

The Effect of Capital Adequacy Ratio, Liquidity Coverage Ratio, and Operating Expenses to Operating Income on Return on Equity

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ABSTRACT

This study was motivated by fluctuations in the Capital Adequacy Ratio (CAR), Liquidity Coverage Ratio (LCR), Operating Expenses to Operating Income (BOPO), and Return on Equity (ROE) of Bank Syariah Indonesia (BSI) during the 2021–2025 period. The study aims to examine the partial and simultaneous effects of CAR, LCR, and BOPO on ROE at BSI. A quantitative associative research design was employed using secondary data from BSI's quarterly financial reports for 2021–2025, consisting of 20 quarterly observations. Multiple correlation, multiple regression, coefficient of determination, t-test, and F-test were used for data analysis. The results show that CAR has a significant negative effect on ROE, with a regression coefficient of -0.266 and a significance value of 0.000 . LCR has a positive but statistically insignificant effect on ROE, with a regression coefficient of 0.003 and a significance value of 0.532 . BOPO has a significant negative effect on ROE, with a regression coefficient of -0.349 and a significance value of 0.000 . Simultaneously, CAR, LCR, and BOPO have a significant effect on ROE, with a multiple correlation coefficient of 0.977 , an F-value of 110.922 , and an R-squared value of 0.954 , indicating that 95.4% of the variation in ROE in the sample is explained by the three independent variables.

Keywords : BOPO; CAR; LCR; ROE.

INTRODUCTION

The banking sector plays a vital role in supporting national economic activities. Banking institutions are inseparable from a wide range of financial activities conducted by both individuals and institutions [1]. Assessing a bank's soundness is essential because banks are entrusted with managing funds deposited by the public. The evaluation of bank soundness must be conducted continuously to ensure that operational activities are properly managed, capable of generating profits, and able to minimize potential losses. One of the main instruments used to assess banking soundness is the financial statement [2]. Such information is important not only for internal bank management but also for stakeholders, including owners, management, and the wider public [3].

Bank performance can be assessed through financial statement analysis, particularly by calculating financial ratios to evaluate past and current conditions and to project future performance [4]. One of the indicators commonly used to evaluate bank profitability is Return on Equity (ROE) [5]. ROE measures a bank's ability to generate net income from its equity and reflects the efficiency with which shareholders' funds are utilized [6].

The level of ROE in banking institutions may be influenced by several factors, including the Capital Adequacy Ratio (CAR), which reflects the adequacy of a bank's capital, and the Operating Expenses to Operating Income ratio (BOPO), which reflects the level of the bank's operational efficiency [7]. In addition, the Liquidity Coverage Ratio (LCR), as one of the key liquidity ratios, also plays an important role in evaluating banking performance. This ratio has been implemented in Indonesia through regulations issued by the Financial Services Authority (Otoritas Jasa Keuangan/OJK) [8]. An increase in CAR represents a stronger capacity of a bank to absorb risks arising from productive assets, which may contribute to an increase in ROE [7]. This is consistent with previous research showing that CAR has a positive effect on ROE [9]. A positive effect indicates that an increase in the independent variable is followed by an increase in the dependent variable [10].

The Liquidity Coverage Ratio (LCR) ensures that banks maintain sufficient liquid assets, particularly High-Quality Liquid Assets (HQLA), to meet their obligations on time. A high LCR may indicate a stronger capacity to manage liquidity and support lending activities, potentially generating higher profits and improving ROE [11]. The Operating Expenses to Operating Income ratio (BOPO) is used to evaluate a bank's operational efficiency by comparing operating expenses with operating income. A lower BOPO ratio indicates better banking performance and greater operational efficiency [12]. This is consistent with previous research showing that BOPO has a negative effect on ROE [13]. A negative effect indicates an inverse relationship with the dependent variable; therefore, an increase in the independent variable tends to be followed by a decrease in the dependent variable [14]. One of the largest Islamic banking institutions in Indonesia is Bank Syariah Indonesia (BSI). BNI Syariah, BRI Syariah, and Bank Syariah Mandiri were merged to establish Bank Syariah Indonesia. The merger was officially completed on February 1, 2021, and the three institutions have since operated under the name Bank Syariah Indonesia [15].

The financial ratios of CAR, LCR, BOPO, and ROE at BSI fluctuated during the 2021–2025 period. This condition is important from the perspective of profitability because ROE reflects the bank's ability to generate net income from shareholders' equity. Conceptually, CAR [7] and LCR [11] are expected to support financial performance, whereas BOPO is generally expected to have a negative relationship with profitability because higher operating costs relative to operating income indicate lower efficiency [12]. However, inconsistencies were observed in several quarters, indicating that the theoretical direction of the relationships did not always correspond to the movement of ROE at BSI. Previous research reported a positive effect of CAR on ROE [9], while other research found a negative effect of BOPO on ROE [13]. These findings provide a basis for further examination because

the relationship may differ according to the characteristics and observation period of the bank under study.

The research problem in this study is therefore related to whether changes in CAR, LCR, and BOPO can explain changes in ROE at BSI during the 2021–2025 period, both individually and simultaneously. The post-merger observation period is also relevant because BSI began operating as a consolidated Islamic banking institution in February 2021 [15]. Accordingly, this study aims to determine the partial and simultaneous effects of CAR, LCR, and BOPO on ROE at BSI during 2021–2025 and to explain the direction of the relationships based on the results of the multiple regression analysis.

METHOD

The objects of this study were CAR, LCR, BOPO, and ROE as reported in the financial statements of Bank Syariah Indonesia for the 2021–2025 period. This study employed a quantitative research design with an associative approach and used secondary data. The population consisted of all quarterly observations of CAR, LCR, BOPO, and ROE reported by BSI during 2021–2025. Because all quarterly observations during the observation period were used, the sampling technique was saturated sampling (census), resulting in 20 quarterly observations, calculated from five years with four quarters in each year. Data were collected through documentation of BSI's quarterly financial reports and literature review of relevant theories and previous studies. The data analysis techniques included multiple correlation analysis, multiple regression analysis, coefficient of determination analysis, partial t-tests, and a simultaneous F-test. The multiple regression model was used to examine the effect of CAR, LCR, and BOPO on ROE while controlling for the other independent variables. The t-test was used to evaluate the partial effect of each independent variable, while the F-test was used to evaluate the simultaneous effect of the three independent variables. The level of significance was set at 5% ($\alpha = 0.05$).

RESULTS AND DISCUSSION

The Effect of CAR on ROE

The partial t-test results from the multiple regression model show that CAR has a regression coefficient of -0.266 with a significance value of $0.000 < 0.05$. Therefore, H_0 is rejected and the alternative hypothesis is accepted, indicating that CAR has a significant negative effect on ROE at BSI during 2021–2025. The negative coefficient means that, holding LCR and BOPO constant, an increase of one unit in CAR is associated with a decrease of 0.266 units in ROE. This result indicates that higher capital adequacy did not automatically translate into higher profitability during the observation period. One possible explanation is that a higher level of capital, when not followed by optimal utilization of productive assets, may enlarge the equity base over which net income is generated. Consequently, the return earned on equity may decline. This finding differs from the positive effect of CAR on ROE reported by Pua and Jibrail [9], suggesting that the relationship between capital adequacy and profitability may depend on the characteristics and period of the bank being observed.

The Effect of LCR on ROE

The partial t-test results show that LCR has a regression coefficient of 0.003 with a significance value of $0.532 > 0.05$. Therefore, H_0 is not rejected, indicating that LCR does not have a statistically significant effect on ROE at BSI during 2021–2025. The positive coefficient indicates the direction of the relationship, but the magnitude is very small and the probability value does not meet the 5% significance criterion. This finding means that, after controlling for CAR and BOPO, variations in the liquidity coverage ratio were not sufficient to explain variations in ROE in the sample. The result can be understood from the function of LCR as a liquidity-resilience measure that requires banks to maintain adequate high-quality liquid assets [11]. A higher liquidity buffer can strengthen the bank's ability to meet short-term obligations, but it does not necessarily increase shareholder returns directly because part of the funds may be held in highly liquid assets rather than deployed into relatively higher-return productive financing. Thus, the expected positive relationship between LCR and profitability was not statistically confirmed in this study.

The Effect of BOPO on ROE

The partial t-test results show that BOPO has a regression coefficient of -0.349 with a significance value of $0.000 < 0.05$. Therefore, H_0 is rejected and the alternative hypothesis is accepted, indicating that BOPO has a significant negative effect on ROE at BSI during 2021–2025. Holding CAR and LCR constant, a one-unit increase in BOPO is associated with a decrease of 0.349 units in ROE. This relationship is consistent with the function of BOPO as an indicator of operational efficiency, in which a higher ratio reflects a larger proportion of operating expenses relative to operating income [12]. When operating expenses increase faster than operating income, the portion of income available to generate net profit becomes smaller, which can reduce the return obtained on equity. The result is consistent with previous research showing a negative effect of BOPO on ROE in Islamic banking [13]. Therefore, operational efficiency is an important channel through which changes in BOPO can be associated with the profitability of BSI.

The Simultaneous Effect of CAR, LCR, and BOPO on ROE

The multiple correlation coefficient was 0.977, indicating a very strong relationship between CAR, LCR, and BOPO jointly and ROE at Bank Syariah Indonesia during the 2021–2025 period. The strength of this relationship shows that the three financial ratios, when considered together, are closely associated with the movement of ROE in the sample. The results of the multiple regression analysis are as follows:

$$Y = 47.235 - 0.266 X^1 + 0.003 X^2 - 0.349 X^3 \quad (1)$$

Description:

1. The constant value of 47.235 indicates the estimated value of ROE when CAR, LCR, and BOPO are equal to zero.
2. The CAR coefficient of -0.266 indicates that, holding LCR and BOPO constant, a one-unit increase in CAR is associated with a decrease of 0.266 units in ROE. The significance value of $0.000 < 0.05$ indicates a significant negative effect.

3. The LCR coefficient of 0.003 indicates that, holding CAR and BOPO constant, a one-unit increase in LCR is associated with an increase of 0.003 units in ROE. However, the significance value of $0.532 > 0.05$ indicates that this positive relationship is not statistically significant.
4. The BOPO coefficient of -0.349 indicates that, holding CAR and LCR constant, a one-unit increase in BOPO is associated with a decrease of 0.349 units in ROE. The significance value of $0.000 < 0.05$ indicates a significant negative effect.
5. The coefficient of determination (R^2) was 0.954, indicating that 95.4% of the variation in ROE in the sample can be explained jointly by CAR, LCR, and BOPO, while the remaining 4.6% is associated with other factors outside the model. The F-test produced a calculated F-value of 110.922, which is greater than the critical value of 3.24, with a significance value of $0.000 < 0.05$. Therefore, H_0 is rejected and the alternative hypothesis is accepted, indicating that CAR, LCR, and BOPO simultaneously have a significant effect on ROE at BSI during 2021–2025. These results answer the main research problem by showing that profitability measured by ROE is significantly associated with the three variables when they are considered jointly, although the partial effect of LCR is not statistically significant. The high R^2 should be interpreted within the sample and model used and does not mean that the three variables are the only determinants of ROE in banking.

Table 1

Variable	Regression Coefficient	Sig.	Partial conclusion
CAR	-0.266	0.000	Significant negative effect
LCR	0.003	0.532	Positive but not significant
BOPO	-0.349	0.000	Significant negative effect
CAR, LCR, BOPO (simultaneous)	—	0.000	Significant simultaneous effect; $R^2 = 0.954$; $F = 110.922$

Overall, the multiple regression findings indicate that operational efficiency, as represented by BOPO, and capital adequacy, as represented by CAR, have significant relationships with ROE in opposite directions, while LCR does not show a statistically significant partial effect. This pattern explains why the discussion should not interpret the individual variables only from bivariate relationships: the final inference in this study is based on the simultaneous multiple regression model in which the effects of each independent variable are evaluated while the other variables are controlled.

CONCLUSION

Based on the multiple regression analysis of the effects of Capital Adequacy Ratio, Liquidity Coverage Ratio, and Operating Expenses to Operating Income on Return on Equity, several conclusions can be drawn. First, CAR had a significant negative effect on ROE at BSI during the 2021–2025 period, as indicated by a regression coefficient of -0.266 and a significance value of $0.000 < 0.05$. This means that, holding LCR and BOPO constant, increases in CAR were associated with decreases in ROE in the sample.

Second, LCR had a positive but statistically insignificant effect on ROE, as indicated by a regression coefficient of 0.003 and a significance value of $0.532 > 0.05$. Thus, variations in LCR did not provide sufficient statistical evidence to explain changes in ROE after CAR and BOPO were controlled.

Third, BOPO had a significant negative effect on ROE, as indicated by a regression coefficient of -0.349 and a significance value of $0.000 < 0.05$. This indicates that increasing operating costs relative to operating income was associated with lower ROE. Finally, CAR, LCR, and BOPO simultaneously had a significant effect on ROE, as indicated by an F-value of $110.922 > 3.24$ and a significance value of 0.000 . The R^2 value of 0.954 indicates that 95.4% of the variation in ROE in the sample can be explained jointly by the three independent variables, while the remaining 4.6% is associated with other factors outside the model. These findings answer the research problem by distinguishing the significant partial effects of CAR and BOPO from the statistically insignificant partial effect of LCR, while confirming the significance of the model as a whole.

The findings have practical implications for the management of Bank Syariah Indonesia. The significant negative relationship between CAR and ROE suggests the need to ensure that capital adequacy is accompanied by optimal deployment of productive assets while maintaining the prudential principle. The insignificant partial effect of LCR indicates that liquidity management should continue to maintain an adequate liquidity buffer without assuming that a higher liquidity ratio will automatically increase profitability. In addition, the significant negative relationship between BOPO and ROE highlights the importance of strengthening operational efficiency through appropriate expense control and productivity improvement. These implications should be interpreted together with the results of the multiple regression model and within the 2021–2025 observation period.

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