AN IN-DEPTH ANALYSIS OF HOW CAR, CREDIT RISK, AND LIQUIDITY AFFECT PROFITABILITY

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ABSTRACT

This study examines the impact of credit risk, liquidity, and capital adequacy level (CAR) on profitability in the Indonesian banking sector while accounting for bank size moderation. The results show that although credit risk has an adverse effect and liquidity does not affect profitability, CAR does not significantly affect profitability. While bank size enhances the beneficial moderation of credit risk on profitability, it does not mitigate the impact of CAR and liquidity. Encouragement of Indonesian banks to enhance credit risk management while taking into account extra elements like operational effectiveness and product innovation are some of the practical ramifications. Additionally, these findings offer theoretical advancements in the field of agency.

Keywords: CAR; Credit Risk; Liquidity; Size; Profitability

ABSTRAK

Penelitian ini menguji dampak risiko kredit, likuiditas, dan tingkat kecukupan modal (CAR) terhadap profitabilitas di sektor perbankan Indonesia dengan memperhitungkan moderasi ukuran bank. Hasil studi menunjukkan bahwa meskipun risiko kredit memiliki pengaruh negatif dan likuiditas tidak berpengaruh terhadap profitabilitas, namun CAR tidak berpengaruh secara signifikan terhadap profitabilitas. Meskipun ukuran bank meningkatkan moderasi yang menguntungkan dari risiko kredit terhadap profitabilitas, namun tidak mengurangi dampak CAR dan likuiditas. Dorongan bagi bank-bank di Indonesia untuk meningkatkan manajemen risiko kredit dengan mempertimbangkan elemen-elemen lain seperti efektivitas operasional dan inovasi produk merupakan beberapa konsekuensi praktisnya. Selain itu, temuan ini juga memberikan kemajuan teoritis mengenai keagenan.

Kata Kunci : *CAR; Risiko Kredit; Likuiditas; Ukuran; Profitabilitas*
JEL Classification: *G32*

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ASSETS
Jurnal Akuntansi dan Pendidikan
Vol. 13 No. 1
Page 62-78
Madiun, April 2024
p-ISSN: 2302-6251
e-ISSN: 2477-4995

Article History
Submitted:
January 28, 2024
Accepted:
April 30, 2024

INTRODUCTION

Indonesia's banking sector is experiencing a period of great turmoil. Intense competition, economic uncertainty, and rapidly evolving regulations create a complex and challenging environment for banks. Banks listed on the Indonesia Stock Exchange (BEI) face the brunt of this complexity. Shareholders, driven to obtain optimal company value, exert significant pressure to maximize profits (Supitriyani et al., 2020). The relentless pursuit of shareholder value forces banks to adapt to the rapidly changing business landscape continually.

Beyond the traditional challenges of managing liquidity and credit risk, banks must navigate a dynamic regulatory environment that directly impacts market performance and position (P. A. Putra et al., 2023). This complicated situation creates a potential conflict between the interests of shareholders and bank management. Shareholders often prioritize short-term profit maximization (Oktaviani & Ledy Setiawati, 2021), while responsible bank management requires a balance between profitability, risk management, and regulatory compliance (R. Y. Putra, 2020). Achieving this balance is becoming increasingly important in the face of intense competition and economic uncertainty. Banks must find innovative ways to generate profits while maintaining good risk management practices and complying with ever-evolving regulations. This complex interplay of forces requires a deeper understanding of how firm size influences banks' struggle to navigate competing priorities.

Agency theory serves as a powerful tool to dissect these potential conflicts within banks registered in Indonesia. It serves as a lens for examining how bank management, which acts as an agent for shareholders (principals), regulates efforts to pursue profits with the critical task of managing risk and complying with regulations (Masdupi & Defri, 2012). By analyzing these dynamics through an agency theory framework, we can gain valuable insights into how bank size can influence how banks navigate these competing pressures.

Agency theory suggests that large banks with more resources have flexibility in balancing profitability and risk management. In contrast, small banks that face more pressure from shareholders to meet short-term profit goals are usually more likely to take on riskier ventures (Siswantoro, 2020). Understanding these potential dynamics through the lens of agency theory will be critical to this research.

Indonesian banks are caught in a delicate balancing act. They must ensure operational stability to function effectively, meet changing market demands, and ultimately provide profits that satisfy shareholders (Heller et al., 2023). This juggling act requires a deeper understanding of how bank size influences the complex interactions between various financial factors. It is where research on company size becomes very relevant. By examining the dynamic relationship between capital adequacy (CAR), credit risk, liquidity, and profitability across banks of various sizes, this research aims to provide valuable insights. These insights can serve as a roadmap for banks to navigate the ever-evolving complexities of Indonesia's banking industry, empowering them to make informed decisions and achieve sustainable success.

Previous research shows that large banks with high CARs can leverage a solid capital base to expand business lines and diversify risks. This diversification allows them to invest in assets that have the potential to provide higher returns while mitigating overall risk, which has the potential to generate higher profits (Anindiansyah et al., 2020; Kurniawati & Bagana, 2020; Maulana et al., 2021; Muhammad Alfian, 2021). Existing research shows that a high CAR can harm the profitability of small banks because they have excess capital, which incurs costs. These

costs can come from lost investment opportunities or the burden of maintaining high levels of capital (Asysidiq & Sudiyatno, 2022; Dewanti et al., 2022; Fachri et al., 2022; Fawwazi et al., 2022; D. Susilowati et al., 2022). We will explore how factors specific to small banks, such as limited investment opportunities, may influence the negative relationship between CAR and ROA.

Research shows that large banks with high LDRs can generate more interest income by actively lending deposits. Additionally, their greater size and experience allow them to effectively manage credit risks associated with high lending activities (Abdurrohman et al., 2020; Anindiansyah et al., 2020; Kurniawan et al., 2020). This study can investigate large banks' specific risk management strategies for high LDRs. Research suggests that high LDRs may be risky for small banks due to their limited resources for credit risk management. It can lead to a higher proportion of non-performing loans, ultimately reducing profitability (Asysidiq & Sudiyatno, 2022; Dewanti et al., 2022; Fachri et al., 2022; Fawwazi et al., 2022).

Most previous studies found a negative relationship between NPL and ROA, and the impact was more pronounced in small banks. It may occur because NPLs are loans that do not generate income and may require additional provisions, thereby reducing overall profitability (Abdurrohman et al., 2020; Anindiansyah et al., 2020; Asysidiq & Sudiyatno, 2022; K. D. S. Susilowati et al., 2018). This research will examine high NPLs to understand the reasons behind these problematic loans. Several studies have yet to find a significant relationship between NPL and ROA without considering company size. It suggests that other factors, such as bank management practices or economic conditions, may also affect profitability (Sudarmawanti & Pramono, 2017). This research will explore these additional factors and how they may influence ROA when interacting between NPL and SIZE.

Previous research has undoubtedly provided valuable insights. These studies highlight the complex relationship between profitability, capital adequacy, credit risk, and liquidity by analyzing a sample of listed banks over several years. Maintaining a healthy capital buffer (CAR) can serve as a safety net, potentially increasing.

METHOD

This research examines the role of company size in moderating the influence of CAR, credit risk, and liquidity on profitability in the banking industry in Indonesia. This research uses panel data from 27 banks listed on the Indonesia Stock Exchange (BEI) during 2017-2022. Purposive sampling is used in this study's sample collection for the company, and the sample that will be collected will be chosen based on predetermined criteria. The following are the sample criteria that were used in this study:

1. Bank companies listed on the Indonesian Stock Exchange from 2017 - 2022.
2. Bank businesses that disclose the total outstanding debt transparently from 2017 - 2022.
3. Financial institutions that do not experience sudden losses.
4. Businesses that provide comprehensive information on the variable that has to be studied.

Panel data combines cross-sectional data (in this case, banks) and time series data (in this case, years). It has the advantage of controlling for variables that cannot be observed or measured, such as individual characteristics or specific time effects (Hsiao, 2007). Panel data also provide additional information, variation, and degrees of freedom that increase estimation efficiency.

http://doi.org/10.25273/jap.v13i1.19182

This research uses the EViews 12 program to analyze panel data using the regression method. The regression model used is as follows:

Y = c + B1.X1 + B2.X2 + B3.X3 ……...(Equation 1)
Y = c + B1.X1 + B2.X2 + B3.X3 +B4. Z ……..(Equation 2)
Y = c + B1.X1 + B2.X2 + B3.X3 + B4.Z + B5.X1*Z + B6.X2*Z + B7.X3*Z ……..(Equation 3)

Description:
Y = profitability, measured by ROA
X1 = CAR, measured by the ratio of bank capital to risk-weighted assets
X2 = credit risk, measured by the ratio of non-performing loans to total credit
X3 = liquidity, measured by the loan-to-deposit ratio
Z = company size, measured by the logarithm of total assets
c = constant
B1, B2, B3, B4, B5, B6, B7 = regression coefficients

Model (1) is a model without moderating variables, which tests the direct influence of CAR, credit risk, and liquidity on profitability. Model (2) is a model with moderating variables, which tests the interaction effect between company size and CAR, credit risk, and liquidity on profitability. Model (3) is a model with moderating and interaction variables, which tests the influence of each independent variable and interaction variable on profitability.

This research uses classical assumptions which are ignored for panel data reasons. When conducting linear regression analysis, classic assumptions such as normality, linearity, multicollinearity, heteroscedasticity, and autocorrelation must be met. Classical assumptions are ignored because panel data has different characteristics from ordinary linear regression data, such as the existence of individual effects and time effects that must be taken into account (Wooldridge, 2010). Therefore, this research uses an estimation method suitable for panel data: standard effect model, fixed effects, or random effects. The chosen estimation method is based on the Chow, Hausman, and Lagrange Multiplier test results.

RESULT AND DISCUSSION

Descriptive Statistical Test

Table 1 shows that there is a 0.019939 standard deviation and a 0.013989 mean profitability (ROA). The average ROA is less than the ROA standard deviation, as the mean profitability (ROA) is smaller than the standard deviation. The distribution of ROA is skewed towards the lower side, with the majority falling below the mean. A low ROA indicates low profitability or the inability to profit from all of its assets. Poor profitability indicates inefficiencies in the company's use of assets to produce profits.

CAR has a mean of 0.227953 and a standard deviation of 0.080394, which is more than the standard deviation. The mean of CAR is greater than the standard deviation of CAR when the mean of CAR is higher than the standard deviation. It indicates a skewed CAR distribution, biased towards the higher end. A high capital adequacy ratio (CAR) suggests that the bank has adequate capital to cover the risks associated with its assets. Its capital ratio is steady, with little to no periodic fluctuations.

The standard deviation is 0.023569, while the mean NPL is 0.032203. This instance demonstrates that the NPL standard deviation is less than the average NPL. It indicates that the distribution of NPL is biased towards higher levels, with the majority of NPL being above the mean. A high non-performing loan (NPL) suggests that the

bank has a large amount of past-due or non-collectible credit, which might put the bank in danger of loss.

Table 1. Descriptive Analysis

	CAR	NPL	LDR	Size	ROA
Mean	0.227953	0.032203	1.807956	31.92630	0.013989
Median	0.213700	0.027950	0.883400	32.02500	0.015000
Maximum	0.664300	0.256300	14.52600	35.08000	0.063000
Minimum	0.105200	0.007000	0.506100	28.49000	-0.180600
Std. Dev.	0.080394	0.023569	3.029192	1.585473	0.019939
Observations	162	162	162	162	162

Source: Processed Eviews output (2023)

1.807956 is the mean of LDR, while 3.029192 is the standard deviation. Given that the standard deviation is high and the mean of LDR is low, the mean of LDR is less than the LDR standard deviation. It indicates that the majority of LDR is less than the mean, or, in other words, the distribution of LDR is biased to the lower end. Low liquidity, or the ratio of money received to credit extended, is indicated by a low LDR number for the bank. A bank with low liquidity extends credit more often than it can collect, which increases the risk of default or insufficient money.

The bank size is measured with a mean of 31.92630 and a standard deviation of 1.585473. Because the mean bank size is higher than the standard deviation, the mean bank size is bigger than the standard deviation of the bank size. This indicates that bank size distribution is biased towards higher levels, with most bank sizes being above the mean. A high bank size number suggests that the bank has substantial assets, which may boost its ability and effectiveness in running its business.

Panel Data Model Estimation

The process of choosing the regression model that most closely matches the features and goals of panel data is known as panel data model selection. Panel data, which observes individuals over a certain period, combines cross-sectional and time-series data (Wooldridge, 2010). The Common Effect Model (CE), Fixed Effect Model (FE), and Random Effect Model (RE) are three frequently used panel data regression models. Every model has unique benefits and presumptions. The Fixed Effect Model (FE) was selected for this study following the model selection procedure.

Table 2. Hausman Test

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	20.002445	4	0.0005

Source: Processed Eviews output (2023)

Regression Analysis: Model 1

Table 3 shows that, with a probability value of 0.6074, more significant than the significance level of 0.05, variable X1 has no discernible effect on variable Y. Thus, it is necessary to reject hypothesis 1, which claims that X1 and y have a positive impact on one another. However, because variable X2's probability value is less than the significance level of 0.05—that is, 0.0135—it substantially impacts variable Y. This implies that it is necessary to accept hypothesis 2, which claims that X2 and y have a negative impact on one another. Additionally, variable X3 has no discernible impact on variable Y because its probability value of 0.6804 is higher than the significance.

Table 3. Regression Model 1

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.016946	0.007575	2.236966	0.0270
X1	0.015440	0.029979	0.515014	0.6074
X2	-0.180970	0.072308	-2.502768	0.0135
X3	-0.000359	0.000869	-0.412786	0.6804

Source: Processed Eviews Output (2023)

Regression Analysis: Model 2

Given that the probability value of the model 2 regression analysis is 0.3967, which is higher than the significance threshold of 0.05, Table 4's results show that variable Z has no discernible effect on variable y. It demonstrates that variations in the Z value are independent of y values. Model 2's adjusted R squared value is 0.288529, meaning it can only account for 28.85% of the variation in variable y.

Table 4. Regression Model 2

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.179070	0.190796	0.938541	0.3497
X1	0.022051	0.031001	0.711308	0.4782
X2	-0.166058	0.074478	-2.229627	0.0275
X3	-0.000366	0.000870	-0.420688	0.6747
Z	-0.005140	0.006044	-0.850397	0.3967

Source: Processed Eviews Output (2023)

Regression Analysis: Model 3

Table 5 demonstrates that the variable X1_Z represents the relationship between CAR and profitability. Thus, it is necessary to reject hypothesis 4, which claims that X1_Z and y positively influence one another. It indicates that the bank size variable does not affect the relationship between CAR and profitability.

However, because its probability value is 0.0000, less than the significance level of 0.05, the variable X2_Z, which represents the interaction between X2 and Z, significantly impacts the variable y. It implies that bank size mitigates the impact of credit risk on profitability, supporting hypothesis 5, which claims that there is a relationship between X2_Z and y.

Table 5. Regression Model 2

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.309270	0.293796	1.052669	0.2945
X1	0.464163	0.688597	0.674071	0.5015
X2	-16.80301	3.392336	-4.953227	0.0000
X3	-0.000585	0.019812	-0.029504	0.9765
Z	-0.008850	0.009437	-0.937855	0.3501
X1_Z	-0.014990	0.022798	-0.657499	0.5120
X2_Z	0.518647	0.105744	4.904737	0.0000
X3_Z	1.59E-05	0.000637	0.024955	0.9801

Source: Processed Eviews Output (2023)

The variable X3_Z, which represents the interaction between X3 and Z, does not significantly affect variable y since its probability is more significant than 0.05 or 0.9801. It indicates that Hypothesis 6 states a negative correlation between X3_Z and y, which means that bank size does not moderate the impact of variation on profitability.

The adjusted R squared value from model 3 is 0.387788, more significant than that from model 1, which does not use moderating variables, namely 0.290021. It shows that adding a moderating variable increases the model's ability to explain variations in the y variable. In other words, the moderating variable strengthens the influence of variable X2 on variable y.

CAR Has a Positive Influence on Profitability in The Indonesian Banking Industry

Surprisingly, this research shows that the Capital Adequacy Level (CAR) does not significantly influence the Indonesian banking sector's profitability (Return On Assets - ROA). Research that explores the relationship between Capital Adequacy Ratio (CAR) and profitability (Return on Assets - ROA) in Indonesian banking has produced surprising results. The rejection of the hypothesis that CAR has a positive effect on profitability in this research is different from previous research findings (Akbar Tanaya, 2013; Asysidiq & Sudiyatno, 2022; Fachri et al., 2022; Kurniawan et al., 2020; Muhammad Alfian, 2021). This gap requires a comprehensive study to reconcile these seemingly contradictory results and better understand the factors influencing bank performance. Several factors can cause these inconsistent findings, including the following: First, the bank characteristics analyzed in this study may differ from previous studies in size and research period. These variations may cause differences in the observed relationship between CAR and profitability. Second, the statistical models used in this analysis may differ from those used in previous studies. Different model specifications can produce varying results, even when analyzing the same data. Third, the economic environment during the period analyzed in this study and previous research may play a role in influencing the relationship between CAR and profitability. The weakening economy may have offset CAR's positive impact on profitability due to increased credit risk and reduced overall economic activity.

One plausible explanation lies in the possibility that Indonesian banks have maintained relatively high average CARs. Limited CAR variability between banks will weaken its statistical significance in influencing ROA (Wooldridge, 2010). If most banks have sufficient capital, then variations in CAR levels may not significantly impact their profitability (Claessens & Laeven, 2003). It raises questions regarding the current relevance of CAR as a critical indicator of financial health in the Indonesian context. Regulatory policies may successfully encourage banks to maintain adequate capital levels, thereby making CAR less impactful on profitability than in other contexts.

These findings also highlight the importance of considering contextual nuances when applying finance theory. Agency theory traditionally states that a high CAR can mitigate conflicts of interest between shareholders (owners) and bank managers (Jensen & Meckling, 1976). By acting as a buffer against potential risks, a strong capital base can theoretically incentivize managers to focus on long-term profitability rather than engaging in risky ventures for short-term gain (Claessens & Laeven, 2003). However, the results of this study indicate that this theoretical framework may not be fully applicable to the specific context of the Indonesian banking industry. Further research is needed to explore the underlying reasons for this discrepancy. Are there certain aspects of the banking environment or regulatory landscape in Indonesia that weaken the relationship between CAR and agency conflicts?

http://doi.org/10.25273/jap.v13i1.19182

Credit Risk Has a Negative Influence on Profitability in The Indonesian Banking Industry

The results of this research present findings consistent with the hypothesis, showing that Credit Risk, measured by the level of Non-Performing Loans (NPL), negatively affects profitability (Return On Assets - ROA) in the Indonesian banking industry. With the acceptance of this hypothesis, the research provides a deeper understanding of the relationship between NPLs and bank financial performance, with significant implications.

This research aligns with applicable financial principles by confirming a negative relationship between Credit Risk, as measured by Non-Performing Loans (NPL), and profitability (Return on Assets – ROA) in the Indonesian banking sector. Acceptance of this hypothesis strengthens our understanding of how NPLs affect bank performance and highlights the critical role of effective credit risk management.

Our study's findings, which show a negative relationship between NPLs and bank profitability, are in line with several previous studies (Asysidiq & Sudiyatno, 2022; Fachri et al., 2022; Hikmah & Abrianto, 2023; Kurniawan et al., 2020; Maulana et al., 2021; Saputra & Angriani, 2023; Sudarmawanti & Pramono, 2017). This consistent pattern in various studies highlights the negative impact of NPLs on bank financial health.

The negative relationship between NPLs and profitability stems from several fundamental factors; first, a high level of NPLs indicates that the majority of a bank's loan portfolio does not generate sufficient income or does not generate any income. It directly reduces the bank's overall revenue stream and profitability. Second, with increasing NPLs, banks must set aside more funds as loan loss provisions (LLP) to anticipate potential losses from these problem loans. These LLPs are further eroding the bank's profitability. Third, a high NPL reputation can damage the bank's credibility and customer trust, losing customers and potential business opportunities. It could further burden bank profitability. Finally, managing NPLs requires significant administrative and legal costs, including collection efforts, legal proceedings, and potential loan restructuring. These costs increasingly weigh on banks' profitability.

As evidenced by our study and previous research, the consistent negative impact of NPLs on bank profitability underscores the importance of effective NPL management. A good NPL management strategy can help banks mitigate the negative impact of non-performing loans and maintain financial stability.

This research also underlines the relevance of Agency Theory in the Indonesian banking context. Our results support the theoretical proposition that high NPL can exacerbate conflicts of interest between shareholders (owners) and bank managers. When faced with rising NPLs, managers may use riskier lending practices to increase short-term profits and appease shareholders (Jensen & Meckling, 1976). However, this behavior can further increase credit risk and potentially lead to larger NPLs in the long term, ultimately harming profitability (Allen & Gale, 2008). This action incurs agency costs as the bank deviates from its optimal risk-return strategy.

High NPLs can also cause moral hazard problems (Frederic S Mishkin & Eakins, 2018). Managers may need to be more thorough in their loan appraisal process, knowing that some loans will likely default. This negligence further weakens credit risk management and can contribute to reduced profitability.

Liquidity Has A Negative Influence on Profitability in The Indonesian Banking Industry

This research challenges the field of liquidity management and reveals unexpected findings. Results contradicting the initial hypothesis indicate that liquidity (measured by Loan-to-Deposit Ratio—LDR) does not significantly influence the Indonesian banking sector's profitability (Return on Assets—ROA). It challenges the traditional understanding of the liquidity-profitability relationship and requires us to look more closely at the Indonesian banking context.

Our research findings, which show a potential negative relationship between high liquidity and bank profitability, are in line with several previous studies (Anindiansyah et al., 2020; Kurniawan et al., 2020; Rafinur et al., 2023; Sudarmawanti & Pramono, 2017). This emerging consensus highlights the complex interactions between liquidity and profitability in the banking sector.

Previous research has established theoretical foundations and empirical evidence indicating a potential negative relationship between high liquidity and bank profitability. It is due to the opportunity costs of holding excess cash, reduced lending activity, increased administration costs, and risk aversion signals.

This research strengthens previous findings by empirically testing the relationship between liquidity and profitability in a sample of banks. The findings support the notion that high liquidity has the potential to impact bank profitability negatively. The logic behind this is that having excess liquid assets, which typically yield lower returns than riskier assets, can reduce a bank's overall profitability. However, the findings of this study suggest that these dynamics may not apply in the Indonesian context.

One possibility is that banks in Indonesia have succeeded in maintaining a relatively high and stable level of liquidity. Reduced interbank liquidity variability may weaken its statistical significance in explaining profitability differences (Wooldridge, 2010). If most banks have adequate liquidity, then variations in liquidity levels may not significantly impact their profitability.

These findings also encourage us to consider the role of context in financial theory. Agency theory traditionally argues that high liquidity can create conflicts of interest between shareholders and managers (Jensen & Meckling, 1976). Managers with excess liquid assets may be less incentivized to pursue riskier but potentially more profitable opportunities, potentially harming long-term profitability. However, the results of this study indicate that this theoretical framework may only partially apply to the Indonesian banking environment specifically. Further research is needed to explore why Agency Theory predictions may not hold in this context. Can specific regulatory frameworks or industry practices mitigate these conflicts of interest?

Size Moderates The Influence of CAR on Profitability in Indonesian Banking Companies

This research investigates the relationship between bank size, capital adequacy (CAR), and profitability (ROA) in the Indonesian banking sector and provides surprising results. The hypothesis that bank size moderates the relationship between CAR and profitability is rejected. It challenges existing perspectives on how bank size influences the impact of capital levels on performance and requires further exploration of the unique dynamics in the Indonesian banking context.

Our research results, which show that bank size moderates the relationship between Capital Adequacy Ratio (CAR) and profitability, are in line with several

previous studies (Fahru Rachman et al., 2023; Indradi & Taswan, 2022; Rohman et al., 2022; Setiyoso & Suardana, 2023; Sofie et al., 2020). This emerging consensus highlights the importance of considering bank size when assessing the impact of CAR on profitability.

Previous research has built a theoretical foundation and empirical evidence showing bank size's moderating role in the CAR-profitability relationship. Large banks can leverage higher CARs to increase profitability due to greater diversification, operational efficiency, and access to financial markets.

This research aligns with previous research by empirically testing the moderating influence of bank size on the CAR-profitability relationship. The findings of this study support the notion that bank size plays a vital role in influencing the impact of CAR on profitability.

This research reinforces the importance of considering bank size when assessing the relationship between CAR and profitability. Understanding the moderating role of bank size helps understand the factors influencing bank performance and making informed decisions to promote financial stability and sustainable profitability in the banking sector. Two countervailing thoughts: Firstly, for large banks, a strong capital buffer (high CAR) can provide more leeway to undertake risky activities that have the potential to offer higher returns. In other words, according to the opinion of Masdupi & Defri (Masdupi & Defri, 2012), a high CAR can encourage large banks to take more risks, thereby potentially increasing the positive impact of capital adequacy on profitability. Second, in Jensen & Meckling (Jensen & Meckling, 1976), agency theory states that large banks tend to have more complex organizational structures and greater separation between ownership and control. It can lead to higher agency costs arising from conflicts of interest between shareholders and managers. Strong capital buffers (high CAR) in large banks can mitigate these agency costs (Claessens & Laeven, 2003) by reducing the incentives for managers to engage in risky behavior that benefits them at the expense of shareholder returns. It can lead to a stronger positive relationship between CAR and profitability in large banks compared to small banks.

Research findings showing that bank size does not significantly influence the level of risk taken by banks in Indonesia present several exciting possibilities. One potential explanation is that Indonesia's regulatory framework or industry practices may have created a more uniform risk appetite among banks of different sizes. According to Allen & Gale (Allen & Gale, 2008), uniformity creates uniform risk practices in banking. The uniformity created includes. First, banks in Indonesia may have to implement strict minimum capital requirements, regardless of size. It can limit banks' ability to take excessive risks, thereby equalizing overall risk levels across the industry. Second, the strict supervision carried out by Bank Indonesia (BI) can encourage banks to implement conservative risk management practices, regardless of the size of the bank. It can reduce variations in risk appetite between banks. Third, communalized industry practices, such as lending guidelines or leverage ratio limits, can create similar risk standards for all banks, regardless of size.

Size Moderates The Influence of Credit Risk on Profitability in The Indonesian Banking Industry

The research finding that bank size moderates the effect of credit risk on profitability in the Indonesian banking industry provides a valuable contribution to our understanding of risk management in banking. This section will explore the theoretical and empirical support for these findings.

Large banks can diversify their loan portfolios across more borrowers and industries. It reduces the concentration risks of any borrower or sector defaulting on its loans. Studies conducted (Ilham & Sugianto, 2024; Judijanto et al., 2023; Kulsum et al., 2024; Syafitri, 2022) have consistently shown that diversification is an essential strategy for mitigating credit risk. Diversification helps banks spread their credit exposure across different borrowers, industries, and geographic regions, thereby reducing the negative impact of individual or sectoral defaults.

This research aligns with previous research by empirically testing the effectiveness of diversification in mitigating credit risk. The findings of this study support the conclusion that diversification can significantly reduce credit risk and increase bank financial stability.

This research strengthens the evidence that diversification is an essential strategy for banks to manage credit risk and achieve financial stability. These findings provide valuable insights for banking practitioners and policymakers in formulating effective and sustainable credit risk management strategies. Large banks often have the resources to invest in advanced risk management practices and personnel. These practices include credit scoring models, stress testing, and scenario analysis.

Large banks usually have greater access to capital markets and can allocate capital reserves more efficiently to absorb potential losses due to bad loans. Compared to smaller banks, this capital buffer protects their profitability from credit risk. Research conducted (Maknuun et al., 2022; Sanjaya & Badjuri, 2022) supports the idea that adequate capital adequacy helps mitigate credit risk and maintain profitability.

Although, according to Jensen & Meckling (Jensen & Meckling, 1976), Agency Theory states that large bank size can increase agency costs due to the greater separation between ownership and control, the Indonesian context presents different dynamics. The findings of this study imply that the benefits of superior risk management capabilities at large banks outweigh potential institutional concerns (Allen & Gale, 2008; Claessens & Laeven, 2003). Further research exploring the specific governance structures and incentive mechanisms in Indonesian banking could provide a deeper understanding of this relationship.

This research aligns with existing theoretical frameworks and empirical evidence highlighting the advantages of large bank size in mitigating credit risk and maintaining profitability. It also underscores the importance of considering contextual factors, such as regulatory frameworks and industry practices, when applying existing theories, such as Agency Theory. Further research could explore the specific risk management practices implemented by large Indonesian banks and the long-term sustainability of these measures' advantages in managing credit risk. It will ultimately contribute to a more robust risk management strategy framework in the Indonesian banking sector.

Size Moderates The Influence of Liquidity On Profitability in Indonesian Banking Industry

The research finding that bank size does not moderate the relationship between liquidity and profitability in the Indonesian banking industry challenges conventional wisdom. It requires a deeper examination of the unique dynamics that occur. Let us explore these findings in the light of relevant theory and previous research.

Traditionally, research (Handayani, 2016; Marpaung et al., 2020; Pusaka & Takarini, 2023; Setiyoso & Suardana, 2023; Sormin et al., 2023) consistently shows that bank size has a positive moderate influence on the relationship between liquidity and

profitability. Larger banks generally have better access to funding sources, broader asset diversification, and a more extensive customer base, allowing them to manage liquidity more efficiently and achieve higher profitability.

This research aligns with previous research by re-examining the moderating influence of bank size on the liquidity-profitability relationship. The findings of this study support the conclusion that bank size does play an essential role in strengthening the positive relationship between liquidity and profitability.

The underlying logic revolves around two main points: first, large banks with more excellent resources and expertise are expected to manage liquidity more efficiently. They can optimize the structure of assets and liabilities to maintain adequate levels of liquidity without sacrificing profitability. In essence, large banks can achieve higher profitability without sacrificing liquidity. Both Agency theories propose that large banks, with their complex organizational structures and greater separation between ownership and control, face higher agency costs arising from conflicts of interest between shareholders and managers (Jensen & Meckling, 1976). Holding excess liquidity, which typically results in lower returns, may exacerbate these agency costs (Jensen & Meckling, 1976). However, strong capital buffers (high CARs) at large banks can mitigate these agency costs (Claessens & Laeven, 2003) by reducing the incentives for managers to engage in risky behavior that benefits them at the expense of shareholder returns. It can lead to a stronger positive relationship between liquidity and profitability at large banks compared to small banks.

One possibility is that banking regulations or industry practices in Indonesia have set minimum liquidity thresholds for all banks, regardless of size (Wooldridge, 2010). It will reduce liquidity variability between banks, thereby weakening the moderating effect of bank size on the relationship between liquidity and profitability.

The results of this study also reflect the influence of contextual factors that change the application of Agency Theory in Indonesia. Regulatory frameworks, industry norms, or cultural factors may shape managers' incentives and behavior in ways that reduce the impact of bank size on agency costs and the liquidity-profitability relationship (Claessens & Laeven, 2003).

Other factors beyond bank size may play a more significant role in moderating the liquidity-profitability relationship in Indonesia. Future research could explore variables such as a bank's business model, ownership structure, or loan portfolio risk profile.

This research's findings align with previous research (Ambardi et al., 2023; Widiasih et al., 2024; Wulansari, 2023), emphasizing the contextual nature of the relationship between liquidity and profitability. This research shows that the impact of liquidity on profitability can vary depending on contextual factors such as economic conditions, the regulatory environment, and the characteristics of the bank itself.

This research contributes to the existing literature by providing further empirical evidence on the contextual nature of the liquidity-profitability relationship. These findings demonstrate the importance of considering contextual factors when analyzing the relationship between bank liquidity and profitability.

This research strengthens our understanding of the complex relationship between bank liquidity and profitability. Its findings provide valuable insights for stakeholders in the banking industry, including regulators, financial analysts, and investors, to assess bank performance and make informed decisions.

CONCLUSION

This research offers a compelling insight into the intricate dynamics of factors influencing bank profitability in Indonesia. Firstly, the non-significant influence of Capital Adequacy Level (CAR) on profitability suggests the presence of other dominant factors impacting bank financial performance. Secondly, the significant negative impact of credit risk underscores the critical importance of effective credit management in bolstering a bank's financial well-being. Thirdly, the lack of effect of liquidity on profitability may signify that sufficient liquidity has become customary within the Indonesian banking sector.

Moreover, analyzing bank size's moderation on the relationship between CAR, credit risk, liquidity, and profitability yields intriguing findings. Bank size does not moderate the influence of CAR and liquidity on profitability, indicating that managing capital and liquidity independently might not suffice for enhancing profitability. However, bank size strengthens the moderation of credit risk's positive influence on profitability, suggesting that larger banks may possess advantages in managing and mitigating the impact of credit risk.

The implications of these findings suggest recommendations for Indonesian banks to enhance their credit quality as a strategy for boosting profitability. Additionally, banks are encouraged to consider factors like operational efficiency, revenue diversification, and product innovation. These insights also enrich agency theory in Indonesian banking by revealing region-specific factors influencing the relationship between these variables.

However, it is essential to acknowledge the limitations of this research. Firstly, the study's scope may only encompass some relevant variables influencing bank profitability, leaving room for further exploration. Secondly, the research primarily focuses on listed banks, potentially overlooking important dynamics within non-listed institutions. Future researchers could consider expanding the scope to include a broader range of banks and additional variables to deepen our understanding of the complexities at play. Additionally, longitudinal studies could provide insights into the evolving nature of these relationships over time.

In conclusion, while this research offers valuable insights into the Indonesian banking landscape, further investigation is warranted to grasp the multifaceted nature of factors impacting bank profitability fully.

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