

BANK SPECIFIC DETERMINANTS OF BANK PROFITABILITY IN INDONESIA FOR THE PERIOD 2008-2019

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Abstract

Banks have an important role in the economy and are the significant driver of economic growth for its financing to many industries in the economy. Thus, banks need to be maintained profitable to keep operating and avoid the major impact of bank failure. This study attempts to know the relationship between bank-specific variables of Liquid Assets to Total Assets (LATA), Non-performing Loans to Total Loans (NPLTL), Operating Cost to Operating Income (OCOI), Third-party funds to Total Assets (TPFTA), and Core Capital Tier 1 to Total Assets (TIER1TA) toward bank profitability by using Return on Assets (ROA) and Return on Equity (ROE) as the measure. The data used are 7 banks of BUKU 4 category for the period 2008-2019 in quarterly frequency. The research uses panel data regression of the fixed-effects model. The findings show that LATA is significant negative to ROA and ROE, NPLTL is significant positive to ROA and ROE, OCOI is significant negative to ROA and ROE, TPFTA is significant positive to ROA and ROE, and TIER1TA is significant negative toward ROA and ROE. Banks should maintain their operating expense low, increase their interest income, and getting a source of funds with low cost to get more profit.

Keywords: Bank Profitability; Bank Specific Variables; Financial Intermediary; Liquidity; Third-Party Funds

1. Introduction

Banks as one of the most common financial intermediaries have important roles in the financial system and are a significant driver of economic development since they facilitate financial transactions, convert savings into investments, connect the borrower and lender in financial markets and diversify the risks. The existence of banks directly affects the economy of a country because banks comprehensively affect the financial matters of the public concerning the economic stability and growth. Hence, bank performance has to be maintained in sound and profitable financial conditions to better be able to withstand negative shocks and keep operating to contribute to the stability of the financial system of an economy (Athanasoglou, Brissimis, and Delis, 2005).

Banks are exposed to diverse risks and uncertainties, it could be more exposed by risks when the management of the bank is bad, this is shown in the 1997 crisis. The crisis was

caused by the terrible management of the conglomerates that owned most of the banks at that time by doing insider lending, market monopoly, and waste in the use of capital investment that led to the mountainous bad loans (Arief, 1997). This led to the event of bank runs due to the trust crisis on the Indonesia banking system and put the bank industry in dangerous liquidity risk, many private banks got bankrupt, and some got bailed out. After the dire situation, Indonesia did restoration in the banking industry where the management and stakeholders were more prudent in making decisions. Proper regulations and prudent management showed a great result on banking performance where the result was an instant success, even before the establishment of Indonesia Deposit Insurance Corporation (LPS), capital adequacy ratio (CAR) of banks which had reached minus 15.7% in 1998 increased to 21.6%, along with the improvements of nonperforming loan (NPL), which fell from 48.6% to 32.9%. The banking sector was slowly recovering then, and Indonesian banks were relatively more stable when the global financial crisis in 2008 hit, with CAR at that time reached 16.8%, while NPL at the level of 3.2%. There were only two banks failed in Indonesia, one was liquidated by LPS, the other one, Century Bank, got bailed out by Bank Indonesia due to negative CAR and anticipated the possible systemic risk impact (Bisnis.com, 2018).

To be able to deal with risk and possible damage, banks must be effective in managing their assets and liability to generate profit and not bearing so many losses. From the micro perspective of the banking institution, profit is a crucial factor of successful business and at the macro level, the profitable banking industry will contribute to the stability of the financial system (Menicucci and Paolucci, 2016). Therefore, it is important to understand the relationship between bank profitability and its determinants so the banks could keep operating and support economic growth.

2. Literature Review

Bank profitability can be influenced by liquidity risk by which it denotes risk deduction on bank performance, or higher liquidity risk decrease ROA and ROE (Shen et al., 2009). The liquidity risk is measured with the financing gap to total assets ratio. The liquidity is predicted by using bank-specific variables of bank size, the square of bank size, less risky liquid assets, risky liquid assets, and external funding.

Furthermore, by modifying the research from (Shen et al., 2009) in liquidity risk and bank performance, Anggono (2017) analyzed bank profitability from asset and liability management (ALM) factors and bank-specific variables as predictors to the ALM factors. The ALM factors are liquidity coverage, core capital adequacy, intermediary function, and market discipline. The bank-specific variables used are natural logarithm of total assets, the natural logarithm of total assets squared, less risky liquid assets to total assets ratio, risky liquid assets to total assets ratio, loan loss provision to total earning assets ratio, third party funds to total earning assets ratio, operating cost to operating income ratio, non-performing loan total earning assets ratio, and core capital tier-1 to total assets ratio. The result showed that the market discipline factor from ALM has a high relationship with profitability factors of ROA and ROE, other functions of bank intermediary and liquidity in ALM also influenced by internal factors of non-performing loan ratio and a less risky liquid asset to total assets ratio.

In the previous literature, bank profitability is stated as a function of internal and external factors, but internal determinants showed more importance in the literature where every research was using it, unlike external determinants. The internal determinants are also more explored with many forms or modifications throughout the research.

2.1 Dependent variables

The dependent variable is bank profitability, bank profitability definition is varied among the banking studies, so this research will use the same bank profitability measure with previous research. Some of the most used measures are Return on Assets and Return on Equity (Topak and Talu, 2017; Petria et al., 2015; Anggono, 2017; Menicucci and Paolucci, 2016).

2.1.1 Return on Assets (ROA)

Return on Assets represents the management performance in generating profits using all of their assets. ROA is measured as pre-tax profit to total assets.

2.1.2 Return on Equity (ROE)

Return on Equity measures the efficiency of management in generating profits using the shareholder's funds. ROE is measured as net profit after tax to total shareholder equity.

2.2 Independent Variables

In the previous literature, there are internal and external factors influence bank profitability, where bank-specific or internal factors showed more importance to bank profitability (Samad, 2015). Bank-specific variables are common predictors of bank profitability in banking studies and have been used in all literature reviewed, studies have explored bank-specific variables as factors from internal management of the bank that could affect the bank profitability, such as capital adequacy, assets quality, management efficiency, credit quality, and liquidity factors of the bank that has been used as a global standard of bank measurement.

2.2.1 Liquid Assets to Total Assets Ratio

Liquid assets to total assets ratio (LATA) is the measurement of bank liquidity risk. This variable will combine the less risky and risky liquid assets from previous research of Shen et al. (2009) and Anggono (2017). Less risky liquid assets are easily converted into cash without the potential of decreasing value. Meanwhile, risky liquid assets are easily convertible into cash with the probability of decreasing value (Anggono, 2017). According to Shen et al. (2009), banks can sell their less risky liquid asset to get liquid funds, because less risky liquid assets are easy to be sold, then the liquid funds will decrease the liquidity risk. Furthermore, banks with high liquidity risk tend to use funds with higher interest rates and finally reduce their profits. Unlike the less risky liquid assets, risky liquid assets would be difficult to be collateralized, due to the credit freeze to get liquid funds (Shen et al., 2009). The inability to get liquid funds will increase the liquidity risk to cause banks to take funds from high-interest rate sources and decrease profitability (Shen et al., 2009). The expected effect of LATA to the bank profitability is positive because liquid assets will help banks to get funds from the selling of those liquid assets, although there will be some decreasing assets value, the overall liquidity of assets could lower the liquidity risk by converting it into cash and avoid banks in using high-interest funds which will increase the profitability. So, it is expected that liquid assets to total assets ratio and profitability have a positive relationship.

2.2.2 Total Third-Party Funds to Total Assets Ratio

Total third-party funds to total assets ratio (TPFTA) is a measurement of bank intermediary function. It indicates how much third-party funds can be utilized. As the main source of funding for banks, it can be used to do financing or loans and generating income from earning assets such as loans, less risky liquid assets, and risky liquid assets. High growing

third-party funds allow banks to expand their business and generate more profits (Menicucci and Paolucci, 2016). So, it is expected that total third-party funds to total earning assets ratio and profitability have a positive relationship.

2.2.3 Non-Performing Loan to Total Loans

Non-performing loan to total loans (NPLTL) is a measurement of credit risk. The non-performing loan (credit risk) is one of the key determinants of bank performance as it shows the number of uncollectible loans due to the failure of the borrower to pay its obligations (Petria et al., 2015). So, it is expected that Non-performing loans to total earning assets ratio and profitability have a negative relationship.

2.2.4 Operating Cost to Operating Income Ratio

Operating cost to operating income ratio (OCOI) is a measurement of management efficiency. Anggono (2017) referred to the previous study from Ayanda et al. (2013), stated that the cost to income ratio shows how well and efficient banks could manage their operating cost to increase the operating income which will be increasing profitability. So, it is expected that operating cost to operating income ratio and profitability have a negative relationship.

2.2.5 Core Capital Tier 1 To Total Assets Ratio

Core capital tier 1 to total assets ratio (TIER1TA) is a measurement of capital risk. Capital is important for banks to maintain their liquidity and being able to provide cash in the potential event of losses and bank runs (Shen et al., 2009). Considering profit-making, high core capital would allow bank management to have flexibility in choosing high-interest income on productive assets without the big concern of liquidity and capital deterioration (Anggono, 2017). So, it is expected that core capital tier 1 to total assets ratio and profitability have a positive relationship.

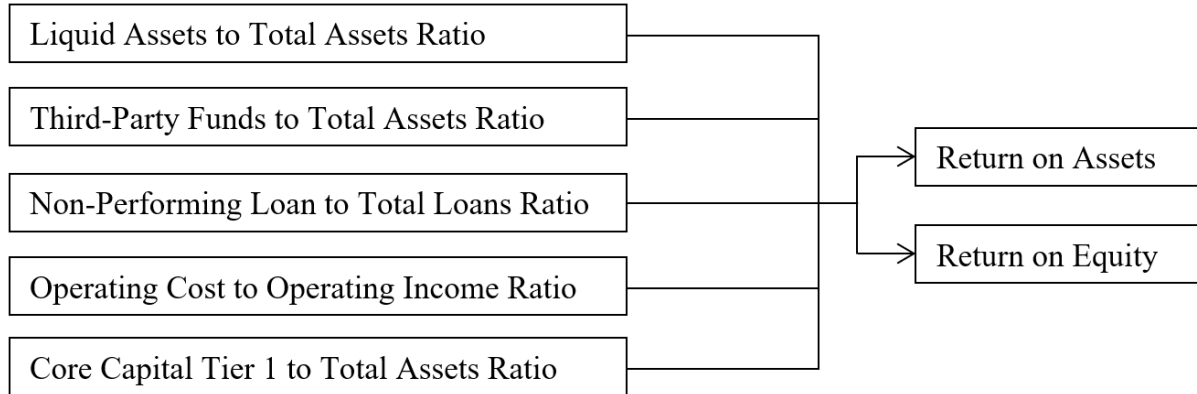
3. Methodology of Research

This research uses data from bank financial reports of balance sheets, income statements, minimum capital requirements, and productive assets quality. These financial reports are the quarterly data report that is obtained from Indonesia Financial Service Authority (ojk.go.id). The dataset covers banks from Bank of Business Activity Unit (BUKU) category 4 which are banks with the core capital of more than 30 trillion rupiahs as of 31 December 2019. The time scope of the research will be from the period of January 2008 to December 2019.

The data will be processed using panel data to deal with cross-section and time-series data. The raw data was smoothed using exponential smoothing method and test its stationarity to avoid spurious regression. Panel equation testing is conducted to know the best method between common effects, fixed effects, and random effects. Furthermore, classical assumption of normality, multicollinearity, heteroscedasticity, and autocorrelation is conducted to be considered BLUE and suitable for regression. Finally, the regression result will be analyzed.

The research model in picture 1 shows how the independent variables of liquid assets to total assets ratio, total third-party funds to total assets ratio, non-performing loan to total loans ratio, operating cost to operating income ratio, and core capital tier 1 to total assets ratio related to the dependent variables of return on assets and return on equity. The hypotheses are trying to test whether independent variables will significantly affect the dependent variables and to know the relationship between both.

Picture 1. Research Model



$$Y = \beta_0 + \beta_1 * LATA + \beta_2 * TPFTA + \beta_3 * NPLTA + \beta_4 * OCOI + \beta_5 * TIER1TA + \epsilon$$

- Y is the dependent variable of ROA and ROE
- Hypothesis for Liquid Assets to Total Assets Ratio
H0: $\beta_1 = 0$, There is no significant relationship between LATA and bank profitability.
H1: $\beta_1 \neq 0$, There is a significant positive relationship between LATA and bank profitability.
- Hypothesis for Total Third-Party Funds to Total Assets
H0: $\beta_2 = 0$, There is no significant relationship between total TPFTA and bank profitability.
H1: $\beta_2 \neq 0$, There is a significant positive relationship between TPFTA and bank profitability.
- Hypothesis for Non-Performing Loan to Total Ratio
H0: $\beta_3 = 0$, There is no significant relationship between NPLTL and bank profitability.
H1: $\beta_3 \neq 0$, There is a significant negative relationship between NPLTL and bank profitability.
- Hypothesis for Operating Cost to Operating Income Ratio
H0: $\beta_4 = 0$, There is no significant relationship between OCOI and bank profitability.
H1: $\beta_4 \neq 0$, There is a significant negative relationship between OCOI and bank profitability.
- Hypothesis for Core Capital Tier-1 to Total Assets Ratio
H0: $\beta_5 = 0$, There is no significant relationship between TIER1TA and bank profitability.
H1: $\beta_5 \neq 0$, There is a significant positive relationship between TIER1TA and bank profitability.
- ϵ is the error component

4. Result and Discussion

The ROA and ROE models after tested using Chow and Hausman test are showing the fixed-effects model as the best model for the estimation. The data passed the stationary test and multicollinearity problem check, but not all passed normality, heteroscedasticity, and autocorrelation test. The normality is then assumed to be normal due to the nature of a large sample that will make the distribution normal. Heteroscedasticity and autocorrelation problems are then resolved using the (Generalized Least Squares) GLS weight method (Widarjono, 2005; Gujarati, 2009).

The regression result with the dependent variable of ROA is shown in Table 1 and the goodness-of-fit model statistics can be seen in Table 2.

Table 1. Coefficient Estimation of Equation Model

Variable	ROA Coefficient	Prob.	ROE Coefficient	Prob.
C (Intercept)	0.082242	0.0000	0.590386	0.0000
LATA	-0.022296	0.0000	-0.163867	0.0000
TPFTA	0.032724	0.0000	0.278989	0.0000
NPLTL	0.155375	0.0000	0.849169	0.0000
OCOI	-0.096218	0.0000	-0.513860	0.0000
TIER1TA	-0.036356	0.0000	-1.670242	0.0000

From the estimation result in Table 1, the panel data analysis model of bank-specific factors effect toward bank profitability in Indonesia can be concluded as:

$$ROA_{it} = 0.082242 - 0.022296*LATA_{it} + 0.032724*TPFTA_{it} + 0.155375*NPLTL_{it} - 0.096218*OCOI_{it} - 0.036356*TIER1TA_{it} + \varepsilon_{it}$$

$$ROE_{it} = 0.590386 - 0.163867*LATA_{it} + 0.278989*TPFTA_{it} + 0.849169*NPLTL_{it} - 0.513860*OCOI_{it} - 1.670242*TIER1TA_{it} + \varepsilon_{it}$$

The result shows that all bank-specific variables of LATA, TPFTA, NPLTL, OCOI, and TIER1TA have significant effect toward ROA. For the ROE model, LATA, TPFTA, NPLTL, OCOI, and TIER1TA have significant effect toward ROE. If all the independent variables remain constant or zero, the ROA will remain at 0.082242 and ROE remain at 0.590386.

The expected effect of LATA to the bank profitability is positive. However, the regression result shows that variable LATA has significant negative relationship with ROA and ROE at 1% significance level, this result is not consistent with the hypothesis of LATA. The 1% increase of LATA will decrease the ROA by 0.022296% and decrease ROE by 0.163867%, ceteris paribus. The negative effect of LATA toward ROA and ROE possibly due to the lower liquidity risk premium banks would get when investing in illiquid assets than in liquid assets. Banks would get additional compensation for the additional risk they bear in a longer period since market value could fluctuate and changes over time. So, the increasing investments in liquid assets would reduce the liquidity risk premium of the net interest margin which is the main factor of ROA and ROE.

The expected effect of TPFTA to the bank profitability is positive. Third-party funds are the main source of funding for banks and should be utilized to generate profit from loans, by having large funding banks would be able to generate more financing to customers and generate more profits. The result shows that TPFTA has significant positive relationship with ROA and ROE at 1% level of significance, this result is consistent with the hypothesis of TPFTA. The 1% increase of TPFTA will increase ROA by 0.032724% and increase ROE by 0.278989%, ceteris paribus.

The expected effect of NPLTL to the bank profitability is negative. NPLTL is the indicator of bad loan performance and its high number would decrease the profitability of banks. However, NPLTL shows a significant positive relationship to both ROA and ROE at 1% significance level, this result is not consistent with the hypothesis of NPLTL. The result shows that 1% increase of

NPLTL will increase the ROA by 0.155375% and increase ROE by 0.849169%, ceteris paribus. The relationship is positive probably because the banks are doing aggressive loans to get more interest income and making the non-performing loans being relatively small compared to the performing loans. The profitability of banks might be increased because it is influenced by the interest income from the large amount of performing loans. Banks that are doing aggressive loans will be exposed by high-risk loans and they charged an implicit risk premium in the interest rate for the cost of forgone interest income.

The expected effect of OCOI to the bank profitability is negative. OCOI shows how well banks being efficient in generating income by having small operating cost or expense. When OCOI is high, banks are having more expense to pay the deposit interest which will decrease profitability. The result shows that OCOI has significant negative relationship with ROA and ROE at 1% significance level, this result is consistent with the hypothesis of OCOI. The 1% increase of OCOI will decrease ROA by 0.096218% and decrease ROE by 0.513860%, ceteris paribus.

The expected effect of TIER1TA to the bank profitability is positive. Core capital tier 1 allows banks to obtain high interest income on productive assets without concerning the liquidity risk since the capital will protect bank liquidity. The result shows that TIER1TA has significant negative relationship with ROA and ROE at 1% significance level, this finding is not consistent with the hypothesis of TIER1TA. The 1% increase of TIER1TA will decrease ROA by 0.036356% and decrease ROE by 1.670242%, ceteris paribus. The negative relationship of TIER1TA and ROE can be explained by the high probability of correlation between core capital tier 1 in TIER1TA and total equity in ROE. By the assumption that TIER1TA is the inverse of financial leverage multiplier, the increase in TIER1TA which is equivalent with the decrease of FLM will consequently decrease the ROE.

Table 2. Equation Model Statistics

ROA Model Weighted Statistics		ROE Model Weighted Statistics	
R-squared	0.986609	R-squared	0.978262
Adjusted R-squared	0.986144	Adjusted R-squared	0.977507
Prob(F-statistic)	0.000000	Prob(F-statistic)	0.000000

Table 2 shows the goodness-of-fit of the model. The R-squared ratio of 0.986609 for ROA equation model shows that 98.6609% of the variation of the dependent variable can be explained by the variables in the model while the remaining 1.3391% influenced by other variables outside of the model. The probability of F-statistic for ROA model is less than the 5% significance level and therefore meaning all independent variables are jointly significant in affecting ROA. Meanwhile, the weighted statistics of ROE model shows the R-squared ratio of 0.978262 for ROE equation model shows that 97.8262% of the variation of the dependent variable can be explained by the variables in the model while the remaining 2.1738% influenced by other variables outside of the model. The probability of F-statistic for ROE model is less than the 5% significance level and therefore meaning all independent variables are jointly significant in affecting ROE.

5. Conclusion

The objective of this research is to examine the determinants of bank performance using ROA and ROE ratio for the BUKU 4 category banks in Indonesia during the 2008-2019 quarterly period. The data is processed with panel data regression using the fixed-effects model and valid to the classical assumption test.

The result shows that bank-specific variables of LATA, TPFTA, NPLTL, OCOI, and TIER1TA have significant effect toward bank profitability of ROA and ROE. There are variables that show similar expected results with the hypothesis which are TPFTA and OCOI, meanwhile some variables show different expected results with the hypothesis which are LATA, NPLTL, and TIER1TA.

From the findings of the research, banks should increase their operation efficiency either from the decrease of the cost of fund from deposit or increase in the interest income from loans and financing. The TIER1TA ratio needs to be maintained low by increasing its total assets from liability side or third-party funds, instead of decreasing the core capital tier 1 due to its importance in liquidity. The increase of third-party funds will also support banks to do financing and investment to generate profits.

Further research could examine the effect of cost of fund from liability and equity toward bank profitability to answer the negative relationship between TIER1TA and bank profitability found in this research. The effect of liquidity risk premium on illiquid assets toward bank profitability that might be the reason of negative relationship between LATA and bank profitability could also be explored, and the aggressive financing from the banks in giving loans and its effect on bank profitability that might cause positive relationship between NPLTL and bank profitability might also be examined. This research is limited to Indonesian banks of BUKU 4 category and covering the quarterly period from 2008-2019, further research may use more banks from BUKU 3 & 4 category and covering monthly frequency in a longer time period to get more accurate results.

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