

## Antecedents of Return on Assets in Covid-19 Pandemic: Do LDR, CAR, OE and Bank Size Matters?

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### ABSTRACT

*This study examines the effect of LDR, CAR, OE, and Bank Size on ROA. The population in this study, namely, Conventional Commercial Banks listed on the Indonesia Stock Exchange (IDX) for the 2020-2021 period amounted to 43 banks. The determination of the sample was carried out using the purposive sampling technique so that 62 research observations were obtained. The analysis used is multiple linear regression. The results showed that the LDR, CAR, and bank size have no effect, while OE have a significant negative effect on ROA. This research is expected to be an additional reference and information for subsequent researchers and academics in the field of accounting and investors during Covid-19 pandemic regarding investment decisions by considering the factors that affect ROA.*

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### ABSTRAK

*Penelitian ini bertujuan untuk menguji pengaruh LDR, CAR, OE, dan Bank Size terhadap ROA. Adapun populasi dalam penelitian ini yaitu, Bank Umum Konvensional yang terdaftar di BEI periode 2020-2021 berjumlah 43 bank. Penentuan sampel dilakukan dengan teknik purposive sampling sehingga diperoleh 62 observasi penelitian. Analisis yang digunakan ialah regresi linear berganda. Hasil penelitian menunjukkan bahwa, LDR, CAR, dan Bank Size tidak berpengaruh, sedangkan OE berpengaruh negatif signifikan terhadap ROA. Penelitian ini diharapkan dapat menjadi tambahan referensi dan informasi bagi peneliti selanjutnya dan akademi dalam bidang akuntansi serta, investor di masa pandemi Covid-19 mengenai keputusan investasi dengan mempertimbangkan faktor-faktor yang mempengaruhi ROA.*

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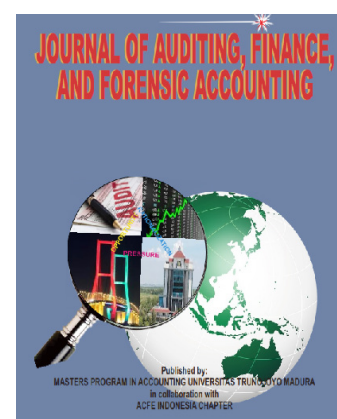
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### Keyword:

*Loan to Deposit Ratio, Capital Adequacy Ratio, Operational Efficiency,  
Bank Size, Return on Assets*



## **1. INTRODUCTION**

Bank profitability fluctuated from 2017 to 2021 due to the covid-19 pandemic (CNBC Indonesia, 2020). Since the imposition of social restrictions due to the covid-19 pandemic, the economic sector in Indonesia has experienced a slowdown in the business world due to weak production and distribution activities. The economy in Indonesia tends to experience a decline from 2017 to 2021, which is in the range of 2.5%, then in 2020, it becomes 1.5%, and then increases in 2021, which is 1.9% (OJK, 2020). The impact of declining economic growth has caused growth in credit or financing in the banking industry to slow down and experience a decline. As a result of the decline in funds distribution in the banking sector, it caused a decline in the profitability of banks in Indonesia. Their primary customers, namely, the business world and the public, cannot pay their credit obligations resulting in bad credit, which can harm banks and reduce profits at banking companies. Another impact of declining economic growth makes investors reluctant to invest their capital.

The lack of investment and customer deposits in investing during the Covid-19 period will affect a bank's income. Capital is used in order to obtain assets used to carry out its operational activities. It is hoped that the banking sector will profit from bank operational activities by raising funding and lending. If the investment value of the customer decreases, then the value of Return On Assets (ROA) also decreases. ROA can measure a bank's ability to generate profit. These variables are the ratios used to measure a bank's financial performance—however, the value of ROA experiences movement due to several factors. The factors are Loan to Deposit Ratio (LDR), Capital Adequacy Ratio (CAR), Operational Efficiency (OE) and Bank Size. LDR describes credit to third-party public funds and bank capital. LDR indicates how capable a bank is in returning customer funds by using distributed credit as a source of liquidity (Hery, 2019). The LDR ratio assesses the credit capacity of the public's savings funds. A high LDR ratio means a bank can support its profits from credit income lent effectively. Research conducted by Rohmiati et al. (2019) and states that LDR positively influences ROA. Other studies provide contrasting findings that prove that LDR harms ROA (Ismadi & Irawati, 2019; Harun, 2016).

The findings from Widyastuti & Aini (2021) and Agam & Pranjoto (2021) concluded that CAR positively affects ROA. Research from Ismadi & Irawati (2019) and Oktaviani et al. (2019) show contradictory findings that CAR negatively impacts ROA. CAR is a ratio that assesses sufficient capital to assess a bank's capability in terms of capital defense that can cover losses. Increased profits will increase CAR value Capital adequacy, as measured by CAR, can accommodate risky assets, namely distributed loans, securities, and investments originating from bank capital or from public funds that have been collected. According to Peraturan Bank Indonesia Regulation Number 9/13/PBI/2007, every commercial bank in Indonesia must meet the stipulated minimum capital of 8%.

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This is a government step to overcome and minimize the possible risks. OE serves to assess the bank's performance in carrying out operational activities to reduce the operational burden on the funds rotated by the bank and reserve funds to cover the risks that can be faced by the bank (Safitri et al., 2020). According to Rohmiati et al. (2019) OE is useful for measuring and seeing how the state of the bank is in minimizing operational expenses incurred in operating income. A small OE value indicates that a bank efficiently manages its operating expenses and vice versa. The study by Mangantar (2019), Agam & Pranjoto (2021), and Putri et al. (2022) provide empirical evidence that OE harms ROA. Profitability can decrease due to the high OE value. Meanwhile, research by Yundi & Sudarsono (2018), and Oktaviani et al. (2019) stated that OE does not affect ROA.

Research conducted by Vernanda & Widyarti (2016) and Indrawati et al. (2018) shows that bank size positively affects ROA. Meanwhile, Ismadi & Irawati (2019) concluded that bank size negatively impacts ROA. Bank Size is clarified how prominent the bank's position is from the bank's assets. The bank can obtain large profits from the total assets in its operational activities. In addition, the larger the size of the company, it is possible that the bank has a good efficiency level because its resources are also enormous. Based on the background and previous research, it can be concluded that there is still a gap. This study provides updates in the form of a period that has never been studied before, namely in 2020-2021, when the Covid-19 pandemic confronted the world. This study describes the effect of LDR, CAR, OE and Bank Size on ROA during that period. Empirical evidence generated from this research will be able to reinforce the impact of independent variables on ROA during the Covid-19 pandemic.

## **2. LITERATURE REVIEW AND HYPHOTESIS DEVELOPMENT**

Spence (1973) introduced the signaling theory, which argued that signals give a sign. The sending party (owner of the information) tries to provide relevant information that the receiving party can utilize. The receiving party will then adjust its behavior according to its understanding of the signal. Company performance measurement can be explained by signaling theory. The signaling theory explains why companies urge to provide financial report information to external parties. The signaling theory emphasizes the importance of the notification issued by the company to the investment decisions of external parties. The implications of signaling theory with this research can explain the relationship between LDR, OE, and Bank Size on ROA. LDR indicates how far the bank can pay back the withdrawal of funds made by depositors by relying on the amount of credit provided as a source of liquidity (Hery, 2019). LDR is related to signaling theory, which offers financial explanations for investors. A high LDR value indicates that the company can manage its credit effectively. Effective credit management will increase the amount of interest income earned. Thus, it becomes an essential factor in improving the company's

prospects. This is because credit is one of the leading products of banks in generating profits. Prospects of a good company will show a healthy performance. Therefore, the LDR value is a positive signal for investors in investing. Investment decisions can be made based on the prior signals provided by the company.

According to Safitri et al. (2020), OE assesses a bank's performance in carrying out operations to minimize the operational burden on the funds rotated by the bank. OE explains the measurement of bank operational activities so that management is the party that knows comprehensive internal information regarding operating expenses and income. This information is a signal to investors. Operational activities are a factor for investors in viewing company performance to consider their investment decisions. One of the things in assessing the company's performance is to determine the company's activities based on the income and operating expenses used. OE is a signal for investors in determining their investment decisions. A low OE value indicates that the operating income earned is higher than the operational expenses. This is per the signaling theory, and the OE value is a signal received by investors to assess the company's performance based on its operational activities. Bank size is the bank's size reflected in the total assets owned by the bank. Bank size is related to signaling theory. One of the pieces of information that becomes a signal for investors in making investment decisions is the total assets owned by the bank, as seen from the value of the bank's size. If the bank size increases every year, which can be seen from the total assets, it will be one of the considerations by investors in making investment decisions. Investors in banks with extensive resources get positive signals regarding their interest in investing. This is because ample resources will convince investors that the bank can manage its management correctly so that the bank size is a positive signal for investors.

Agency theory was first coined by Jensen dan Meckling (1976), who stated that agency theory is a theory of different interests between principals and agents. Agency theory bases the contractual relationship between shareholders or owners and management or managers. According to this theory, the relationship between owners and managers is challenging to create because of conflicting interests. Agency theory is a theory used to show that incomplete information conditions and uncertainty will lead to agency problems. CAR is the bank performance ratio in managing banks' capital adequacy to support assets that contain or generate risk (Dewi, 2018). The implication of agency theory in this research is to explain the relationship between CAR and ROA. Management (agent) will provide information about the capital owned regarding the CAR value, which will convince investors (principal) that the bank has sufficient capital. This is in line with agency theory because CAR will give the company capital reserves to cover in the event of a loss. In making investment decisions, investors always consider all risks that will be faced, and one way to prevent these losses is by having a good CAR. So, this can trust investors to

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make investment decisions.

H1: LDR, CAR, OE and Bank size is simultaneously associated with ROA

H2: LDR is associated with ROA

H3: CAR is associated with ROA

H4: OE is associated with ROA

H5: Bank size is associated with ROA

### 3. RESEARCH METHODS

The population is a generalized area consisting of objects or subjects with specific qualities and characteristics determined by researchers to study and then draw conclusions (Sugiyono, 2019:126). The total population in this study was all Commercial Banks listed on the Indonesia Stock Exchange (IDX), totaling 43 banks. Based on the population of Commercial Banks that Go Public on the Indonesia Stock Exchange during the 2020-2021 period, there are 43 banks. A purposive sampling technique was used to determine the number of samples. Thirty-one banks were obtained according to predetermined criteria, so the number of samples in this study totaled 62 samples according to a predetermined period. Techniques and data collection through the literature study method, namely data collection techniques with literature review in the form of collecting written materials and references that are relevant to previous research that has been carried out (Sugiyono 2019: 291). Documentation studies are also employed by collecting and analyzing documents and records that are important and related and can provide data to solve problems in research (Sugiyono, 2019: 240).

The data analysis technique uses the classic assumption test, which consists of the Normality Test using the non-parametric Kolmogorov-Smirnov (K-S) statistical test, multicollinearity test, heteroscedasticity test, and autocorrelation test. Then, this study used multiple linear regression analysis using the IBM Statistical Product and Service Solution (SPSS) Software Version 25. Its use is to find out the direction and how much influence the independent variables have on the dependent variable (Ghozali, 2020: 140). This study uses the effect of the variables LDR, CAR, OE, and Bank Size on ROA. The next test is the coefficient of determination which measures how far the model can explain the dependent variables. Statistical F-test and t-test do hypothesis testing. In this study, Return On Assets (ROA) is the dependent variable, which measures the extent to which a company can generate profits using its assets. The formula for calculating ROA is as follows:

$$ROA = \frac{\text{Earnings Before Tax}}{\text{Total Assets}} \times 100\%$$

Source: Bank Indonesia (2011b)

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LDR indicates how far the bank can pay back the withdrawal of funds made by depositors by relying on the amount of credit provided as a source of liquidity (Hery, 2019). The formula for calculating the LDR is as follows:

$$LDR = \frac{\text{Total Loan Amount Disbursed}}{\text{Total Third Party Funds}} \times 100\%$$

Source: Kasmir (2016)

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CAR is the bank performance ratio in managing a bank's capital adequacy to support assets that contain or generate risk. The CAR is calculated using the following formula:

$$CAR = \frac{\text{Capital}}{\text{Risk Weighted Assets}} \times 100\%$$

Source: Bank Indonesia (2013)

OE is the ratio used to measure the bank management's ability to control operational costs against operating income. The formula for calculating OE is as follows:

$$OE = \frac{\text{Total Operating Expenses}}{\text{Total Operating Income}} \times 100\%$$

Source: Bank Indonesia (2011a)

Bank size is the size of the bank, which is reflected in the total assets owned by the bank. The total assets can be the indicator to find out how big a bank is. Bank size is obtained from the natural logarithm of the total assets owned by the bank in a certain period. Calculation of bank size can use the following formula:

$$\text{Bank Size} = \ln(\text{Total Assets})$$

Source: Setiawan (2019)

## 4. RESULTS AND DISCUSSION

Based on the normality test carried out, the significance value of Asymp.Sig. (2-tailed) of 0.083, which means it has a value greater than the significance level of 0.05. Under the decision basis in Kolmogorov-Smirnov, the data above is said to be normally distributed. Thus, the normality test in the regression model has been fulfilled (Ghozali, 2020). Then, the results of the multicollinearity test show that the tolerance value is > 0.1. The VIF value is < 10. The regression model is declared free if it has a tolerance value greater than 0.1 and a VIF value lower

than 10. Thus, the regression model can be declared free from multicollinearity. Based on the results of the Heteroscedasticity test shows that the value of Sig. (2-tailed) > 0.05. So, following the Spearman rho test decision statement in this regression model, there is no heteroscedasticity.

The autocorrelation test that has been carried out shows that this value indicates the Asymp. Sig. (2-tailed) > 0.05. Per the basis for decision making on the Run Test, namely, if the Asymp. Sig. (2-tailed) > 0.05, then there are no signs of autocorrelation. So, it can be concluded that there is no autocorrelation problem in the regression model. The following is the result of Multiple Linear Regression Analysis using the SPSS application:

**Table 1  
Multiple Linear Regression Test**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	0.041	0.032		1.289	0.203
LDR	0.002	0.001	0.147	1.349	0.183
CAR	1.958E-5	0.006	0.000	0.003	0.998
OE	-0.038	0.009	-0.556	-4.315	0.000
BANKSIZE	2.641E-5	0.196	0.000	0.000	1.000

Source: SPSS (2022)

Based on the table above, the multiple linear regression equation can be compiled as follows:

$$ROA=0.041+ 0.002LDR+ 1.958CAR-0.38OE+ 1.641SIZE+ \epsilon$$

From the multiple linear regression equation above, it can be seen that a constant of 0.041 indicates that ROA has a value of 0.041 if the LDR, CAR, OE, and Bank Size value is 0. The coefficient value of the LDR is 0.002 which indicates that for every one percent increase in LDR, then the ROA value increases by 0.002, assuming the CAR, OE, and Bank Size values are fixed. The multiple linear regression equation shows that the CAR coefficient is 1.958. This value means that for every one percent increase in CAR, the ROA value will also increase by 1,958 assuming the LDR, OE, and Bank Size values are fixed.

**Table 2  
Coefficient of Determination Test**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.586 <sup>a</sup>	0.343	0.297	0.00991

Source: SPSS (2022)

Based on the table above, it can be seen that the coefficient of determination using Adjusted R2 to evaluate the best regression model is 0.297, which shows the level of relationship between the

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variables LDR, CAR, OE, and Bank Size of 29%. In comparison, other factors influencing the remaining dependent variable is 71%.

Table 3  
Simultaneous Hypothesis Test

Model	F	Sig.
1	7.446	0.000 <sup>b</sup>

Source: SPSS (2022)

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Based on the table above, an F count value of 7,446 is obtained. To obtain F table from the statistical table at a significance of 0.05 with df1 (k-1) and df2 (n-k), where k is the number of independent variables and n is the number of samples. The way to determine F table = a (k-1: n-k) = 0.05 (4-1: 62-4) = 0.05 (3: 58), then the value of F table is 2.76. So, based on table 4.8, the calculation results obtained F count > F table 7.446 > 2.76 and a significance value of 0.000 < 0.05, the null hypothesis (H0) is rejected, and the hypothesis (H1) is accepted. So, it can be concluded that LDR, CAR, OE, and Bank Size simultaneously affect ROA. Thus, H1 is supported.

Table 4  
Partial Hypothesis Test

Model	Standardized Coefficients Beta	T	Sig.
(Constant)		1.289	0.203
LDR	0.147	1.349	0.183
CAR	0.000	0.003	0.998
OE	-0.556	-4.315	0.000
BANKSIZE	0.000	0.000	1.000

Source: SPSS (2022)

The table above shows the calculated t-value of 1,289. Then, to obtain the t-count value from the statistical table on significance with df (n-k-1). It can be seen that n is the number of samples and k is the number of independent variables. The way to determine the t-table value is a/2: (n-k-1) = 0.025 : (62-4-1) = 0.025 : 59, then a t-table of 2.001 is obtained. The discussion of the hypothesis testing is as follows:

### Effect of Loan to Deposit Ratio (LDR) on Return On Assets (ROA)

LDR has empirically proven to have no significant effect on ROA. LDR indicates how much the bank extends credit to third-party funds that have been collected. It can be seen in the ratio of problem loans or Non-Performing Loans (NPL) in banks, which has increased. The Financial Services Authority noted that banking



NPLs as of February 2021 grossly were at the level of 3.21% and 1.04% on a net basis. NPL in the last two years has increased, NPL in 2019 was at 2.5%, then in 2020 it rose to 3.0%, and in 2021 it has touched above 3%, namely 3.2% (IDX Channel, 2021). A high LDR rate will make the bank earn greater interest income. However, the high LDR level must be balanced with the bank's obligation to meet the demands of depositors who want to withdraw their money that has been channeled by the bank in the form of credit in order to avoid liquidity risk. In addition, banks have other income besides loan interest income. One of the incomes obtained by the bank is Fee-Based Income, namely the bank's business to obtain income other than loan interest income. Fee-Based Income is obtained from commissions and fees, income from foreign exchange transactions, and others. So, it can be stated that LDR has no effect on ROA. The results of this study are in line with Widyastuti & Aini (2021) and Putri et al. (2022) which states that, LDR has no effect on ROA.

#### **Effect of Capital Adequacy Ratio (CAR) on Return On Assets (ROA)**

CAR has no significant effect on ROA, so the third hypothesis is rejected. CAR indicates a bank's ability to cover declining assets as a loss due to risky investments such as loans. Assets containing risk tend to limit the amount of capital available in profit-generating activities. Thus, the higher the CAR, the stronger the bank's ability to bear risky assets and increase profitability. Meanwhile, credit losses are caused by the inability of the debtor to repay credit. In addition, banks prefer strengthening capital rather than allocating capital funds to lending activities. According to the Executive Director of Banking Research and Regulation (OJK, 2020), capital owners must always be committed to maintaining bank health by monitoring liquidity risk and capital adequacy. Industry-wise, the CAR value decreased from 23% to 21% until March 2020. So far, banks have spent a lot of their reserve funds due to credit until their capital has decreased. This resulted in banks not only having to maintain the quality of their liquidity but also prioritizing the quality of their assets in other profitable activities outside of credit activities. The reason is that banks do not want to bear significant credit risks due to lending activities. So, it can be stated that CAR has no effect on ROA. This study's results align with previous research conducted by Vernanda & Widyarti (2016) and Widyastuti & Aini (2021), which stated that CAR did not affect ROA.

#### **Effect of Operational Efficiency (OE) on Return On Assets (ROA)**

OE significantly negatively affects ROA; therefore, the fourth hypothesis is supported. OE is the ratio between operating expenses and operating income. Banks must minimize the expenses incurred, which can result in the funds being rotated by the bank, and reserve funds to cover the risk of losses experienced by the bank. If the operational costs incurred are high, the profit

earned will decrease, causing the ROA value to fall. Conversely, if the OE value is low, the profit earned will be high and cause the ROA value to increase. So, it can be stated that OE harms ROA. This is because the efficiency level of the bank in carrying out its operations affects the level of income or earnings generated by the bank. If operational activities are carried out efficiently, in the sense that the OE ratio is low, then the income generated by the bank will increase. In addition, the large OE ratio is also due to the high cost of funds raised and low-interest income from investing funds. Thus, the greater the OE, the smaller it will be, and the bank's financial performance will decline. And vice versa, if OE is low, banking performance will increase. This study's results align with research conducted Safitri et al. (2020) and Ruslan et al. (2019), which state that OE harms ROA. This ratio measures whether the bank's management has used all its production factors effectively and efficiently or not. If OE increases, the ROA obtained decreases.

#### **Effect of Bank Size on Return On Assets (ROA)**

The last hypothesis is not supported, which means that bank size has no significant effect on ROA. The total value of commercial bank assets in Indonesia has a value that continues to increase while the value of ROA tends to decrease. Thus, there is no influence on the number of total assets on ROA. In addition, the business expansion has not been able to generate profits for the bank. The negative outlook reflects expectations that Indonesia will face additional fiscal and external risks related to the COVID-19 pandemic in the next 24 months. Thus, the expansion and relaxation of credit restructuring provisions by The Financial Services Authority and the management of fixed assets have not been able to overcome the negative impacts of the Covid-19 pandemic maximally, so no profit has been obtained (OJK, 2020). The strategy implemented in using assets has not been able to show effective and efficient results in improving bank performance as measured by ROA. Thus, asset management carried out by banks has not been able to increase bank profits or income. The results of this study support empirical evidence from previous research conducted by Indrawati et al. (2018) and Febria dan Halmawati (2014), which state that bank size does not affect ROA.

#### **5. CONCLUSIONS AND SUGGESTIONS**

This study aims to examine several factors that are thought to have influenced the ROA of banking companies listed on the IDX during the Covid-19 pandemic, namely 2020-2021. LDR, CAR, OE, and bank size variables were tested for their effect on ROA. Through statistical testing, it was found that only OE had a significant impact on ROA, while LDR, CAR, and bank size did not significantly impact ROA. This research contributes by empirically examining certain factors usually considered by investors when investing or divesting in banking companies listed on the IDX. This research is several studies that tested this variable on ROA during

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a pandemic. Investors will get a better picture to make investment decisions concerning this research. OE will be a particular concern or indicator for investors before deciding to buy, hold or sell the banking shares they own. Referring to the findings of this study, banks with low OE have good opportunities during a pandemic. This research has limitations in the form of a limited research period because this study focuses on examining banking ROA during a pandemic. Future research can add periods during endemic times or conduct comparative studies between banks before and during the pandemic.

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