



## **Determinants Of Rural Bank's Rentability In Indonesia: Data Panel Approach**

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### **Abstract**

This study aims to investigate the determinants of the rentability of rural banks in Indonesia. Rural bank rentability in Indonesia in this study uses Return on Assets (ROA). This study also uses bank-specific CAR, NPL, LDR, Bank Size and Third Party-Fund growth factors as independent variables. The Generalized Method of Moments (GMM) fixed model is built on 5-year panel data for 295 rural banks in Indonesia. The results showed that all specific factors, except Bank Size, had a significant effect on rentability as measured by ROA. Furthermore, the results showed that the ratio of capital, credit quality, liquidity and growth ratio of third party funds are significant variables of rentability in the context of rural banks in Indonesia. The results provide a better insight into the Indonesian banking sector and the determinants of rentability, particularly rural banks.

**Keywords:** rentability, rural banks, data panel

**JEL Classification Codes:** G20, G21, R10

### **1. INTRODUCTION**

Financial system stability, particularly banking, is vital to ensure sustainable economic growth and development. Rural Banks are described as banks whose business activities are intended to serve the community and small groups in rural areas. The role of rural banks in the Indonesian economy cannot be separated from their contribution to the empowerment and development of MSMEs (Micro, Small and Medium Enterprises), which is one of the provisions of the government's strategy to drive the country's economy. Rural bank is one of the financial institutions established to provide banking services to the public and small and medium enterprises and absorb unemployment.

Due to the vital role of rural banks, it is very important to maintain its level of performance. Performance is often related to the efficiency of previous or proposed expenditures, management responsibilities, or accountability. Financial performance management is part of the total performance management of an organization (Khan et al., 2015). According to Armstrong (2006), financial performance is a subjective measure of how well a company manages assets to generate returns. A good rural bank's financial performance will have an impact on the success of helping the empowerment and development of MSMEs (Micro, Small and Medium Enterprises) to improve the economy in rural areas. One of the measures of bank financial performance is using rentability analysis. Rentability is a measurement that pays more attention to the bank's ability to generate income. In contrast to profitability, which has included a comparison between the bank's income and operating costs. Rentability is seen as important when the perception of operational costs cannot be reduced, so the ability to generate income as optimally as possible is a major concern (Puspitasari et al., 2020).

Over the past decade, data shows that the number of rural banks in Indonesia has declined. In 2015 there were 1,800 rural banks, but in November 2019 there were 1,709 rural banks registered and operating. This will certainly disrupt rural banks in carrying out their role for economic progress. The decline in the number of rural banks was partly due to a decrease in the rentability of rural banks from time to time, while the costs for running operations continued to increase due to competition with other banks. Most of the previous research has focused on the performance of commercial banks, but performance studies on other financial institutions such as rural banks are still minimal (Puspitasari et al., 2021). Therefore, it is necessary to identify the factors that determine the rentability of rural bank objects with an atmosphere in developing countries such as Indonesia. This study aims to fill this gap by identifying the determinants of rural bank rentability in Indonesia.

## 2. LITERATURE REVIEW

Bank rentability is the ability of banks with all existing assets used to generate returns (Shobbarin, 2019). Several studies have investigated the role of rentability for banks, such as Isayas (2022), Ozili and Ndah (2021), Saif-Alyousfi (2020), and Bolarinwa et al. (2019). The results of his research found that the more a company is able to create a profit from the assets it manages, the more the company will avoid the risk of bankruptcy. The occurrence of bank failures is caused by banks not being able to create rentability which not only harms customers, but all bank stakeholders suffer losses. When banks experience a decline in rentability, of course, it will reduce public confidence in banks. Public assessment of banks applies signal theory.

Signal theory states how signals affect the public's assessment of bank performance through the information signals it receives so that banks need to build public trust. Bank governance by good management will be reflected in bank financial ratios, including bank rentability (Napitupulu, et al., 2020). A bank cannot survive if it is not able to create rentability. Bank financial ratios that reflect the soundness of the bank allow customers to make comparisons with other banks (Donthu and Gustafsson, 2020). If the bank's rentability increases, it will be considered as good news, while on the contrary it is considered as bad news (Boaten, 2018 and Alarussi, 2017). Therefore, banks need to convey useful information through financial reports to interested parties for their financial decisions (Napitupulu et al., 2019).

Empirically, many studies have been conducted with respect to bank performance (Ongore and Kusa, 2013). Bank performance is reflected in bank rentability using ROA and ROE proxies. To determine the soundness of a bank, the banking authority is more concerned with assessing the amount of ROA than ROE. This is because the banking authorities, as bank supervisors and supervisors, prioritize the value of a bank's rentability as measured by assets whose funds are mostly from public deposit funds. The higher the ROA, the better the bank's performance due to a greater return from the assets used (Nanda and Panda, 2018). The independent variables in this study used bank-specific factors based on previous research. Bank-specific factors consist of Capital Adequacy Ratio (CAR), Non-Performing Loan (NPL), Loan to Deposit Ratio (LDR), Bank Size (BSIZE), and Third-Party Funds (TPF). The following is an explanation of the independent variable.

### 2.1 Capital Adequacy Ratio (CAR)

This study uses variable indicators from bank internal factors referring to previous studies. Based on research conducted by Yonas et al. (2022) found that CAR had a significant positive effect on rentability. The results of this study are in line with Abdulazeez et al. (2020), Sofie et al. (2020), Ahmad et al. (2019), Fakhri et al. (2019) and Nimesh et al. (2018),. Capital adequacy indicates that the bank has sufficient funds to manage its productive assets to create profit. The study conducted by Puspitasari et al. (2021) found that banks soundness when they meet the capital adequacy ratio (CAR). CAR is an important capital adequacy ratio for banks to run their business and accommodate various risks faced by banks.

CAR is a banking performance ratio that serves to measure the adequacy of capital owned by banks to support assets that are potentially exposed to risk such as loans extended by banks (Sudarmawanti and Pramono, 2017). The higher the CAR, the better the bank's ability to bear the risk of credit or risky productive assets (Indrajati et al., 2020). CAR is one of the indicators used to measure the soundness of a bank. The higher the rentability of the bank indicates the bank is in a soundness condition or in good performance.

Positive correlation between rentability and capital has been proven empirically (Puspitasari et al, 2022 and Demirgüç-Kunt and Huizinga, 1999) that banks with high capital will be able to meet their needs and avoid the risk of bankruptcy and are also able to create better returns. In contrast to Agusman et al. (2008) and Guidara et al. (2013) who found that capital has an insignificant relationship to bank rentability. Based on the above review, the hypothesis proposed is as follows:

H1 : CAR has a positive and significant influence on rentability

### 2.2 Non Performing Loan (NPL)

Poor asset quality or high non-performing loans of banks results in a negative perception of depositors about bank soundness prompting them to pay higher interest rates to compensate for the same. Credit quality is measured by the provision of loan losses to gross. loans have a significant negative effect on the rentability of banks. Non Performing Loan (NPL) is the main indicator that describes the credit risk of rural banks. The higher this ratio indicates the worse the quality of bank credit and causes the bank to be in big trouble (Puspitasari et al., 2022). NPL is a condition where the debtor fails to fulfill its obligations so that it is in the status of non-performing loans. Non-performing loans are loans with substandard, doubtful and bad quality (Kurniasari, 2013).

This examination makes use of variable signs from financial institution inner elements relating to preceding studies. Based on studies carried out via the means of DAO (2020) indicates it has a significant positive effect on rentability. The results of this study are in line with Sofie et al. (2020), Saif-Alyousfi (2020) and Ohman et al. (2018). NPL is a ratio that suggests the capacity of bank control in handling non-performing loans. The better this ratio, the more serious the exceptional bank credit, which causes the wide variety of non-performing loans to increase because the health level decreases and of course the bank suffers greater losses. The causes of bad loans are usually caused by a lack of effective monitoring and supervision on the part of the bank (Puspitasari et al., 2022). Meanwhile, Putri and Abundanti (2018) the higher non-performing loans resulted in the increasingly complex bank activities. Different results from Horobet (2021) in her research concluded that NPL had no effect on rentability in rural bank subjects. The results of this study are in line with Ali et al. (2019). Based on the above review, the hypothesis proposed is as follows:

H<sub>2</sub> : NPL has a negative and significant influence on rentability

### 2.3 Loan to Deposit Ratio (LDR)

One of the complex problems of banks in bank operations is bank liquidity. Bank liquidity is the bank's ability to manage funds, most of which are short-term public funds or savings and loans that can be withdrawn at any time. Banks must meet the needs of the community in withdrawing from their deposits and disbursing agreed credits. LDR is a comparison between loans granted and third party funds, including loans received, excluding subordinated loans (Sofie et al., 2020). In the banking system in Indonesia, the largest composition of assets is dominated by credit, which is the main source of bank income. Providing credit is the main activity for most

commercial banks, including rural banks. The rural bank loan portfolio is the largest asset and the main source of income. Rural banks mostly serve the SME community. Therefore, rural banks play a very important role in advancing the economy of rural areas. However, rural banks need to be more concerned with identifying, measuring, monitoring and controlling lending to mitigate the risks they face such as poor credit quality (Segundo et al. (2019), Filip et al. (2018).

The larger the volume of loans disbursed will be directly proportional to the bank's ability to generate interest income (Nimesh et al., 2018). Research by Puspitasari et al., 2020 In developing countries such as Indonesia, credit for banks is still the only source of income. When LDR increases, it will be linear to bank rentability. Therefore, banks compete to gain the trust of the public (Pratiwi et al., 2019; Raz, 2017; Haque and Shadid, 2016; and Ghosh, 2014). However, Ali et al. (2019), in his research revealed that LDR has a significant and negative effect on rentability because funds in the form of loans are far below the bank's health ratio. The results of this research are in line with Ismail et al. (2018).

H<sub>3</sub>: LDR has a positive and significant influence on rentability

#### **2.4 Bank Size (BSIZE)**

Based on a study conducted by Yonas et al. (2022) suggests that Bank Size has a significant positive effect on rentability. The results of this study are in line with Abdelkader (2021), Ali et al. (2019), Ahmad et al. (2018), and Abugamea et al. (2018). Bank size can be an indicator to assess the size of a bank in terms of assets. The size of a bank can determine the performance of a bank because a bank with a large size will find it easier to explore, carry out activities, and carry out its vision and mission than a bank with a smaller size. Banks with large sizes will find it easier to get rentability because of their ability to maintain liquidity (Misbah et al., 2018; Fakhri et al., 2019).

Assessment of the size of a bank can be done by measuring the total assets. If the size of the bank gets bigger, then the company can appear more freely without fear of lack of capital. Ismail et al. (2018) concluded that the exploratory nature of banking companies in lending will have an impact on increasing rentability or company profits because of the interest earned from lending. It has been argued that the effect of size growth on bank rentability is significantly positive for the most part (Smirlock, 1985). Kwan and Eisenbeis (1997) conclude that there is a difference in rentability between large and small banks because technology and services vary depending on the assets owned by the bank. Large bank sizes are not sufficient to save costs (Berger et al., 1987). This result is different from Peter's (2018) research which discovered that Bank Size has a massive impact on rentability due to the fact the ability to create rentability needs to be accompanied by public trust in banks.

H<sub>4</sub> : BSIZE has a positive and significant influence on rentability

#### **2.5 Growth Third-Party Funds (GTPF)**

Third party funds (TPF) are funds obtained from the public in the form of savings deposits, demand deposits and time deposits. In banking, this TPF is the largest fund owned. This is in accordance with the function of banks to collect funds from the public and channel them back to the community in the form of credit. Singh and Sharma (2016) stated that increasing the amount of third party funds as the bank's main source of funds and placing it in the form of productive assets such as credit will contribute to generating interest income for banks.

This study uses variable indicators from bank internal factors referring to previous studies. Based on research conducted by Anbar and Alper (2011), Menicucci and Paolucci (2016), Naeem et al. (2017), Zampara et al. (2017), suggests that Third Party Funds have a significant positive effect on rentability. This is because the largest distribution of funds carried out by rural banks is in the form of credit. Banks earn income from customer loan interest. Rural banks to obtain this income, distribute third party funds in the form of credit to the SME community. Sometimes the SME community is not yet bankable and lacks financial literacy. One of the roles of rural banks in Indonesia is to participate in creating a financial inclusive ecosystem.

H<sub>5</sub>: GTPF has a positive and significant influence on rentability

This study models the financial performance of banks based on previous research. Therefore, this study uses the proxy variables defined in Table 1, drawn from the extensive literature on rentability.

**Table 1.** Definisi Proxy Variable

Dependent Variable	
Rentability	The bank's cap potential to generate earnings or earnings from the assets used
Regressors	
CAR	All financial institution belongings that contain risks (credit, investments, securities, claims on different banks) also are financed from the financial institution's very own capital finances similarly to acquiring finances from re-assets outside the financial institution.
NPL	A credit score class categorized as non-perform loans. Non-current loans, namely loans whose principal or interest payments are not smooth as required in the credit agreement
LDR	Bank's capacity to full-fill short-time period responsibilities via means of dividing overall credit score to overall Third Party Funds.
BANK SIZE (BSIZE)	The size of the bank that can be seen from the assets it has
Growth Third Party-Funds	The growth of budget gathered through banks from the general public within side the shape of demand deposits, financial savings and time deposits

The model in this study is a variant of previous research on bank financial performance. This study uses proxy variables to determine the determinants of rentability which are usually found in conventional and Islamic commercial banks. This study fills the gap in previous research by determining bank-specific variables that determine rentability as shown in Figure1.



**Figure 1.** Theoretical Framework

**3. METHODOLOGY**

The studies method used is descriptive verification and quantitative within the shape of causal studies. It is descriptive and is used to obtain empirical evidence of the effect of the independent variables, namely CAR, NPL, LDR, Bank Size (BSIZE) and GTPF on the dependent variable, namely, rentability.

The data used is secondary data in the form of the annual financial statements of rural banks in East Java for the 2014-2018 period. Furthermore, the control method used in this research is purposive sampling of banks that meet the listed criteria and the application of the panel data methodology involves 295 banks. The regression panel data equation formed is as follows:

$$ROA_{i,t} = a_0 + a_1 CAR_{i,t-1} + a_2 NPL_{i,t-1} + a_3 LDR_{i,t-1} + a_4 BSIZE_{i,t-1} + a_5 GTPF_{i,t-1} + \epsilon_{i,t} \quad (1)$$

Where  $i=1,2,\dots,N=295, t=2014$  until 2018. In our model,  $ROA_{i,t}$  stands for rentability  $CAR_{i,t}$ ,  $NPL_{i,t}$ ,  $LDR_{i,t}$ ,  $BSIZE_{i,t}$ , and  $TPFi,t$  are the bank-specific variables; and  $\epsilon_{i,t}$  is the regression error term. Equation (1) is expected to use ordinary least squares (OLS) with the bank's fixed effects.

**4. RESULT AND DISCUSSION**

This phase offers the baseline regression consequences from our analysis. Table 1 describes the descriptive records for the variables used in this study. It presents info withinside the shape of maximum, minimum, mean, median and well known deviation for the structured variable and its explanatory variable. Table 2 summarizes the effects of the OLS regression with fixed effects for equation (1).

**Table 2.** Summary Statistics

Variabel	Observation	Minimum (%)	Maksimum (%)	Mean (%)	Std Dev
<i>Rentability variables</i>					
ROA	1455	1,60	27,99	4,72	6,36
<i>Bank-specific variables</i>					
CAR	1455	3,00	120,78	49,67	24,58
NPL	1455	0,00	82,65	8,25	9,81
LDR	1455	6,50	146,69	87,98	14,12
BSIZE	1455	2,33	100,00	8,47	10,91
GTPF	1455	1,69	100,00	25,83	24,26

Notes: Summary statistics of the principle variables used withinside the empirical evaluation are stated on this Table. Variables are divided into most important categories: rentability variables at the left and bank-specific variables.

Based on Table 2 the average ROA is above 1% which interprets rural banks as being able to generate profits and of course good for bank performance. The average CAR of rural banks has met the minimum capital adequacy set by the authorities aimed at covering poor credit quality performance and inefficient bank operations. The high NPL ratio above 5% has an impact on decreasing profits earned by banks so that the opportunities for banks to face financial problems increase. Bank Size in rural banks is dominated by banks with lower-middle assets. However, all banks have met the minimum capital adequacy set by the authorities.

The correlations among all of the variables are proven in Table 3. Overall, the consequences confirmed that the correlations among the established variables have been usually low, indicating that there was no multicollinearity problem.

**Table 3.** Correlations Matrix of All Variables

Variables	CAR	NPL	LDR	XBSIZE	GTPF	
Y (ROA)	1					
CAR	.233**	1				
	.000					
NPL	-.472**	.062*	1			
	.000	.018				
LDR	.225**	-.201**	-.034	1		
	.000	.000	.196			
BFSIZE	.093**	.007	-.126**	-.034	1	
	.000	.801	.000	.193		
GTPF	.059*	-.370**	-.185**	-.050	.643**	1
	.024	.000	.000	.056	.000	

Notes: The suggested P-values below the correlation coefficients, \*\*\*, \*\*, \* correspond to the one, five and ten per cent significance levels, respectively, for the bidirectional distribution.

**Table 4.** OLS Regression with Fixed-Effect Result

Independent Variables	Expected Sign	Coefficient	Std.Error	Prob
C		662.1760***	186.0312	3.5594
CAR <sub>t-1</sub>	(+) positive	0.0210*	0.0120	0.5750
NPL <sub>t-1</sub>	(-) negative	-0.3029***	0.0185	-0.0079
LDR <sub>t-1</sub>	(+) positive	0.0311**	0.0139	0.0327
BFSIZE <sub>t-1</sub>	(+) positive	0.0596	0.0499	0.1146
GTPF <sub>t-1</sub>	(+) positive	0.0648***	0.0185	0.0075
N	1455			
R <sup>2</sup>	0.7285			
F-statistic	10.4993***			

Notes: This desk gives the OLS regressions with bank fixed effects. The established variable is Rentability. Constant phrases are covered withinside the fashions however are left out withinside the desk for simplicity. t-information is mentioned in parentheses. Standard mistakes are bank-clustered; \*\*\*, \*\*, \* correspond to the 1%, 5% and 10% ranges of significance, respectively, for a two-tailed distribution

Based on table 4, the t-test shows the relationship between the independent and dependent variables, while 72.85% financial performance can be explained by CAR, NPL, LDR, Bank Size (BFSIZE) and the growth of third party funds, while others are explained by variables not examined. in this research. Therefore, it can be concluded that the model formed is acceptable. Table 3 indicates that the current CAR no longer shows a strong attraction in influencing bank rentability. In general, our current preliminary investigation does not find that better capital levels lead to better bank rentability. This evidence is consistent with several previous studies (Puspitasari et al., 2022 and Demirgüç-Kunt and Huizinga, 1999). This is because most rural banks meet the minimum capital adequacy set by the Indonesian authorities. Meanwhile, the NPL ratio shows negative signs in the regression at 1 percent confidence level. This finding supports the study of DAO (2020), Sofie et al. (2020), Saif-Alyousfi (2020) and

Ohman et al. (2018) but inconsistent with the findings of Horobet (2021). This result is intuitive, because banks with higher NPL ratios tend to have lower bank rentability. We locate that the LDR ratio has a positive impact on bank rentability and is large in one of the regressions. Historically, Indonesian rural banks have usually had a well-controlled liquidity function with the banking LDR degree usually underneath the regulatory threshold of ninety two percent. Therefore, given that ROA is the established variable on this equation, a better LDR will increase rentability and accordingly reduce the hazard of bankruptcy. Research by Pratiwi et al., 2019; Raz, 2017; Haque and Shadid, 2016; and Ghosh, 2014 also reported similar findings in this study.

Meanwhile, Bank Size (BSIZE) has a positive sign but has an insignificant relationship to bank rentability. This provides a finding that bank size does not increase or decrease bank rentability, which also supports the findings of Peter et al. (2018) but contrary with finding's Yonas *et al.* (2022), Abdelkader (2021), Ali et al. (2019), Ahmad et al. (2018), and Abugamea et al. (2018). In our risk equation, the variable growth of third party funds (GTPF) shows a positive sign in influencing bank rentability which implies that growth of third party funds increases bank rentability significantly at 1 percent. Naeem *et al.* (2017), Zampara *et al.* (2017), Menicucci and Paolucci (2016), Acaravci and Çalim (2013), and Anbar and Alper (2011), also observed similar results in their study. In general, the estimation effects of our managed variables are consistent with today's empirical evidence (Indrajati et al., 2020; Puspitasari et al., 2020).

## 5. CONCLUSION AND RECOMMENDATION

In this paper, we check out the connection among bank rentability and financial institution-particular variables for rural banks in Indonesia. In analyzing this relationship, we use ROA as a proxy of rentability and estimate the connection of the usage of a simultaneous equation framework to seize the determinants of bank rentability. We made a contribution to the literature on the usage of rural bank facts in East Java Indonesia at some stage in the 2014-2018 duration because of the implementation of Basel III.

Our empirical proof indicates that bank rentability and bank-specific variables are concurrently related. Based on this simultaneous relationship, we discover that excessive capital adequacy does now no longer constantly mirror top rentability, however it displays resilience to risk. This finding also has several policy implications. Within the framework of bank capital and risk, capital regulation contributes to the high level of capitalization of banks in Indonesia for resilience to bank risk. The relationship between rural bank performance which leads to higher growth of third party funds. The implication of this result is that the trust of bank customers is higher from the information on good bank rentability. Therefore, rural banks need to pay attention to maintaining their reputation through their rentability performance. Rural banks need to manage their non-performing loans so that they are at the threshold according to the provisions of the regulator.

We also find that high NPL will reduce bank rentability. Proper asset management will increase rentability so that capital will be stronger. Banks with strong capital will certainly have the ability to maintain the sustainability of the bank so as to avoid the risk of bankruptcy. Bank size does not reduce or increase bank rentability. Due to the size of the bank, it must be accompanied by good fund management skills. Poor fund management will jeopardize the health of the bank. The growth of third party funds will increase the bank's opportunity to channel funds back to the public so that the opportunity to earn interest income is greater. When the bank's interest income increases continuously it will increase rentability and strengthen capital so as to avoid the risk of bankruptcy.

The results of this study can be used as input for improving the regulation and supervision of the banking industry activities of rural banks. By thinking about the identity of the determinant elements that layout the bank rentability's model, this look makes use of bank-specific elements within the case of rural banks in Indonesia. For further research, it can be enriched by using other variables or methodologies not studied and used in this study.

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