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Liquidity, Profitability, and Capital Adequacy: Evidence from Indonesian Listed Banks

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ABSTRACT

Capital Adequacy Ratio (CAR) reflects a bank's ability to maintain financial stability and absorb risks. This study examines the effect of liquidity and profitability on CAR in banking companies listed on the Indonesia Stock Exchange during 2022–2024. Liquidity is measured by the Loan-to-Deposit Ratio (LDR), while profitability is proxied by Return on Assets (ROA). Using a quantitative approach and multiple linear regression analysis, this study analyzes 63 observations from 21 banks selected through purposive sampling. The results show that liquidity has a positive and significant effect on CAR, whereas profitability has no significant effect. Simultaneously, liquidity and profitability significantly influence CAR. These findings indicate that effective liquidity management plays a more important role in strengthening capital adequacy than profitability alone. This study provides empirical evidence and practical implications for banking management and regulators in maintaining financial stability and capital adequacy.

Keywords: capital adequacy ratio; liquidity; profitability; banking
JEL Classification: G21; G32

1. Introduction

In the contemporary business landscape, financial statements are fundamental instruments in assessing a company's performance and financial position. Beyond serving as a vital source of information for internal management, financial statements also function as a key reference for investors, creditors, regulators, and the general public in their decision-making processes. Hery (2023) states that financial statements provide the foundation for users to make informed economic decisions. They play an essential role in facilitating comparison, evaluation, and trend analysis, as well as for forecasting future financial conditions. Zain and Akbar (2020:1) further explain that financial institutions in Indonesia contribute to national development by promoting economic growth, equity, and stability, and they play an important role in the country's economic system. A bank is considered liquid if it is able to meet its obligations on time, particularly when customers withdraw deposits or settle loans without difficulty (Azizah, Wibowo, and Hapsari, 2020:85). This role becomes increasingly critical within the banking industry, given that banks bear significant responsibility for maintaining national financial stability.

Astuti et al. (2021:59) state that the Capital Adequacy Ratio (CAR) is a standard financial ratio in the banking industry that indicates the adequacy of a bank's capital. Prawoto (2021) further explains that the minimum percentage for the Capital Adequacy Ratio (CAR) required by Bank Indonesia is 8%. An optimal CAR level provides benefits for banks by helping to mitigate financial risks or potential economic crises that may arise during business operations. Banks with a CAR below 8% may experience financial difficulties, whereas those maintaining an optimal CAR are better positioned to manage risks and utilize their capital for more stable growth. Another benefit of maintaining the Capital Adequacy Ratio (CAR) at an optimal level is that banks can operate their business activities more freely, including distributing credit and maintaining their ability to return customer funds (Sadiqin, 2024:9). Therefore, effective CAR management is crucial for maintaining financial soundness and supporting the sustainable development of banking operations.

A similar case regarding the Capital Adequacy Ratio (CAR) was experienced by PT Bank Bukopin Tbk. (BBKP) in 2020, where the decline in financial ratios such as liquidity and profitability contributed to the weakening of the company's capital structure and led to a decrease in public trust. Amid liquidity pressures, customers reportedly faced difficulties in withdrawing their funds, indicating the bank's declining ability to meet its short-term obligations (Kontan.co.id, 2020; MNCTV, 2020; KompasTV, 2020; INewsTV, 2020). This situation underscored the importance of analyzing liquidity in banks' financial statements, as a deterioration in liquidity can indirectly trigger public concern and even the potential for large-scale fund withdrawals. In addition to liquidity, profitability ratios such as Return on Assets (ROA) also experienced a decline. According to Fitriana (2024:57), profitability is a financial ratio that shows the level of efficiency and profitability of a company from its operational activities and asset management. This resulted in lower net income, thereby affecting the bank's ability to strengthen its capital position.

Previous research by Mustopo and Mardiansyah (2020) revealed that liquidity has a significant positive effect on the Capital Adequacy Ratio (CAR), both

partially and simultaneously, as a higher ability of banks to meet their short-term obligations strengthens their capital position. This finding is consistent with the study conducted by Suhano (2023), which also found that liquidity has a positive influence on CAR. However, these results differ from those of Sorongan (2020), who found that liquidity does not have a significant effect on CAR. Furthermore, research by Dewi and Dewi (2022) and Hati et al. (2021) demonstrated that profitability, as measured by Return on Assets (ROA), has a significant positive impact on the Capital Adequacy Ratio. These findings indicate that a company's profits directly contribute to the strengthening of its capital. In contrast, Hasanah and Manda (2021) reported different results, showing a significant effect when tested simultaneously but an insignificant effect when tested partially.

The previously discussed CAR case, combined with the differing results of prior studies, highlights the necessity for further research. Therefore, this study is conducted under the title "The Effect of Liquidity and Profitability on the Capital Adequacy Ratio (CAR) of Banks Listed on the Indonesia Stock Exchange for the Period 2022-2024".

The findings of this study are expected to support accounting professionals in preparing more informative and relevant financial reports that align with Financial Accounting Standards (SAK) and regulatory requirements, thereby facilitating a more objective evaluation of banks' financial health. Furthermore, the study aims to provide accounting-based insights into how reported financial ratios can serve as indicators for assessing banks' performance and risk.

2. Literature review

According to Prawoto (2021:149–155), the assessment of a bank's level of soundness is conducted periodically using various indicators. The CAMEL analysis serves as one of the primary methods employed, consisting of five key elements: capital, asset quality, management, earnings (profitability), and liquidity. Each of these aspects provides a comprehensive overview of a bank's overall condition.

Criteria	CAR	LDR	ROA
Healthy	≥ 8%	≤ 94,75%	≥ 1,215%
Fairly Healthy	7,999% - 8%	≥ 94,75% - < 98,50%	≥ 0,999% - ≥ 1,215%
Less Healthy	6,5% - 7,999%	≥ 98,50% - < 102,25%	≥ 0,765% - < 0,999%
Unhealthy	≤ 6,5%	> 102,25%	< 0,765%

Source: Sujarweni (2023: 97, 101, 102)

Development of Hypotheses

The Effect of Liquidity on the Capital Adequacy Ratio

The effect of liquidity on the Capital Adequacy Ratio (CAR) can be explained through the agency theory. This theory describes the relationship between the owner (principal) and the manager (agent), in which the manager is responsible for managing financial resources in accordance with the principal's interests. In the banking context, maintaining adequate liquidity is essential to meet short-term obligations and sustain sufficient capital to absorb future risks. When a bank maintains an adequate level of liquidity, it indicates that managers are fulfilling their responsibilities effectively to protect shareholders' interests and enhance the confidence of investors and regulators. This condition reflects the efficiency of managing current assets and capital, as reported in financial statements, thereby positively influencing the Capital Adequacy Ratio (CAR).

Previous research by Mustopo and Mardiansyah (2020) revealed that liquidity has a significant positive effect on CAR, both partially and simultaneously, as higher liquidity indicates stronger capital adequacy. This finding is consistent with Suhano (2023), who also found a positive relationship between liquidity and CAR. However, these results differ from the findings of Sorongan (2020), who reported that liquidity has a positive but not significant effect on CAR. Meanwhile, the findings of Darusman and Sunarto (2023) state that liquidity has no effect on CAR. Based on the above explanation and supporting evidence from agency theory and previous studies, the following hypothesis is proposed:
H1: Liquidity has a positive effect on the Capital Adequacy Ratio.

The Effect of Profitability on the Capital Adequacy Ratio

The effect of profitability on CAR can also be explained through agency theory, which highlights the relationship between the owner (principal) and the manager (agent). Managers are responsible for managing resources efficiently to maximize returns for shareholders. In the banking sector, successful profit generation indicates that managers have effectively carried out their responsibilities as trusted agents. Higher profitability strengthens a bank's capital position through retained earnings, which in turn enhances CAR. Thus, the higher the profitability level, the stronger the bank's ability to reinforce its capital structure and maintain investor and regulator confidence.

Research conducted by Dewi and Dewi (2022) and Hati et al. (2021) found that profitability, as measured by ROA, has a significant positive effect on CAR. This implies that profit generation contributes directly to capital strengthening. However, Hasanah and Manda (2021) found differing results showing a significant simultaneous effect but an insignificant partial effect.

Based on the theoretical and empirical evidence above, the following hypothesis is proposed:
H2: Profitability has a positive effect on the Capital Adequacy Ratio.

The Effect of Liquidity and Profitability on the Capital Adequacy Ratio

The relationship between liquidity, profitability, and CAR is mutually complementary. Excessively high liquidity may reduce potential profits as idle funds remain unproductive, whereas high profitability accompanied by excessive credit expansion may increase asset risk and weaken capital adequacy. Therefore, a simultaneous examination is necessary to evaluate how both variables jointly affect the level of capital adequacy in banks.

Previous studies by Mustopo and Mardiansyah (2020) as well as Dewi and Dewi (2022) confirmed that liquidity and profitability simultaneously have a significant effect on CAR. These findings reinforce the view that a bank's ability to balance liquidity and profitability reflects managerial effectiveness in optimizing corporate resources for shareholders' interests.

Based on this rationale, the following hypothesis is proposed:
H3: Liquidity and profitability have a significant effect on the Capital Adequacy Ratio.

3. Research method

This study employs a quantitative research approach. The sample was selected using the purposive sampling technique. The criteria for selecting the sample are as follows:

1. Banking companies listed on the Indonesia Stock Exchange (IDX).
2. Conventional commercial banks that publish complete annual financial statements for the period 2022-2024.
3. Banking companies that did not experience losses during the 2022-2024 period.

Based on these criteria, out of 58 banking companies listed on the Indonesia Stock Exchange, 21 banks were selected as samples based on the availability of data. With a three-year observation period, the total number of observations (n) in this study amounts to 63 financial statement data points (21 banks × 3 years). The data used in this research are annual financial statements published on the official website of the Indonesia Stock Exchange (www.idx.co.id).

The study utilizes a multiple linear regression model to examine the effect of the independent variables liquidity and profitability on the dependent variable, Capital Adequacy Ratio (CAR). According to Soesana et al. (2023:96), the multiple linear regression equation is formulated as follows:

CAR = a + b1L + b2R + e

4. Result and discussion

Results

Based on the results of the descriptive statistical test of 63 banking observations, the findings are. The Liquidity variable (X_1) shows a minimum value of 20.53, a maximum of 163.19, with a mean of 96.99 and a standard deviation of 27.19. This indicates that the banks' liquidity levels fall within the fairly healthy category (<98.50%), with relatively high variation across banks.

The Profitability variable (X_2) has a minimum value of 0.14, a maximum of 4.76, a mean of 2.08, and a standard deviation of 1.22. Based on the bank soundness criteria, this average value is classified as healthy since it exceeds the threshold of 1.215%, indicating varying levels of profit-generating ability among banks.

Meanwhile, the Capital Adequacy Ratio (CAR) variable (Y) shows a minimum value of 18.50, a maximum of 127.42, with a mean of 35.14 and a standard deviation of 21.10. The average CAR value indicates a healthy category, as it is well above the minimum threshold of 8%, although there is considerable variation among banks.

Table 1. Descriptive statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Liquidity	63	20.53	163.19	96.9859	27.19117
Profitability	63	.14	4.76	2.0837	1.22131
CAR	63	18.50	127.42	35.1444	21.09950
Valid N (*listwise*)	63				

Normality, multicollinearity, heteroscedasticity and autocorrelation tests were conducted, with the results described as follows:

1. Normality Test
   The significance value obtained was 0.200, which exceeds 0.05. Therefore, it can be concluded that the data are normally distributed.
2. Multicollinearity Test
   The results show that the tolerance values for all variables are greater than 0.10, and the Variance Inflation Factor (VIF) values are less than 10. Thus, it

can be concluded that all independent variables are free from multicollinearity.

3. Heteroscedasticity Test
   The significance values for the variables are 0.076 for liquidity and 0.575 for profitability. Since both values are greater than 0.05, it can be concluded that there is no heteroscedasticity in this research data.
4. Autocorrelation Test
   The results indicate that the regression model does not exhibit autocorrelation, as the Durbin-Watson value of 1.848 falls between DU and 4-DU, thereby confirming that the model passes the autocorrelation test.

Table 2 shows the results of the multiple linear regression analysis. The constant value of 7.708 indicates that if liquidity and profitability are both zero, the Capital Adequacy Ratio (CAR) is estimated to be 7.708. The liquidity coefficient has a positive value of 0.304 with a significance level of 0.002 (<0.05), indicating that liquidity has a positive and significant effect on CAR. This means that the higher the liquidity level, the greater the bank's capital adequacy ratio. Meanwhile, the profitability coefficient has a negative value of -0.973 with a significance level of 0.637 (>0.05), showing that profitability has a negative but not significant effect on CAR. Therefore, the profitability variable does not have a significant impact on capital adequacy in this model. The test results also show that the coefficient of determination (R Square) is 0.157, meaning that 15.7% of the variation in CAR is explained by liquidity and profitability, while the remaining 84.3% is influenced by other variables not included in this research model.

Table 2. Multiple linear regression output results

		Unstandardized Coefficients		Standardized Coefficients		
	Model	B	Std. Error	Beta	**t**	**Sig.**
1	(Constant)	7.708	10.272		0.750	0.456
	Liquidity	0.304	0.092	0.391	3.303	0.002
	Profitability	-0.973	2.048	-0.056	-0.475	0.637

a. Dependent variable: CAR

Based on the results of testing liquidity and profitability on the Capital Adequacy Ratio, the results show a significance value of 0.006 < 0.05. Therefore, it can be concluded that liquidity and profitability simultaneously have a significant effect on the Capital Adequacy Ratio (CAR).

Table 3. Simultaneous test (F-test)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4343.362	2	2171.681	5.602	0.006[b]
	Residual	23258.357	60	387.639		
	Total	27601.719	62			

a. Dependent Variable: CAR

b. Predictors: (Constant), Profitability, Liquidity

Discussion

The Effect of Liquidity on the Capital Adequacy Ratio

The partial test results show that liquidity has a positive and significant effect on the Capital Adequacy Ratio (CAR) with a significance value of 0.002 < 0.05 and a positive regression coefficient of 0.304. This means that the higher the bank's ability to meet its short-term obligations, the greater its ability to maintain capital adequacy against the risks of its productive assets; thus, the first hypothesis (H1) is accepted.

This relationship can be explained through agency theory, where managers (agents) are responsible for managing financial resources in line with shareholders' interests. In this context, effective liquidity management reflects managerial discipline in ensuring short-term obligations are met without compromising productive assets that support capital adequacy.

This finding is consistent with Mustopo and Mardiansyah (2020) and Suhano (2023), who found that liquidity has a positive and significant effect on CAR. A balanced Loan to Deposit Ratio (LDR) reflects the manager's effectiveness in managing third-party funds for productive financing without disrupting bank liquidity. Meanwhile, higher liquidity also provides a stronger capital buffer, helping banks maintain capital adequacy against market and credit risks. This result indicates that effective liquidity management reflects managerial responsibility in maintaining financial stability and supporting capital adequacy.

The Effect of Profitability on the Capital Adequacy Ratio

Based on partial test results, the profitability variable measured by Return on Assets (ROA) shows a t-value of -0.475 with a significance level of 0.637 > 0.05. This indicates that profitability has a negative and insignificant effect on CAR. In other words, an increase in profit does not necessarily lead to an immediate increase in capital adequacy, and the contribution of profitability to strengthening capital is not significant during the observation period. Hence, the second hypothesis (H2) is rejected.

From the perspective of agency theory, this result indicates potential inefficiency in the allocation of earnings by managers. Although profitability reflects managerial performance, profits are not necessarily retained as capital but may be distributed as dividends or used for asset expansion, so they do not directly strengthen CAR. As a result, the profit reflected in the income statement does not directly increase the capital used in CAR calculation. This indicates that the agent's responsibility for strengthening the company's financial position is not fully reflected in profitability performance.

This finding contrasts with Dewi and Dewi (2022) and Hati et al. (2021), who found a positive and significant relationship between profitability and CAR, suggesting that profits directly increase core capital through retained earnings. However, it is consistent with Hasanah and Manda (2021), who reported that profitability does not significantly

affect CAR because earnings are used for productive asset financing rather than being recognized as equity.

This implies that profitability alone does not directly reflect capital strength unless supported by appropriate profit retention policies.

The Effect of Liquidity and Profitability on the Capital Adequacy Ratio

Based on the simultaneous test results, liquidity and profitability jointly have a significant effect on the Capital Adequacy Ratio (CAR). This is indicated by an F-value of 5.602 with a significance level of 0.006 < 0.05, meaning the regression model is feasible to explain the relationship between the independent variables and the dependent variable. Thus, it can be concluded that simultaneously, liquidity and profitability play a crucial role in determining the level of capital adequacy in banking, and the third hypothesis (H3) is accepted.

Consistent with agency theory, this result indicates that managerial effectiveness is reflected in the ability to balance liquidity and profitability in supporting capital adequacy.

Empirical results show that although profitability individually has no significant effect on CAR, when tested simultaneously with liquidity, their combined effect becomes significant. This emphasizes the complementary relationship between liquidity and profitability in maintaining capital adequacy. Healthy liquidity ensures that profits are not depleted by short-term cash needs, allowing profits to strengthen core capital. In other words, a bank's ability to balance liquidity and profitability demonstrates managerial effectiveness in managing assets and liabilities consistent with the shareholders' interests, as described by agency theory.

This result is consistent with Mustopo and Mardiansyah (2020) and Dewi and Dewi (2022), who found that liquidity and profitability jointly affect CAR significantly. These studies emphasize that effective fund management and profit performance complement each other in strengthening the bank's capital structure. The differing partial results in this study reflect that the impact of profitability on capital depends on how managers allocate earnings and maintain liquidity stability.

Therefore, this finding confirms that the combined management of liquidity and profitability plays an important role in maintaining bank capital adequacy.

5. Conclusion

This study analyzes the effect of liquidity and profitability on the Capital Adequacy Ratio (CAR) of banks listed on the Indonesia Stock Exchange during 2022–2024. The results show that liquidity has a positive and significant effect on CAR, indicating that stronger liquidity management contributes to better capital adequacy and banking stability. In contrast, profitability does not significantly affect CAR, suggesting that generated profits are not directly allocated to strengthen core capital.

Simultaneously, liquidity and profitability significantly influence CAR, highlighting the importance of balancing financial stability and earnings performance in maintaining adequate bank capital. These findings support agency theory and provide practical implications for bank management and regulators in strengthening capital management policies.

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