the money to the borrowers. Large banks need to emphasize that borrowers have met the requirements in providing credit as regulated in Indonesia, namely 5C, consisting of character, capability, capital, collateral, and condition of economy of the borrowers. Better credit assessment will be resulting in better loan disbursement to remain a productive asset. Productive assets are those with the ability to generate profits and cash flow.

Third, banks do not need to pay attention to the LDR and NPL ratios because these two variables do not significantly affect bank profitability. Moreover, management should pay more attention to their financial ratio, especially those used in this research is in ideal ratios. From the data obtained, it can be concluded that there are still many gaps in the value of financial ratios between one bank and another.

The results showed that the independent CIR has the largest influence compared to other variables in predicting the effect on ROA. In addition to CIR, the Bank Size variable also shows a significant effect on ROA. This is expected to be input and consideration for investors in investing in the banking industry.

For further researchers, it is recommended to add other variables that have an influence on internal factors or banking external factors. In addition, the sample under study should also be expanded, both in terms of a longer research period and not only in one country.

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