

Factors Affecting Return on Assets in 5 Conventional Commercial Banks in 2015-2022

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Abstract

This study aims to analyze the factors that affect Return on Assets in 5 conventional commercial banks in 2015-2022. The research method used is panel data with Microsoft Excel and E-Views 10 as analysis tools. Factors that affect Return on Assets in this study include economic factors, environmental factors, and internal bank factors. Economic factors consist of BI Rate and Inflation. Environmental factors are Green Banking which is proxied with the Green Banking Disclosure Index and internal bank factors, namely BOPO. The results of the test found that the variables Inflation, Green Banking proxied Green Banking Disclosure Index, and BOPO have a significant negative effect on Return on Assets, while the BI Rate has a significant positive effect on Return On Assets in 5 conventional commercial banks.

Keywords BI Rate, BOPO, Green Banking, Inflation

INTRODUCTION

The role of banks as financial intermediary institutions is a very important role in supporting overall economic financing and facilitating economic growth (Maharani & Nirmala, 2022). According to Malloy & Lovett (2019), the role of banking is often considered as the heart and driving force of the economy in a country. The economic structure of a country will be strengthened by the prominent and strategic position of the banking industry as an intermediary institution for collecting and distributing public funds for financing in the economic sector. Therefore, banking plays an important role in the economic activities of a country, in other words the development of a country's banking can be a benchmark for the progress of the nation. The economic condition of a country is closely related to the role of the banking sector, which is one of the main sectors in the financial industry as well as economic activity in Indonesia. According to Andrian et al., (2021), the larger number of banking assets compared to other financial institutions in Indonesia reflects that banking has greater attractiveness for consumers compared to other financial institutions.

Service facilities provided by banks and various facilities provided by banks are a form of effort to support the smooth running of the main activities in increasing bank profitability. Bank profitability is the bank's ability to make a profit. In this study, the type of ratio used to measure a bank's profitability is Return on Assets (ROA). The amount of change in the Return on Asset (ROA) rate used in this study was obtained from 5 conventional commercial banks in the commitment to sign the green banking pilot project which is a collaboration between the Financial Services Authority (OJK) and the Worldwide Fund for Nature (WWF), namely BCA, Mandiri, BRI, BNI, and BJB. The signing of the pilot project aims to support banks towards a sustainable finance roadmap in Indonesia in preparing their competencies (WWF, 2019). This research focused only on conventional banks and did not



include Islamic banks. Conventional banks and Islamic banks have similarities in various aspects, especially in the method of receiving money, computer-based remittance procedures that utilize general funding needs, and others (Wahyudi et al., 2023).

According to Yüksel et al., (2018), bank profitability is expressed as a function of micro and macro determinants. Micro variables consist of the accounts on the balance sheet and the income statement. Therefore, it is also referred to as bank-specific variables. On the other hand, macro variables are not related to the internal processes of the bank but affect profitability significantly. Most of the literature focuses on driving profitability at the bank or industry level by selecting variables that are not always consistent whereas environmental, macroeconomic, and internal influences of banks have not been thoroughly studied. Economic factors such as interest rates and inflation are also very important factors in banking activities as they can affect the profitability of banks and investment decisions taken by banks. According to Bank Indonesia (2016), BI interest rate is a policy rate that reflects the monetary policy stance set by Bank Indonesia and announced to the public. Meanwhile, according to Sitorus et al., (2023), the BI interest rate is a certain amount that borrowers need to pay to lenders for a certain amount of money used to fund consumption and investment.

Another economic factor that has an influence on bank profitability is inflation. Inflation is the process of continuously rising prices of goods or the state of an economy that shows an increase in the general price level (www.bi.go.id). People's purchasing power will decrease due to significant inflation, which will result in a reduction in the company's assets. Bank profits are affected by inflation and vice versa and also affect the economy. The economy suffers when the inflation rate is high. Inflation can also increase operational and practical costs for businesses which will ultimately hurt the bank.

According to Setyoko & Wijayanti (2022), due to the significant role of financial institutions in the growth of the country, banks must adopt environmentally friendly business practices. In addition, according to Fajriani et al., (2023), the environment is considered to be influenced by human activities in driving the economic development of a country. One way that banks can do this is by implementing the concept of green banking. According to the United Nations Environmental Program (UNEP), green banking is a financial activity whose results are an increase in human welfare and social equality as well as a significant reduction in environmental risks and the creation of ecological relationships (Rehman et al., 2021). The first regulation in Indonesia that focuses on green banking practices was issued by Bank Indonesia through PBI Number 14/15/PBI/2012 concerning Asset Quality Assessment of Commercial Banks.

Banks that have declared themselves as green banking should not only be limited to CSR (Corporate Social Responsibility) programs but also must be well implemented in their Core Business Competence so that green banking practices are not just a slogan. But in reality, the implementation of green banking in Indonesia is still only a formality and has not been carried out optimally. This is in line with Handajani (2019) statement, although green banking regulations have been issued by international and national institutions, in practice they are not as expected, especially in developing countries.

In addition to economic and environmental factors, one of the factors in financial performance that can affect the rise and fall of bank profitability is Operational Efficiency Ratio. BOPO is a financial ratio to measure the operational capacity and efficiency level of banks. Based on the provisions of Bank Indonesia Circular Letter No. 6/23/DPNP of 2004, the best BOPO value is below 90% which can improve efficiency and increase bank income. The BOPO ratio is one of the ratios whose value changes are very concerned, especially in the criteria used by Bank Indonesia to assess the health level of banks. The BOPO ratio is one of the ratios whose value changes are very concerned, especially in the criteria used by Bank Indonesia to assess the health level of banks. A high BOPO ratio indicates that the bank's operations have not been efficient in generating revenue so that it can have an impact on its profitability.

LITERATURE REVIEW

Theory of Liquidity Preferences

The theory of liquidity preference is a theory first proposed by John Maynard Keynes in 1936. In this theory, Keynes outlined his views on how interest rates are determined in the short run (Mankiw, 2006). This theory asserts that the interest rate is one of the determinants of how much money an individual wants to hold. The theory also states that interest rates are adjusted to balance supply and demand for the economy's most liquid asset, money. Liquidity is an asset attribute where the faster the asset is converted into money, the more liquid the asset will be.

Quantity Theory of Money

According to this theory, the percentage increase in prices will only be proportional to the growth of the money supply rather than the level of national output. This theory emphasizes in the process of inflation the importance of the money supply and people's psychology regarding rising prices. Transactions and output are closely related, this is because the more the economy produces, the more goods will be sold and bought. However, the two are not the same but the money value of the transaction is proportional to the money value of the output (Mankiw, 2006). So, the quantity theory of money states that the central bank, which oversees the money supply, has ultimate control over the inflation rate. If the central bank keeps the money supply stable, then the price level will stabilize. However, if the central bank increases the money supply rapidly then the price level also increases rapidly.

Green Banking

Green banking is defined by the World Bank as a financial institution that prioritizes the sustainability of its business practices. According to the Institute of Development and Research in Banking Technology (2014), green banking is a process in internal banks, physical infrastructure, and information technology (IT) infrastructure as effectively and efficiently as possible with zero or minimal impact on the environment. Green banking is founded on four aspects of life, namely nature, well being, economy, and society. These four



components when combined by a "green" bank will become an ethical business practice by considering the ecosystem and the quality of human life (Lako, 2014). In addition, green banking is a banking business in carrying out a role in sustainability by providing funds to business actors or their operational activities (Bank Indonesia, 2014). The implementation of green banking practices in Indonesia has several legal foundations that are used as regulations that can encourage banks to adopt the implementation of green banking practices. Bank Indonesia Regulation (PBI) No. 14/15/PBI/2012 has included an assessment of environmental management by debtors in lending requirements.

Green Banking Disclosure Index

According to Bose et al., (2018) green banking disclosure is the disclosure of information to the public regarding environmentally friendly activities in companies. According to Handajani (2019), green banking disclosure is a response to stakeholder pressure on banks to operate more ethically, but green banking reporting regulations are still lacking, resulting in a variety of disclosures and reporting procedures.

METHOD

The data used in this study is panel data, which is a combination of time series data and cross section data. According to Widarjono (2018), some of the advantages obtained when using panel data are being able to provide more data so as to produce a greater degree of freedom and this panel data regression can overcome the problems that arise, namely the omitted-variable problem. Data sources were obtained from various official institutions, namely SEKI BI, bank annual reports, and bank sustainability reports published on each bank's website. The scope of this research is conducted in Indonesia with 5 conventional commercial banks (BCA, Mandiri, BRI, BNI, and BJB) that implement green banking practices in the commitment of signing the green banking pilot project 2015-2022. The signing of the green banking pilot project has the aim of supporting banking towards a sustainable finance roadmap in Indonesia which can generate business opportunities related to sustainability and breakthroughs in sustainable banking. The analytical tools used to conduct the test are Microsoft Excel and E-Views 10.

Table 1. Variables and Data Units

Variable	Symbol	Unit	Source
BI Rate	BIR	Percentage	SEKI BI
Inflation	INF	Percentage	SEKI BI
Green Banking Disclosure Index	GBDI	Percentage	Annual Report Bank and Sustainability Report Bank
Operational Efficiency Ratio	BOPO	Percentage	Annual Report Bank
Return On Asset	ROA	Percentage	Annual Report Bank

This study uses the Green Banking Disclosure Index as a proxy for green banking. Green Banking Disclosure is the disclosure of information about efforts made by companies regarding environmentally friendly activities to the public (Bose *et al.*, 2018). The index was

developed by Bose *et al.*, (2018) using 21 indicators. The index measurement is carried out by calculating the green banking disclosure items, the value for the disclosed item is 1 and the undisclosed item is 0. Furthermore, calculating the green banking disclosure index by means of the total score of green banking disclosures reported by banks divided by the expected number of green banking indicator disclosures.

The following is the formula used in calculating the Green Banking Disclosure Index (GBDI) is

$$GBDI = \frac{\sum di}{n}$$

GBDI = Green Banking Disclosure Index
 di = 1 if item is reported and 0 if not reported
 n = Expected number of green banking indicator disclosures

The panel data estimation model equation used in this study is as follows:

$$ROA_{it} = \beta_0 + \beta_1 BIR_{it} + \beta_2 INF_{it} + \beta_3 GBDI_{it} + \beta_4 BOPO_{it} + \varepsilon_{it}$$

ROA = Return On Asset
 BIR = BI Rate
 INF = Inflation
 GBDI = Green Banking Disclosure Index
 BOPO = Operational Efficiency Ratio
 i = Number of cross section data
 t = Number of time series data
 β_0 = Constant
 $\beta_{1, 2, 3, 4}$ = Regression Coefficient
 ε_{it} = Error Term

Classical Assumption Testing

This classic assumption test is carried out to produce a regression model that meets the BLUE (Best Linear Unbiased Estimation) criteria. In this study, the classic assumption tests carried out are:

1. Residual Normality Test

Normality test is used to determine whether the data in a study has a normal distribution or not (Widarjono, 2018). One method that can be used is to compare the distribution of data and observation data using a histogram graph. In research, data is said to be normally distributed if the Jarque-Bera probability is greater than the 5% alpha significance level.

2. Autocorrelation Test

Autocorrelation test is used to determine whether there is a correlation between a certain period and the previous period. According to Santoso (2014), the easiest way to



determine whether there is autocorrelation is to use the Durbin-Watson (DW) test. The following are the criteria for testing autocorrelation:

- a. Durbin-Watson value below -2 means there is positive autocorrelation
- b. Durbin-Watson value between -2 to +2 means there is no autocorrelation
- c. Durbin-Watson value above +2 means there is negative autocorrelation.

3. Heteroscedasticity Test

The Heteroscedasticity test is used to determine whether in the residual model there is inequality of variation between one study and another. The Glejser method is one approach that can be used to assess heteroscedasticity. The following are the criteria for testing heteroscedasticity:

- a. The t-statistic value $> 0,05$ means that there is no heteroscedasticity
- b. The t-statistic value $< 0,05$ means that there is heteroscedasticity

4. Multicollinearity Test

Multicollinearity test is used to determine whether there is a correlation between independent variables in a regression model (Widarjono, 2018). The test in this study uses pearson correlation testing. The model is called free from multicollinearity problems if the correlation coefficient value is more than 0.80.

RESULTS AND DISCUSSION

Panel Data Regression Model Selection

Table 2. Model Selection Results

Test	Prob	Decision
Chow Test	0.1041	CEM
Hausman Test	1.0000	REM
<i>Lagrange Multiplier</i> Test	0.2927	CEM

Sources: E-Views 10, processed data 2023

Based on the test results of the three models conducted, consisting of the Chow test, Hausman test, and Lagrange Multiplier (LM) test, it was found that in this study the best model chosen was the Common Effect Model (CEM) compared to the Fixed Effect Model (FEM) and Random Effect Model (REM).

Classical Assumptions

Normality Test

According to Widarjono (2018), the purpose of the normality test is to determine whether the research data is normally distributed or not. The data in the study is said to be normal if the Jarque Bera probability value is greater than 5% alpha.

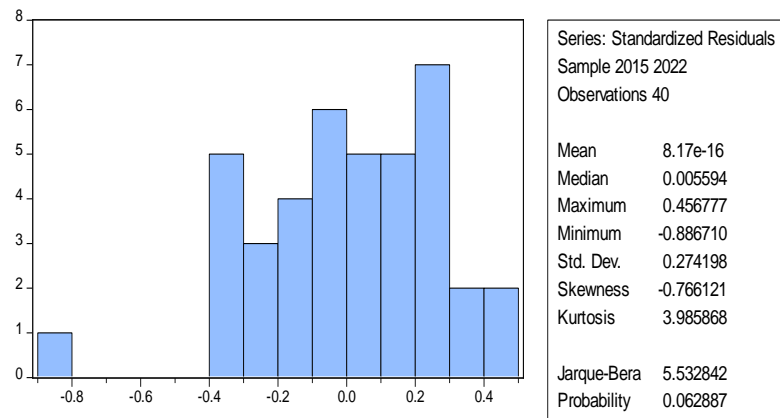


Figure 1. Normality Test

In the figure above, it is obtained that the Jarque Bera probability value of 0.062887 is greater than alpha of 0.05, meaning that the data used in this study are normally distributed.

Autocorrelation Test

The purpose of the autocorrelation test is to see whether there is a relationship between one variable and another (Widarjono, 2018). One way to find out whether autocorrelation occurs or not is to use the Durbin-Watson Test.

Table 3. Autocorrelation Test Result

DW-Test	Value
Durbin-Watson stat	1.077350

Sources: E-Views 10, processed data 2023

Based on the autocorrelation test criteria, the Durbin-Watson value in the regression results is 1.077350, meaning that the D-W number is between -2 to + 2, which means that the regression results do not occur autocorrelation.

Heteroscedasticity Test

A Heteroscedasticity test is performed if there is an inequality of variance of the residuals of the regression model between two data. The Glejser method is one technique that can be used to check for heteroscedasticity.

Table 4. Heteroscedasticity Test Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.520057	3.388015	0.448657	0.6564
BIR	-0.132481	0.243989	-0.542981	0.5906
INF	-0.009497	0.236934	-0.040082	0.9683
GBDI	1.068795	2.820742	0.378906	0.7070
BOPO	-0.003387	0.021608	-0.156760	0.8763

Sources: E-Views 10, processed data 2023



The table above shows that the probability value of each independent variable is greater than alpha 5% so that the test is free from heteroscedasticity problems.

Multicollinearity Test

According to Widarjono (2018), multicollinearity test is conducted to ascertain whether or not there is a correlation between the independent variables in the regression model.

Table 5. Multicollinearity Test Results

	BIR	INF	GBDI	BOPO
BIR	1	0.7247258136092518	-0.3471213176030093	-0.1969723315312468
INF	0.7247258136092518	1	-0.1892125102121131	-0.3393217733311721
GBDI	-0.3471213176030093	-0.1892125102121131	1	-0.151209373892943
BOPO	-0.1969723315312468	-0.3393217733311721	-0.151209373892943	1

Sources: E-Views 10, processed data 2023

The results of the above test show that the results of each independent variable do not have a correlation value greater than 0.80 so they are free from multicollinearity problems.

Panel Data Estimation Results with Common Effect Model (CEM)

Table 6. Common Effect Model (CEM) Estimation Results

Variable	Coefficient	Std. Error	t-Statistic	Prob×
C	12.28192	0.794497	15.45874	0.0000
BIR	0.130860	0.057216	2.287125	0.0142**
INF	-0.169865	0.055562	-3.057235	0.0022***
GBDI	-4.734197	0.661470	-7.157082	0.0000***
BOPO	-0.084361	0.005067	-16.64859	0.0000***
R-squared	0.904897			
Adjusted R-squared	0.894029			

Sources: E-Views 10, processed data 2023

Description: ***statistical significance level at 99%

**statistical significance level at 95%

×probability is divided by 2 because the t-statistical test is done in one direction

The following is the equation from the panel data regression estimation results with the Common Effect model:

$$ROA_{it} = 12.28192 + 0.130860BIR_{it} - 0.169865INF_{it} - 4.734197GBDI_{it} - 0.084361BOPO_{it}$$

The estimation results above show the relationship between the independent and dependent variables and the value of each regression coefficient. In addition, the R² test result is 0.904897. This means that the variables of BI rate, inflation, green banking, and BOPO affect Return On Asset (ROA) in 5 conventional commercial banks in 2015-2022 by

90.4897%. While the remaining 9.5103% is explained by other variables outside of the research model.

Hypothesis Test

t-Statistic Test

The t-statistic test, also known as the partial test, is a test that aims to test the effect of each independent variable individually on the dependent variable. This test is carried out by comparing the value of the t-statistic and t-Table on each variable.

Table 7. t-Statistic Test Results

Variable	t-Statistic	t-Table	Prob _x	Information
BIR	2.287125	2.03011	0.0142**	Significant
INF	-3.057235	2.03011	0.0022***	Significant
GBDI	-7.157082	2.03011	0.0000***	Significant
BOPO	-16.64859	2.03011	0.0000***	Significant

Sources: E-Views 10, processed data 2023

Description: ***statistical significance level at 99%

**statistical significance level at 95%

×probability is divided by 2 because the t-statistical test is done in one direction

Based on the table above, BI rate partially has a significant positive effect on Return On Asset (ROA) in 5 conventional commercial banks in 2015-2022 while inflation partially has a significant negative effect on Return On Asset (ROA) in 5 conventional commercial banks in 2015-2022 and green banking partially has a significant negative effect on Return On Asset (ROA) in 5 conventional commercial banks in 2015-2022. In addition, BOPO also partially has a significant negative effect on Return On Asset (ROA) in 5 conventional commercial banks in 2015-2022.

F-Statistic Test

Based on the test results, the probability value (F-statistic) is $0.000000 < 0.05$, it can be concluded that the independent variables consisting of BI rate, inflation, green banking, and BOPO are simultaneously or jointly significant and affect the dependent variable.

The Effect of BI Rate on *Return On Asset (ROA)* in 5 Conventional Commercial Banks 2015-2022

Changes in the BI rate if followed by changes in deposit rates and lending rates will move in the same direction or positively. When interest rates are higher, banks tend to raise interest rates on their loans to customers, thus creating a larger interest margin between the interest income they receive and the cost of funds they have to pay. This larger interest margin can have a positive impact on banks' net interest income and as a result, support an increase in Return On Asset (ROA). In addition, banks can also earn additional income from



investing in safe financial instruments such as government bonds when interest rates rise. This income can also contribute positively to Return On Asset (ROA).

Liquidity preference theory states that banks tend to prefer to hold assets that are liquid and have low risk rather than providing high-risk loans. This is because when the BI rate rises, lending rates and deposit rates also rise, providing additional interest income for banks from their investments in safe financial instruments. This increase in interest rates increases the return on these investments and thus can support an increase in Return On Asset (ROA). This is in line with research from Dithania & Suci (2022) and Almaqtari *et al.*, (2019) which states that there is a positive and significant effect of BI rate on Return On Asset (ROA).

The Effect of Inflation on *Return On Asset (ROA)* in 5 Conventional Commercial Banks 2015-2022

Higher inflation can lead to lower profitability of banks due to the presence of several bad debts that may have an impact on the company's financial performance because some of the funds come from bank loans. In the quantity theory of money, this theory states that when there is too much money in circulation, prices tend to rise, causing inflation. Central banks usually raise interest rates in an effort to reduce inflation when inflation rises. Increased interest rates will result in banks experiencing lower profitability. This is in line with research conducted by Almaqtari *et al.*, (2019), this is because rising inflation will result in people preferring to use their money to meet their living costs rather than to save so that this affects bank profitability.

The Effect of *Green Banking* on *Return On Asset (ROA)* in 5 Conventional Commercial Banks 2015-2022

The government has focused on green banking through a number of regulations, but the use of technical guidelines has hampered these efforts and made it difficult for financial institutions to assess compliance or increase the number of implementations (Handajani, 2019). Green banking practices have a negative impact on bank profitability and this effect is stronger for listed banks. This is because the implementation of green banking practices usually requires significant initial investment in green infrastructure, technology, employee training, and compliance with environmental regulations. This is in line with the opinion of Hamilton (1995) in Karyani & Obrien (2020), banks that choose pollution control and environmental disclosure tend to be less profitable.

The Effect of BOPO on *Return On Asset (ROA)* in 5 Conventional Commercial Banks 2015-2022

According to Hidayati (2022), any increase in cost inefficiency or BOPO can reduce Return On Asset (ROA) directly. The effect of BOPO on earnings quality when the bank's operating expenses increase but are not offset by an increase in operating income, the bank's operating profit decreases which ultimately reduces profits. This is in line with Silitonga & Wirman (2022) that the lower the BOPO value, the more effective the bank is in managing its operations.

CONCLUSION

Based on the results of the estimation carried out, it shows that economic factors namely inflation, environmental factors namely green banking, and bank internal factors namely BOPO have a negative and significant effect on Return On Asset (ROA) in 5 conventional commercial banks from 2015-2022. In addition, other economic factors, namely the BI rate have a significant positive effect on Return On Asset (ROA). This shows that these factors are very important factors in banking activities and affect the bank's response in generating profits in its operational activities.

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