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Evaluating the Effects of Liquidity and Capital Adequacy on Profitability in IDX-Listed Private Banking Firms (2015–2024)

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ABSTRACT
A bank's health is evaluated through various performance metrics, with profitability serving as a primary indicator. Higher profitability reflects superior financial performance, demonstrating a bank's capacity to generate returns on its assets effectively. Profitability is paramount not only for corporate earnings but also for fostering customer trust through prudent fund management. This study examines the impact of the Loan to Deposit Ratio (LDR) and Capital Adequacy Ratio (CAR) on Return on Assets (ROA) among private commercial banks listed on the Indonesia Stock Exchange (IDX) from 2015 to 2024. Adopting a quantitative methodology, the study utilizes panel data regression analysis with a Fixed Effect Model based on annual financial reports. The F-test results demonstrate that LDR and CAR jointly exert a significant effect on ROA. Additionally, the t-test results reveal that both variables individually have a significant impact on ROA. These findings underscore the critical roles of liquidity and capital adequacy in driving bank profitability, indicating that effective LDR and CAR management is vital for maintaining robust financial performance.

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INTRODUCTION

Banking institutions serve a pivotal role in driving economic growth by functioning as financial intermediaries that channel capital from surplus units to deficit units. A bank's efficacy in executing this role hinges significantly on its financial stability and overall soundness. Profitability stands as a crucial measure of bank performance, reflecting its capacity to yield returns from invested assets to ensure long-term viability and expansion (Dwiningsih et al., 2023). In the banking industry, Return on Assets (ROA) is widely employed as a core profitability metric, evaluating how effectively management leverages assets to generate net earnings. A higher ROA indicates superior operational efficiency and financial strength, which are essential for sustaining depositor and investor confidence.

A bank's financial outcome is driven by a combination of internal and external factors, with the Loan to Deposit Ratio (LDR) and Capital Adequacy Ratio (CAR) playing critical roles. LDR serves as a liquidity metric that compares total extended loans against total customer deposits to assess lending capacity. It reflects how efficiently a bank converts its deposit base into interest-generating loans, directly affecting revenue and profitability. Maintaining an optimal LDR requires balancing earnings potential against liquidity exposure; an overly elevated LDR suggests aggressive lending that may jeopardize liquidity, whereas an excessively low LDR signals an underutilization of resources (Asset Voyager, 2024; FasterCapital, 2019). Consequently, systematic oversight of LDR is crucial for preserving liquidity while optimizing credit delivery.

Similarly, the Capital Adequacy Ratio (CAR) reflects a bank's financial strength by measuring the amount of capital relative to its risk-weighted assets. It serves as a buffer to absorb potential losses and protect depositors, regulators, and other stakeholders from financial distress. A higher CAR indicates better risk management and a stronger capital base, which supports sustainable lending and credit growth, thereby enhancing profitability. Regulators worldwide, including Indonesia's Financial Services Authority (OJK), mandate minimum CAR requirements to ensure the banking sector's resilience (Karadayi, 2023). Effectively managing CAR is therefore a vital component of overall bank soundness and performance.

The rapid evolution of the financial landscape, particularly driven by technological advances and the rise of financial technology (Fintech), has posed new challenges and opportunities for banks. The COVID-19 pandemic accelerated fintech adoption, altering consumer behavior and increasing competition in financial services. Many customers now gravitate towards digital lending platforms, reducing dependency on traditional bank loans and impacting banks' LDR and profitability (Yanuartha, 2022). Consequently, private banks must strategically manage liquidity and capital adequacy to sustain their competitive edge and financial health.

Despite the critical importance of LDR and CAR for bank profitability, the existing literature presents mixed findings on the magnitude and direction of

their influence on ROA, often varying by country, bank type, and period studied. This research aims to provide empirical evidence on the effects of LDR and CAR on ROA specifically among private banks listed on the Indonesian Stock Exchange over a recent ten-year period (2015–2024). Unlike many studies that cover shorter periods or combine different bank categories, this study offers a focused analysis of private banks within a dynamic economic and regulatory environment.

This article integrates and updates previous findings by employing panel data regression with a Fixed Effect Model to analyze quantitative data sourced from annual financial reports. The analysis aims to answer two key research questions: (1) Do LDR and CAR simultaneously influence the profitability of private banks in Indonesia? (2) What is the individual effect of each ratio on ROA during 2015–2024? The study's novelty lies in its comprehensive and up-to-date empirical approach, contributing to the understanding of financial ratios' roles amid evolving banking sector challenges.

The remainder of this article follows a structured methodical approach: first, the research method section details data sources, sample selection, variables, and analytical techniques. Then, the results and discussion section presents findings and interprets their implications for banking management and regulation. Finally, the conclusion summarizes key insights and suggests directions for future research.

LITERATURE REVIEW

To build a comprehensive academic and theoretical foundation regarding the financial performance of banking institutions—specifically focusing on liquidity, capital adequacy, and profitability—several foundational theories and financial management concepts are synthesized below:

Financial Intermediation Theory

According to Diamond and Dybvig (1983), financial intermediation theory explains that commercial banks serve as vital intermediaries between surplus units (depositors) and deficit units (borrowers). By channeling funds efficiently, banks transform liquid short-term deposits into longer-term loans, balancing liquidity risk and generating returns.

Bank Profitability Theory (Return on Assets / ROA)

Kashmir (2020) defines profitability ratios as metrics used to assess a company's ability to earn profits through all available resources, such as assets, cash, capital, and number of employees. Return on Assets (ROA) specifically measures how efficiently bank management converts total assets into net income, serving as a primary indicator of overall financial health and operational efficiency.

Liquidity Management and Loan to Deposit Ratio (LDR) Theory

According to Hempel and Simonson (1999), liquidity management involves maintaining adequate cash and liquid assets to meet depositor withdrawals and loan demands without incurring heavy losses. The Loan to Deposit Ratio (LDR) acts as a primary liquidity indicator, reflecting the proportion of total loans funded by customer deposits; an optimal LDR ensures maximum interest income without exposing the bank to severe liquidity distress.

Capital Adequacy and Capital Adequacy Ratio (CAR) Theory

According to Saunders and Cornett (2018), capital adequacy theory posits that a strong capital base is essential to absorb unexpected financial shocks, credit losses, and insolvency risks. The Capital Adequacy Ratio (CAR) measures a bank's capital relative to its risk-weighted assets, safeguarding depositor funds and complying with regulatory frameworks (such as Basel Accords and OJK standards) to maintain market confidence.

Signalling Theory

Spence (1973) states that signalling theory explains how companies (or banks) provide reliable financial information to the market to reduce information asymmetry. Strong financial indicators such as healthy liquidity (LDR), robust capital buffers (CAR), and high profitability (ROA) send positive signals to investors, regulators, and depositors regarding the bank's stability and future prospects.

RESEARCH METHOD

To investigate the impact of Loan to Deposit Ratio (LDR) and Capital Adequacy Ratio (CAR) on the profitability of private commercial banks listed on the Indonesia Stock Exchange (IDX) between 2015 and 2024, this study employs a quantitative panel data regression framework. Based on model specification diagnostics specifically Chow and Hausman tests a Fixed Effect Model (FEM) was selected to control for unobserved bank-level heterogeneity across time. Data were compiled from the official annual financial reports of IDX-listed private banks. Using a purposive sampling method with continuous data availability criteria, a final sample of seven banks was established.

The analytical framework incorporates LDR (total loans to total deposits) and CAR (capital to risk-weighted assets) as independent metrics representing liquidity and capital strength, respectively. Profitability, as the dependent variable, is measured via Return on Assets (ROA), calculated as pre-tax income relative to total assets. Data processing was conducted in EViews, encompassing descriptive statistical profiling, classical regression assumption diagnostics (normality, multicollinearity, heteroskedasticity, and autocorrelation), and hypothesis verification through joint F-testing and individual t-testing.

RESULTS AND DISCUSSION

The descriptive statistical analysis reveals that the average Loan to Deposit Ratio (LDR) for the selected private banks ranges around 80-90%, indicating a relatively high utilization of deposits for loan disbursement over the 2015-2024 period. Capital Adequacy Ratio (CAR) trends show a general increase, with values mostly above the regulatory minimum, reflecting prudent capital management. Return On Assets (ROA) fluctuates across years, with an average around 2%, signifying moderate profitability levels for these banks. The data highlights notable impacts of external events, such as a significant dip in LDR and ROA during 2020, likely due to the COVID-19 pandemic's effect on economic activities and credit demand.

The panel regression results using the Fixed Effect Model assert that both LDR and CAR have statistically significant simultaneous effects on ROA, as demonstrated by the F-test with p-values well below 0.05. Individually, t-tests confirm that LDR positively and significantly influences ROA, emphasizing that higher loan utilization correlates with increased profitability. This supports the notion that effective asset deployment is critical for private banks to generate returns. Similarly, CAR shows a significant positive impact on ROA, indicating that maintaining adequate capital buffers enhances bank stability and investor confidence, thereby fostering profitability.

These findings align with earlier studies underscoring the critical roles of liquidity management and capital adequacy in sustaining bank performance. The results also illustrate the dynamic interplay between regulatory compliance and operational strategy in the Indonesian banking sector, particularly during periods of economic stress. However, some variability in the strength of these effects among banks suggests that individual management policies and market conditions influence outcomes. Overall, this study confirms that prudent management of LDR and CAR is instrumental in optimizing bank profitability, especially amid shifting economic landscapes and evolving financial technologies.

This study analyzed financial ratio data from seven private banks listed on the Indonesian Stock Exchange over the period 2015–2024 to assess the influence of Loan to Deposit Ratio (LDR) and Capital Adequacy Ratio (CAR) on profitability measured by Return On Assets (ROA). The descriptive statistics reveal fluctuations in the banking sector linked to prevailing economic and regulatory conditions. The average LDR hovered between 80% and 90%, reflecting a generally high utilization of deposits for lending activities. CAR showed an upward trend, with most banks maintaining ratios above regulatory minimums, indicating ongoing efforts to strengthen capital buffers. ROA values averaged around 2%, consistent with moderate profitability, though the data reflected a decline during the COVID-19 pandemic in 2020, likely due to slower economic activity reducing credit demand and adversely affecting income.

Panel data regression using the Fixed Effect Model demonstrated statistically significant simultaneous effects of LDR and CAR on ROA (F-test significance $p < 0.01$). Individually, LDR exhibited a positive, significant association with ROA, suggesting that effective utilization of deposits for loans enhances bank profitability. This aligns with Herawati et al. (2024), who emphasize that higher LDR translates to increased interest income, though excessive lending also entails liquidity risk. CAR's positive effect on ROA corroborates findings from Puji Astuti et al. (2023), confirming that sound capital adequacy supports resilience against losses and investor confidence, facilitating sustainable profit generation.

The results indicate that prudential management balancing credit growth and capital sufficiency underpins financial performance in private Indonesian banks. During 2015–2024, macroeconomic shocks and technological disruptions such as the rise of Fintech introduced volatility in bank performance, underscoring the importance of flexible financial strategies. Some variability among banks in the strength of LDR and CAR effects highlights how managerial decisions and risk profiles influence outcomes. For example, banks like BCA showed consistent ROA leadership through conservative LDR and robust CAR, while others with more aggressive lending strategies experienced higher volatility. Comparisons with previous literature reveal mixed evidence about the LDR-ROA relationship. While this study confirms a positive influence, Kawinda et al. (2024) reported no significant effect of LDR on profitability in some contexts, suggesting heterogeneity across banking environments. CAR's significance in this paper supports the consensus that capital adequacy is integral to banking stability and profitability, though studies like Maulana et al. (2021) showed neutral impacts, possibly reflecting differences in sample or methods. Overall, the findings advocate for banking policies that optimize deposit lending without compromising liquidity and maintain capital buffers above regulatory thresholds. This balance is critical not only for maximizing returns but also for sustaining confidence in a rapidly evolving financial sector facing digital disruption and economic uncertainty. These results provide practical insights to bank executives and regulators aiming to foster resilience and performance in the Indonesian private banking industry.

CONCLUSION

This study has demonstrated that both Loan to Deposit Ratio (LDR) and Capital Adequacy Ratio (CAR) significantly influence the profitability of private banks listed on the Indonesian Stock Exchange from 2015 to 2024. The simultaneous and individual positive effects of LDR and CAR on Return On Assets (ROA) underscore the importance of effective liquidity management and maintaining sufficient capital buffers for banks to sustain and enhance their financial performance. The results reinforce that prudent management of these financial ratios is vital in the increasingly competitive and evolving Indonesian banking sector. Moreover, the findings contribute new empirical evidence by

focusing on private banks over a recent decade marked by significant technological and economic changes, including the growth of fintech and challenges arising during the COVID-19 pandemic. The study's use of panel data regression with a Fixed Effect Model ensures robust analysis, accounting for individual bank characteristics over time. However, the study is limited to seven banks and excludes other important financial and macroeconomic variables that could further explain profitability dynamics, indicating opportunities for future research. In conclusion, this research highlights that optimizing loan portfolio utilization and capital adequacy are critical strategies for maintaining bank profitability and stability amid industry transformation. Policymakers and bank managers should endeavor to balance liquidity and capital adequacy requirements carefully to support sustainable growth. Future studies are encouraged to expand the scope by including a broader set of banks, incorporating additional financial ratios, and considering external economic factors to deepen the understanding of bank performance drivers.

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