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The Effect of Liquidity on Profitability Through the Activities of State-owned Bank in Indonesia Period 2018 - 2022

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Abstract

A bank's financial performance is an indicator that reflects the success of a bank in managing its financial activities in accordance with applicable regulations. The purpose of this research is to measure and analyze the liquidity ratio and its effects on profitability ratios, both directly and indirectly through activity ratios. The analysis was conducted using secondary data in the form of annual report data and quarterly reports from state-owned banks for the period 2018 to 2022. Liquidity ratios are measured by the Loan to Deposit Ratio (LDR), profitability ratios are measured by Return on Assets (ROA), and activity ratios are measured by the Total Assets Turnover (TATO) ratio. The test results show that LDR is negatively related and has no significant effect on profitability. TATO has a positive and significant effect on ROA. If TATO increases by 1%, then ROA will increase by 0.36%. Additionally, LDR is negatively related to ROA through TATO, where an increase in LDR and TATO by 1% will significantly reduce ROA by 0.06%.

Keywords: Loan to Deposit Ratio (LDR), Return on Assets (ROA), Total Assets Turnover (TATO), Bank Performance, Profitability

1. Introduction

Bank financial performance needs to be monitored simultaneously with operational activities, as it is an influential indicator in the successful management of financial activities in compliance with applicable regulations. The assessment of a bank's financial performance is derived from various reports, including the balance sheet, profit and loss report, and cash flow report (Winarno, 2019). Furthermore, the economic crisis has led to a decline in public trust, prompting customers to withdraw their funds from banks, resulting in subsequent liquidations (Elfadhli, 2012).

Financial performance is gauged through multiple ratios such as liquidity, profitability, activity, and solvency, all extracted from the bank's financial reports. The profitability ratio, specifically, is employed by companies, especially banks, to measure the capacity to generate profits over a specific period (Winarno, 2019).

This research aims to analyze the financial performance of banks, focusing on investigating the impact of liquidity ratios on the profitability ratios of state-owned banks in Indonesia. Notably, the activity ratio may also influence the profitability ratio. Therefore, the novelty of this research lies in using the activity ratio as an intervening variable that links the influence of liquidity ratios on the profitability ratios of state-owned banks in Indonesia. The study draws on several pertinent prior works, with Rahmah et al. (2019) finding that liquidity, solvency, and activity positively affect the profitability of automotive companies.

Additionally, Hidayat's (2021) research reveals that the profitability of sound banks exceeds Indonesian standards, ranging between 1.25% and 2%, or even surpassing 2%. Building on these studies, the current research aims to analyze the influence of liquidity ratios on profitability ratios, considering the independent impact of activity ratios on state-owned banks in Indonesia. While similar research has been conducted previously, the novelty of this study lies in the incorporation of the activity ratio as an intervening variable, a unique aspect in this research.

2. Literature

2.1 Financial Performance

The financial performance of a bank is one aspect that is part of the overall performance of the bank, where the performance of the bank is a depiction of the achievements the bank has made during a specific period in its operational activities. The assessment of financial performance is conducted to obtain data on the health status of the bank. The evaluation of the financial performance of the bank is regulated by Bank Indonesia Regulation number: 6/10/PBI/2004 regarding the Assessment System of the Health Level of Commercial Banks.

2.2 Profitability Ratio

Profitability ratios are metrics that measure a bank's effectiveness in generating profits or earnings based on its financial activities. Bank profitability ratios are typically assessed using profitability ratios, one of which is Return on Assets (ROA). The larger the profitability of the bank, the higher its overall performance, as profitability serves as a metric to evaluate a bank's performance outcomes (Rahmah et al., 2019). According to the standards set by Bank Indonesia, as regulated by Bank Indonesia Regulation Number: 6/10/PBI/2004, a good and healthy ROA falls within the range of 0.5% to 1.25%.

2.3 Liquidity Ratio

Liquidity ratios are employed within an organization to convert assets into cash, allowing the organization to meet its financial obligations that have fallen due or its short-term liabilities (Malik et al., 2016). The liquidity aspect can be analyzed using the Loan to Deposit Ratio (LDR), which measures the amount of credit extended by the bank compared to the total funds from the public and the bank's own capital. The higher the LDR ratio, the lower the liquidity of the bank, indicating a reduced ability of the bank to meet its short-term debts, and vice versa (Nurhasanah & Maryono, 2021).

2.4 Activity Ratio

Activity ratios are metrics that measure the efficiency of a company in utilizing its resources, including sales, inventory, accounts receivable, and others. They also gauge a company's ability to carry out its day-to-day operations. According to research by Rangkut (2004), the purpose of activity ratios is to assess the effective and efficient utilization of the company's funds based on its activities. Activity ratios can be measured using Total Assets Turnover (TATO), a ratio that assesses a bank's ability to generate sales from its total assets.

2.5 Previous Research

Several previous studies have been conducted to measure the profitability, liquidity, and activity of banks in Indonesia, specifically conventional banks, Islamic banks, commercial banks, and state-owned banks. Based on the research by Khan & Ali (2016), which explored the relationship between liquidity and profitability of banks in Pakistan, it was found that liquidity and profitability during the period 2008-2014 influenced each other and also had a significant negative relationship between liquidity and profitability. Additionally, another study by Sapand et al. (2022) analyzed the relationship between liquidity and profitability in banks in Afghanistan. This research indicated that higher liquidity of a company's assets is beneficial because it can be easily converted into cash when needed.

In a study conducted by Ningsih (2008) on the relationship between profitability and solvency ratios on the profitability of Islamic banks, it was found that Total Asset Turnover (TATO) significantly and positively influenced Return on Assets (ROA). Another study by Nariswari & Nugraha (2020) investigated the impact of Total Asset Turnover (TATO) as an activity ratio on profitability and found that TATO had a significant influence on the profitability growth of companies. Other previous study by Hermuningsih (2023) on liquidity and the effectiveness of financial technology, it was revealed that liquidity has a positive impact on the financial performance of banks, enhancing their effectiveness in generating profits. In banks that are liquid, an increased level of liquidity enhances the opportunities for lending and profit generation. The profitability of a bank can be maximized by improving the efficiency of the bank in utilizing liquid resources from its working capital. Working capital is used to meet the operational needs of the bank and should be managed effectively to fulfill short-term obligations, preventing a reduction in the liquidity capacity of the bank (Sartika, 2014).

3. Methods

3.1 Research Model

This research is a quantitative study that utilizes secondary data in the form of annual reports and quarterly financial reports that have been published. The research involves analyzing the annual reports of state-owned banks to assess changes in the financial performance of the banks and using quarterly financial reports for data processing. The research method involves analyzing financial ratios such as Loan to Deposit Ratio (LDR), Return on Assets (ROA), and Total Asset Turnover (TATO) of state-owned banks from 2019 to 2021 for comparison and analysis, aiming to identify relationships and trends among these financial ratios, as depicted in Fig. 1. This study focuses on analyzing the influence of liquidity, represented by LDR, on profitability, represented by ROA, and the impact of liquidity (LDR) on profitability (ROA), influenced by activity (TATO).

The data utilized in this study is secondary data, and the information is derived from financial reports already published by the banks on the Indonesia Stock Exchange. The population in this study consists of banking companies that are included and listed on the Indonesia Stock Exchange during the period from 2019 to 2021. The sample was selected using purposive sampling. The data utilized in this study is secondary data, and the information is derived from financial reports already published by the banks on the Indonesia Stock Exchange. Therefore, this study includes respondents from four government-owned banks: Bank Mandiri, Bank BNI, Bank BTN, and Bank BRI. Kerlinger & Lee (2000) suggest that for large datasets in quantitative research, a minimum of 30 samples is needed. In this study, using quarterly reports from four state-owned banks in Indonesia, a total of 36 samples were obtained and will be analyzed. The analysis conducted in this study includes regression analysis, hypothesis testing, and classical assumption tests.

4. Research Results and Discussion

4.1 Liquidity of State-Owned Banks from 2018 to 2022

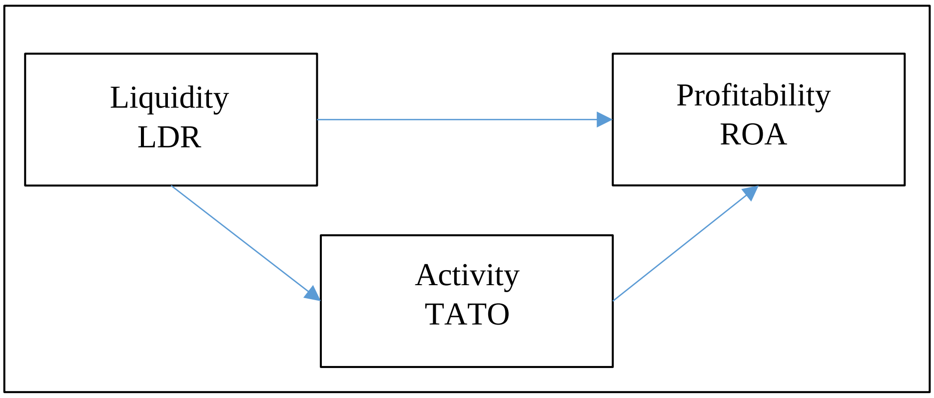

Fig 1. Research Model

The liquidity of the bank is measured using the Loan to Deposit Ratio (LDR) based on the total credit extended and the total third-party funds gathered by the bank. Overall, state-owned banks (BUMN) from 2018 to 2022 indicate that liquidity is still in a healthy category as it falls within the favorable LDR range according to Bank Indonesia regulations, specifically between 78% and 92%. Research by Ramadhan (2016) states that banks are still in a healthy category, ranging from 72% to 100%. This suggests that although the LDR ratio exceeds the standard set by Bank Indonesia, there is still an acceptable range considered safe if the LDR ratio of the bank exceeds or falls below the Bank Indonesia standard.

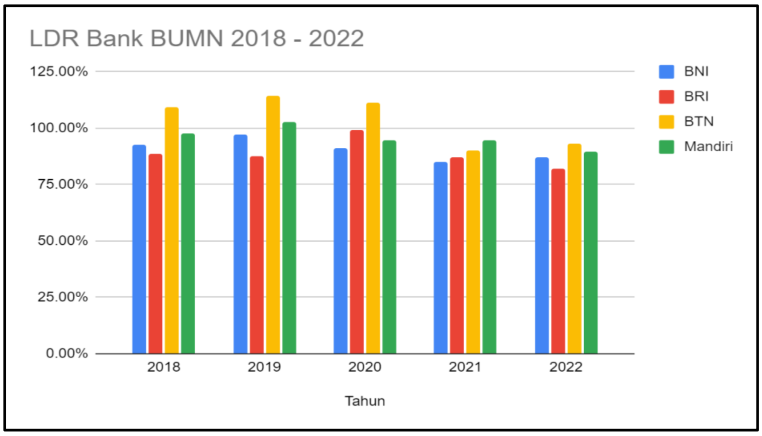

Fig 2. Graphical Overview of State-Owned Banks' Liquidity from 2018 to 2022 (Source: processed data)

Based on the data in Table 1, state-owned banks (BUMN) show an LDR range from 87% to 114% from 2018 to 2022, still categorized as healthy. Although there were instances of high liquidity in certain years like 2019 and 2020, low liquidity below the Bank Indonesia standard indicates that the bank is unable to meet its short-term obligations (Notoatmojo, 2018). Fig. 2 illustrates the graphical representation of the liquidity of state-owned banks (BUMN) from

2018 to 2022. The graph depicts fluctuating changes each year for each state-owned bank. Overall, the LDR ratio for all state-owned banks experienced an increase in 2019, except for Bank BRI, which saw an increase in 2020.

The LDR ratio of Bank BNI shows a good and healthy LDR value. It falling within the range of 78% - 100% and considered a good LDR ratio (Ramadhan, 2016). During the period 2018 - 2022, Bank BNI has focused on enhancing its digitalization efforts, responding to the high customer demand for digital banking, as evidenced by research conducted by Jannah et al. (2020). The liquidity of Bank BRI from 2018 to 2022, as measured by the LDR ratio, shows that the results can still be categorized as healthy since the LDR ratio falls within the range of 78% to 100%. The increasing credit growth from Bank BRI between 2018 and 2022 is reflected in the rising LDR of the bank. Based on its annual report published in 2022, higher credit growth leads to smaller profits for the bank, indicated by the increase in the LDR ratio and the decrease in the ROA ratio in 2018, 2020, 2021, and 2022. The liquidity of Bank BTN from 2018 to 2022, with an LDR ratio results indicate that Bank BTN from 2018 to 2022 falls into an unhealthy category as its average LDR exceeds 100% from 2018 to 2020. In this context, it is evident that Bank BTN's liquidity from 2018 to 2020 is very high, potentially leading to lower profits. The liquidity of Bank Mandiri from 2018 to 2022, with an LDR ratio shows it can still be categorized as healthy as they remain within a good LDR range. Although in 2019, the LDR exceeded 100%, indicating excessive liquidity. A bank with high liquidity becomes less competitive due to the imbalance between third-party deposits and the credit extended by the bank (Kusumo et al., 2008). High credit issuance will reduce the profits obtained by the bank, and conversely, low credit issuance will increase the profits obtained by Bank Mandiri.

Table 1. Loan to Deposit Ratio (LDR) of State-Owned Banks from 2018 to 2022

Year	LDR Ratio			
	Bank BNI	**Bank BRI**	**Bank BTN**	**Bank Mandiri**
2018	92.46%	88.48%	109.38%	97.64%
2019	97.06%	87.79%	114.24%	102.98%
2020	91.09%	99.38%	111.37%	94.64%
2021	85.22%	87.20%	90.18%	94.87%
2022	86.85%	81.92%	93.13%	89.51%

Descriptive statistical analysis is also conducted in this study for each state-owned bank from 2018 to 2022, as seen in Table 2. Overall, among the state-owned banks, the lowest and highest LDR ratios are observed in Bank BRI at 71.62% and 138.27%, respectively. Based on annual data, the lowest ratio is 81.92%, the highest is 114.24%, with an average annual ratio of 94.77%. The average annual LDR ratios for state-owned banks from 2018 to 2022 indicate a healthy liquidity ratio, suggesting that state-owned banks can effectively manage the credit provided based on the third-party funds held by the bank.

Table 2. Descriptive Statistical Analysis of Liquidity in State-Owned Banks from 2018 to 2022

Statistik Descriptive	Quarterly				Avg. Yearly Data
	BNI	BRI	BTN	Mandiri	
Minimum	79.88	71.62	87.65	85.52	81.92
Maximum	100.77	138.27	128.15	105.47	114.24
Mean	90.54	88.95	103.66	95.93	94.77
Std. Deviation	5.10	12.83	12.10	5.69	8.90

4.2 Activities of State-Owned Banks from 2018 to 2022

The activity of the bank is measured using the Total Assets Turnover (TATO) ratio based on the income generated by the bank relative to its assets. State-owned banks from 2018 to 2022 exhibit relatively fluctuating activities, as shown in Table 3. Overall, state-owned banks from 2018 to 2022 indicate that their activities are still in the healthy category as they fall within the general activity ratio range of 0.5% - 2%. Higher activity levels correspond to higher assets owned by the bank (Supiyadi, 2019). The highest activity is observed in Bank BRI with an activity ratio of 7.15%, indicating the bank's ability to generate income seven times its total assets. This demonstrates the bank's efficient operational activities for income generation (Nariswari & Nugraha, 2020).

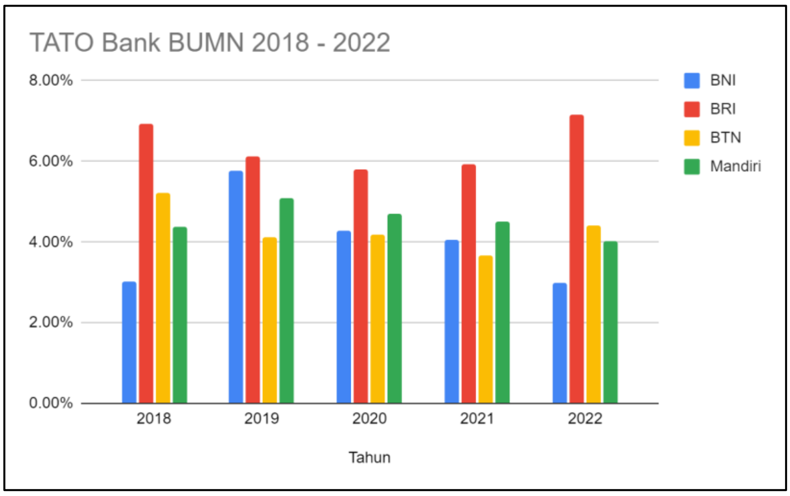

Fig 3. Graph Overview of State-Owned Enterprises (BUMN) Activity from 2018 to 2022 (Source: Processed Data)

The activity of Bank BNI from 2018 to 2022 can be categorized as healthy since the TATO ratio obtained is higher than 2%, despite showing a decrease in the TATO value. This indicates the bank's ability to efficiently manage its assets. From 2018 to 2022, there is an increase in profits and a decrease in profits based on the assets owned by Bank BNI. The activity of Bank BRI from 2018 to 2022 can be categorized as healthy because the TATO value tends to increase from year to year and is higher than 2%. This suggests that the bank can efficiently manage its assets. Bank BRI's focus on improving Micro, Small, and Medium Enterprises (UMKM) in Indonesia from 2018 to 2022 indicates that Bank BRI can manage its assets efficiently to achieve company profits. The activity of Bank BTN from 2018 to 2022 can be categorized as healthy because the TATO value tends to increase from year to year and is higher than 2%. Bank BTN's focus on providing housing financing to customers from 2018 to 2022 shows that Bank BTN can manage its assets well. This is because Bank BTN can provide credit financing to its customers, even though the profits obtained are small.The activity of Bank Mandiri from 2018 to 2022 can be categorized as healthy because the TATO value remains stable at around 4%, with an increase in 2019 and is higher than 2%. This suggests that the bank can efficiently manage its assets. The growth of assets from Bank Mandiri is quite fluctuating from year to year, despite a decrease in 2021 compared to 2020 and 2022, according to the annual report published by Bank Mandiri.

Table 3. Value of TATO Ratio for State-Owned Banks period 2018 - 2022

Year	TATO Ratio			
	Bank BNI	**Bank BRI**	**Bank BTN**	**Bank Mandiri**
2018	3.03%	6.93%	5.21%	4.38%
2019	5.75%	6.14%	4.11%	5.09%
2020	4.27%	5.81%	4.19%	4.71%
2021	4.06%	5.92%	3.65%	4.51%
2022	2.98%	7.15%	4.40%	4.02%

Table 4. Descriptive Statistical Analysis of State-Owned Banks Activity 2018 - 2022

Statistik Descriptive	Quarterly				Avg. Yearly Data
	BNI	**BRI**	**BTN**	**Mandiri**	
Minimum	1.24	2.76	1.80	1.67	2.98
Maximum	8.95	10.61	8.13	7.49	7.15
Mean	4.02	6.39	4.31	4.54	4.82
Std. Deviation	1.91	2.57	1.82	1.77	1.16

Descriptive statistical analysis is also conducted in this study for each activity ratio of state-owned banks from 2018 to 2022, as seen in Table 4. Overall, among the state-owned banks, out of 4 banks, the lowest TATO ratio is observed in Bank BNI at 1.24%, and the highest is in Bank Mandiri at 7.49%. Based on annual data, the lowest ratio is 2.98%, the highest is 7.15%, with an average annual ratio of 4.82%. This indicates that based on the annual average, state-owned banks from 2018 to 2022 show a relatively high activity ratio, suggesting that state-owned banks can efficiently manage their assets to increase the amount of assets they own.

4.3 Profitability of State-Owned Banks from 2018 to 2022

Profitability of banks is measured using the Return on Assets (ROA) ratio based on after-tax profit and total assets held by the bank. State-Owned Banks (BUMN) from 2018 to 2022 show fluctuating profitability, as seen in Table 5. Overall, BUMN bank profitability demonstrates fluctuating values with a minimum ratio of 0.29% and a maximum of 2%. A good profitability ratio for banks, according to Bank Indonesia regulations, ranges from 0.5% to 1.25%. Thus, BUMN banks, in general, during the period 2018 - 2022, show values that can be categorized as healthy. A higher profitability ratio indicates higher profits for the company. Research by Hidayat (2021) shows ROA ratios above 1.25% and 2%, indicating an increase in profits for the banking companies examined.

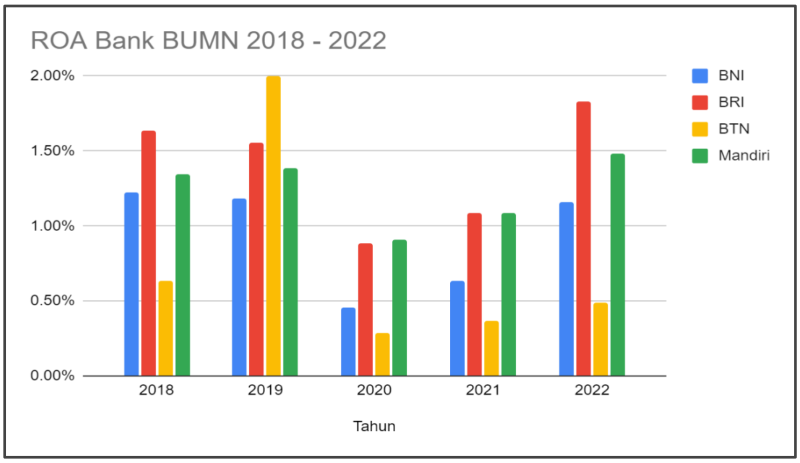

Fig 4. Graph Overview of State-Owned Banks (BUMN) Profitability for the Period 2018 - 2022 (Source: Processed Data)

Based on the chart in Fig 4, the profitability ratio values based on the ROA ratio appear to be fluctuating. In 2020, there is a tendency to decrease across all BUMN banks in Indonesia because the profitability ratio values are below 1%. The trend of high profitability ratios in 2019 increased in 2021 and 2022 after a decrease in 2020. Research by Eliza et al. (2022) indicates a decline in profits from BUMN banks in 2020 due to various factors, including restrictions in offices, public places, and public transportation, reduced purchasing power during the pandemic, and the high risk of COVID-19 transmission.

Profitability of BNI bank from 2018 to 2022 with ROA ratios shows the highest ROA value exceeds the threshold for good and healthy ROA according to Bank Indonesia regulations. However, the increasing ROA indicates that the bank is earning high profits. Research by Choudry (2018), which examines bank capital quality, states that an increase in customer failure rates will affect the assets and capital held by the bank. Profitability of BRI bank from 2018 to 2022 can be categorized as healthy, indicating consistent values above 1%. Profitability of BTN bank from 2018 to 2022 with ROA ratios indicate healthiness ratio. Even though it reaches very high values above 2%, indicating that BTN bank earns high profits compared to its assets. Consistently below 1%, although this value indicates below the threshold for good ROA, the bank can still operate even though it earns enough profit to manage its business activities. Profitability of Mandiri bank from 2018 to 2022 can be categorized as healthy, indicating consistency around 1%. Despite a decrease in profitability in 2020, Mandiri bank was able to increase its profitability.

Table 5. ROA Ratios of State-Owned Banks Period 2018 - 2022

Year	ROA Ratio			
	Bank BNI	**Bank BRI**	**Bank BTN**	**Bank Mandiri**
2018	1.22%	1.64%	0.63%	1.35%
2019	1.19%	1.56%	2.00%	1.39%
2020	0.46%	0.89%	0.29%	0.91%
2021	0.63%	1.09%	0.36%	1.08%
2022	1.16%	1.83%	0.48%	1.48%

Descriptive statistical analysis was also conducted in this study for each State-Owned Banks from 2018 to 2022, as shown in Table 6. Overall, of the 4 banks, the lowest and highest ROA ratios are in Bank BTN at 0.07% and 7.25%, respectively. Based on annual data, the lowest ratio is 0.29%, the highest is 2%, with an average annual ratio value of 1.08%. This indicates that, based on the average annual ratio, State-Owned Banks from 2018 to 2022 show a healthy profitability ratio, indicating that State-Owned Banks can earn profits that can be categorized as healthy based on the assets they own.

Table 6. ROA Ratios of State-Owned Banks Period 2018 - 2022

Statistik Descriptive	Quarterly Data				Avg. Yearly Data
	BNI	**BRI**	**BTN**	**Mandiri**	
Minimum	0.28	0.49	0.07	0.41	0.29
Maximum	1.87	2.76	7.25	2.26	2.00
Mean	0.93	1.40	0.75	1.24	1.08
Std. Deviation	0.54	0.72	1.55	0.58	0.50

4.4 Analysis of the Effect of Liquidity Ratios on Profitability Ratios

In this study, liquidity ratio is measured based on the Loan to Deposit Ratio (LDR), and its impact on profitability ratio is analyzed using the Return on Assets (ROA) measurement from the quarterly financial reports of Bank BNI, Bank BRI, Bank BTN, and Bank Mandiri for the period 2018 - 2022. The healthy range for LDR is considered to be between 78% and 92%, based on the requirements and regulations set by Bank Indonesia in Bank Indonesia Regulation No.012/19/PBI/2010 (Agustina, 2013). If a bank's LDR is below or above the range of 78% - 100%, the bank's liquidity is considered unhealthy, and the bank needs to increase the Mandatory Reserve (GWM) at Bank Indonesia by 0.2% of the excess or deficiency of 1% from the range set by Bank Indonesia (Ramadhan, 2016).

Based on the Normality test, a significance value of 0.07 was obtained using the Kolmogorov-Smirnov test with a sample of 80 liquidity and profitability samples from state-owned banks (BUMN). The result indicates that the significance value of 0.07 > 0.05, suggesting no significant difference in the used sample and it can be considered normal. This also indicates that the sample used for testing is normally distributed. The Correlation Test results show a Pearson Correlation value of -0.062, indicating a negative relationship between LDR and ROA. According to the degree of correlation guidelines, the Pearson Correlation value suggests no correlation between LDR and ROA, falling within the range of 0.00 to 0.20. Decision-making is typically based on a significance value < 0.05 indicating correlation, while a value > 0.05 indicates no correlation. The significance value obtained is 0.59, indicating 0.59 > 0.05, thus suggesting that LDR and ROA are not correlated and have a negative relationship.

Table 7. Classical Assumption Tests, Regression Analysis, and T-test of LDR on ROA for State-Owned Banks from 2018 to 2022

Analysis		Result
Classical Assumption Test	**Normality Test**	
	Significance	0.07
	Correlation Test	
	Constant - Dependent Variable	LDR - ROA
	Pearson Correlation	-0.062
	Sig. (2-tailed)	0.59
Regression Analysis	Constant	LDR
	Dependent Variable	ROA
	Beta	-0.04
T-Test	t	-0.55
	Sig.	0.59

Regression analysis, based on a sample of 80 quarterly data points from the four state-owned banks during the period 2018 - 2022, yielded a Beta value of -0.04. This indicates a negative relationship between liquidity and profitability for state-owned banks during 2018 - 2022. It implies that if liquidity increases by 1%, profitability will decrease by 0.04% as liquidity has a negative impact on profitability. Based on the known t-test significance value, a value of 0.59

was obtained, indicating that there is no significant influence of liquidity on the profitability of state-owned banks during 2018 - 2022. Therefore, liquidity does not significantly affect the profitability of state-owned banks during the period.

Previous research conducted by Fajari & Sunarto (2017), Pratama (2021), and Putri & Akmalia (2016) stated that liquidity measured by the LDR ratio shows a negative relationship and no significant effect. Fajari & Sunarto (2017) researched the effect of LDR as liquidity on profitability in the form of ROA for banks listed on the Indonesia Stock Exchange from 2011 to 2015, showing that LDR has no effect on ROA. Another study by Pratama (2021) examined the influence of LDR as liquidity on bank profitability in the form of ROA for banks listed on the Indonesia Stock Exchange from 2017 to 2019, concluding that liquidity does not affect profitability. Putri & Akmalia (2016) argued that high lending to customers results in a high LDR, impacting the financial performance of banks. Other factors, such as banks focusing on commission-based income, can influence profitability independently of liquidity, as bank profits are influenced by various factors.

4.5 Analysis of the Effect of Activity Ratios on Profitability Ratios

In this study, the activity ratio is measured based on the Total Asset Turnover (TATO) ratio, and its impact on profitability ratios is analyzed using the Return on Assets (ROA) ratio. The financial reports for the quarterly periods of Bank BNI, Bank BRI, Bank BTN, and Bank Mandiri from 2018 to 2022 are utilized for the analysis. The activity ratios using TATO are presented in Table 8. Generally, banks often fall within the range of 0.5% to 2%, indicating that a bank can generate income equal to half or twice the total assets it possesses (Supiyadi, 2019).

The normality test, analyzed using the Kolmogorov-Smirnov test with 80 samples, shows a significance value of 0.08 > 0.05. This suggests no significant difference in the used samples, and the data can be considered normal as it is distributed normally. The activity sample from the banks is normally distributed, indicating no anomalous data or discrepancies. The correlation test using Pearson Correlation yields a value of 0.37, indicating a positive relationship between TATO and ROA. Based on the degree of correlation guidelines, the Pearson Correlation value suggests a weak correlation between TATO and ROA, falling within the range of 0.20 to 0.40. Decision-making is performed if the significance value is < 0.05, indicating a correlation, and if the significance value is > 0.05, indicating no correlation. The obtained significance value is 0.001 < 0.05, signifying a weak and positive correlation between TATO and ROA.

Regression analysis in this study, with a sample of data from the four state-owned banks from 2018 to 2022, is shown in Table 8. The regression analysis of activity on the profitability of state-owned banks indicates a Beta value of 0.36, signifying that activity has a positive impact on the profitability of state-owned banks from 2018 to 2022. Based on the calculated t significance value, 0.001 < 0.05, it is established that activity significantly influences the profitability of state-owned banks from 2018 to 2022. This indicates that if activity increases by 1%, profitability will increase by 0.36%. Therefore, activity is positively correlated and significantly influences the profitability of state-owned banks from 2018 to 2022.

A T-test is also conducted to analyze the influence of all independent variables on the dependent variable, where in this study, the independent variable used is activity, and the dependent variable is profitability. The significance level used in this research is 0.05. The results for state-owned banks from 2018 to 2022 show a significance value of 0.001 < 0.05, indicating that activity (X) significantly influences the changes in profitability (Y) of state-owned banks from 2018 to 2022.

Table 8. Classical Assumption Test, Regression Analysis, and T-test of TATO on ROA in Indonesian State-Owned Banks (BUMN) 2018 – 2022

Analysis		Result
Classical Assumption Test	**Normality Test**	
	Significance	0.08
	Correlation Test	
	Constant - Dependent Variable	TATO - ROA
	Pearson Correlation	0.37
	Sig. (2-tailed)	0.001
Regression Analysis	Constant	TATO
	Dependent Variable	ROA
	Beta	0.36
T-Test	t	3.46
	Sig.	0.001

From this research, it is concluded that the activity ratio is positively and significantly related to the changes in profitability of state-owned banks from 2018 to 2022. Based on research on the impact of liquidity, activity, and solvency on profitability conducted by Rahmah et al. (2019), the results show that activity, partially, affects the profitability of automotive companies listed on the Indonesia Stock Exchange from 2012 to 2014. This indicates that activity can enhance the profitability of companies. Research by Pranata et al. (2014) in the banking sector, studying the influence of Total Asset Turnover on Return on Assets or profitability of private commercial banks listed on the Indonesia Stock Exchange from 2010 to 2012, reveals that over three years, TATO as an activity ratio of private commercial banks significantly and positively influences profitability measured by ROA. Another study by Ningsih (2008), examining the relationship between TATO and ROA of Islamic banks from 2005 to 2007, shows that TATO positively affects ROA, although the correlation is not significant. Research by Cahyani (2021), analyzing the impact of TATO, demonstrates that TATO has a significant and positive influence on ROA.

4.6 Analysis of the Effect of Liquidity Ratio on Profitability Ratio Through Activity

This study analyzes the influence of liquidity ratios on profitability, which is also influenced by activity ratios of state-owned banks from 2018 to 2022. Liquidity is measured using the Loan to Deposit Ratio (LDR), profitability is measured using the Return on Assets (ROA) ratio, and activity is measured using the Total Asset Turnover (TATO) ratio.

Table 9. Classical Assumption Test, Regression Analysis, and T-Test of LDR on ROA through TATO for State-Owned Banks in 2018 – 2022

Analysis		Result
Uji Asumsi Klasik	**Normality Test**	
	Significance	0.07
	Correlation Test	
	Constant - Dependent Variable	LDR , TATO - ROA
	Pearson Correlation LDR - TATO	-0.05
	Sig. (2-tailed) LDR - TATO	0.66
	Sig F	0,001
Regression Analysis	Constant	LDR, TATO
	Dependent Variable	ROA
	Beta LDR	-0.04
	Beta TATO	0.36
	Beta LDR - TATO	-0.02
	Beta LDR-TATO to ROA	-0.06
F-Test	F	38.747
	Sig.	0.004

Based on the Normality test, a significance value of 0.07 is obtained using the Kolmogorov-Smirnov test with a sample of 80 data points for liquidity, activity, and profitability of state-owned banks. The result shows that the significance value of 0.07 > 0.05, indicating no significant difference in the sample. This suggests that the sample used is suitable for testing and comes from a normally distributed population.

The Correlation test using Pearson Correlation yields a value of -0.05, indicating a negative relationship between LDR and ROA. The decision-making basis is established with a significance value where if it is < 0.05, it is considered correlated, and if it is > 0.05, it is considered not correlated. The significance value obtained is 0.001, which is less than 0.05, indicating a correlation between TATO and ROA with a negative relationship.

Multiple linear regression analysis is conducted using SPSS to determine the relationship between LDR and TATO on ROA, with TATO as an intervening variable. The Beta value for LDR-TATO is -0.02, representing the indirect influence of LDR on ROA through TATO. The calculated value of -0.06 indicates the relationship between LDR on ROA through TATO. The influence of LDR on ROA through TATO shows a negative relationship, where an increase in LDR affecting TATO by 1% will decrease ROA by 0.06%.

The results of the t-test analysis for state-owned banks from 2018 to 2022 show a significance value of 0.68 > 0.05 for the relationship between LDR and ROA. This indicates that liquidity (X1) partially has a significant effect on the changes in profitability (Y) of state-owned banks from 2018 to 2022. Regarding the relationship between TATO and ROA, the significance value is 0.10 > 0.05. An F-test is also conducted in this study to analyze the combined influence of LDR and TATO on ROA. The analysis results indicate a significance of 0.004, where 0.004 < 0.05. This suggests a significant influence of LDR on ROA through TATO, indicating that any changes in LDR and TATO will affect the changes in the ROA of the bank.

5. Conclusion

Based on the results of the research conducted on four state-owned banks during the period 2018 - 2022 in Indonesia, listed on the Indonesia Stock Exchange, the conclusion is drawn that liquidity has a negative relationship and does not significantly affect the profitability of state-owned banks in Indonesia from 2018 to 2022. This indicates that an increase in liquidity by 1% will decrease profitability by 0.04% because liquidity has a negative relationship with profitability and does not have a significant effect. Activity has a positive and significant relationship with the profitability of state-owned banks in Indonesia for the period 2018 - 2022. This suggests that an increase in activity by 1% will increase profitability by 0.36%. Liquidity has a negative relationship with profitability through activity in state-owned banks in Indonesia for the period 2018 - 2022. This indicates that the indirect effect of LDR on ROA through TATO shows a negative relationship, where an increase in LDR and TATO by 1% will decrease ROA by 0.06%.

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