Yayasan Literasi Ilmiah Indonesia

BizNOMIC: International Journal of Business and Economics Vol. 1 No. 4 October 2026

Does Financial Performance Matter for Firm Value in Indonesia Banks?

Ratnaningrum[1]*, Mutiara Suci Ramadhani[2]
[1,2]Sekolah Tinggi Ilmu Ekonomi Studi Ekonomi Modern, Sukoharjo, Indonesia
*e-mail: ratna@stiestekom.ac.id

Article History
Received:
5 September 2026
Revised
24 September 2026
Accepted:
29 September 2026
Available online:
31 October 2026

Keywords:
Capital Adequacy Ratio;
Net Interest Margin;
Liquid Assets to Total Assets;
Firm Value;
Banks;

Hak Cipta (c) 2026 BizNOMIC: International Journal of Business and Economics

Artikel ini berlisensi Creative Commons Attribution-ShareAlike 4.0 International License.

ABSTRACT

Purpose: The purpose of this study is to give empirical evidence about the effect of capital adequacy ratio (CAR), liquidity and profitability toward firm value on Indonesian listed banks with special attention to the role of moderation of Net Interest Margin (NIM) in the relationship between CAR and firm value.

Method: This study uses a quantitative method employing panel data regression with Fixed Effects and Random Effects models. The population is the banks listed on the Indonesia Stock Exchange in 2020-2023, while the sample is the selected listed banks that fulfillll the research criteria. Tobin's Q is used as a measure of firm value, Liquid Assets to Total Assets (LATA) is used as a proxy for liquidity and NIM is used as a measure of profitability

Finding: The results indicate that NIM has a positive and significant effect on firm value, while CAR has no significant effect on firm value. LATA is negatively related to firm value which suggests higher liquidity might be associated with lower operational efficiency. Furthermore, the interaction effect between CAR and NIM is insignificant, suggesting that investors evaluate the capitalisation and profitability separately

Novelty: The novelty of this study lies in examining the moderating role of NIM in the relationship between CAR and firm value within the Indonesian banking sector during the 2020–2023 period, providing evidence on the relative importance of profitability and prudential indicators in explaining bank valuation in an emerging market.

PUBLISHER:
Yayasan Literasi Ilmiah Indonesia
Yogyakarta, Indonesia

INTRODUCTION

The performance of the banking sector has a vital influence on economic development and stability, and its signals serve as essential cues for investments, which is usually measured by ratios including Tobin's Q (Butt et al., 2023). The growing literature on banking sustainability and resilience highlights the importance of evaluating financial performance indicators in contemporary banking markets (Hasan, 2025). For developing nations such as Indonesia, such signals have gained even more prominence during the post-pandemic and digital age as financial mechanisms and expectations change significantly. Financial signaling theory asserts that financial information conveyed by banks affects the perception of investors and thus their valuations (Ghazalat, 2025). For this reason, three financial measures, namely, CAR, LATA, and NIM, will be used since they can signal solvency, liquidity, and profitability.

Previous studies on the subject matter reveal conflicting findings. The literature states that CAR increases earning quality and, thus, enhances firm value (Novianti & Kuswanto, 2020) or increases profitability (Ali, 2022) of companies, though some studies indicate the insignificance of CAR on market valuation (Sar & Panigrahi, 2025). The liquidity performance of companies has also received mixed research outcomes. While Jagirani, Lim and Kosim (2023a) revealed that LATA was not significantly associated with firm value, Ahmad *et al.* (2023) revealed the moderation effect of LATA.

Liquidity can increase stability but decrease efficiency (Kamran et al., 2022), and its effects are often contingent upon firm characteristics such as size (Tarawallie & Bein, 2025). Prior evidence from Indonesian regional banks suggests that liquidity-related indicators remain closely associated with banking performance and operational sustainability (Hasan, 2024). The profitability indicators also show different results especially NIM. Higher NIM might improve investor confidence (Novianti & Kuswanto, 2020). Further, there exist studies which state that the influence of liquidity and net interest margin on the stock price is influenced by certain risk and efficiency variables (Sar & Panigrahi, 2025). In addition, the influence of asset quality and credit risk in defining profitability and value can be illustrated in the works of Kasie, Onyenwe and Rita (2023); Yahaya *et al.* (2022).

Indonesia is a unique empirical setting because the post-pandemic and digital transformation era has redefined the banking behavior. The regulatory reforms in the Fintech industry led to substantial changes in CAR, NIM, LDR, ROA and NPL indicators.

Suryanto *et al.* (2022) observed that due to COVID-19 and rapid digitalisation, banks restructured portfolios, increased capital buffers, and handled narrowing interest margins. Markets became more uncertain and investors began to pay more attention to signals of profitability rather than traditional measures of stability. Such conditions raise the question of whether CAR, LATA and NIM are still reliable determinants of firm value in a post-crisis, digitally transforming economy. Thus, this raises the question of whether CAR, LATA, and NIM remain relevant determinants of firm value in a post-crisis, digitally transformed economic environment.

Institutional dynamics make things more complicated. Studies in African and Asian banks show that profitability and valuation are determined by the interaction of capital and liquidity with governance effectiveness, political stability, diversification and macroeconomic factors (Tsekpo and Wahua, 2023; Osifo and Evbayiro-Osagie, 2020; Abbas, Ali and Ahmad, 2023). However, the relation between CAR, liquidity measures and profitability, especially in the case of NIM, is still under-explored in the case of emerging markets undergoing technological and regulatory transitions.

This study examines the effect of CAR, LATA, and NIM on the firm value of Indonesian listed banks during 2020–2023, a period marked by post-pandemic recovery and rapid digital transformation. after the pandemic period and the current period of digitalization. In this regard, using NIM as a moderator on the relationship between CAR and firm value, this study reveals that

signals from profitability are more likely to be in line with investors' expectations compared to those from capital and liquidity. The findings on ROA and LATA also reflect the ongoing trade-off between stability and efficiency during periods of economic and technological transition.

Several bank-specific factors affecting firm value have been studied in the past, with a primary focus on their direct link to market valuation. However, there is little attention given to whether intermediation profitability moderates the relationship between capital strength and firm value. This research fills the gap by examining the NIM as a moderating variable of the relationship between CAR and firm value in the banking sector listed in Indonesia in 2020-2023.

This study contributes to the literature by providing evidence on the association of bank-specific financial characteristics to firm value in the Indonesian listed banks. It also expands the existing research by examining NIM as a moderating variable of the relationship between capital adequacy and firm value. The study further adds to the bank valuation literature in an emerging-market setting by providing evidence from the Indonesian banking industry in the 2020–2023 period.

THEORETICAL FRAMEWORK AND HYPOTHESIS DEVELOPMENT

A long-standing theme in banking and finance literature is the relationship between capital strength, liquidity and firm value. Capital adequacy is commonly expressed as the Capital Adequacy Ratio (CAR) and indicates the bank's capacity to absorb losses and stay solvent.

It is a measure of financial stability. According to signaling theory, the increase in CAR reflects caution and stability for investors, hence enhancing confidence in the market.

On the other hand, under the trade-off theory, although an abundance of capital reduces the probability of bankruptcy, overcapitalization affects the profitability of banks since they will be unable to extend loans. There is no clear indication of the connection between bank capital and profitability. According to Coccorese and Girardone (2021), bank capital has been found to be correlated to profitability, but the connection is weak. This relationship is even more pronounced during financial crises, in low or middle-income economies, and in large banks. This implies that the institutional environment and income level of an economy play a moderating role in the relationship between capital and bank performance. In a study which seeks to extend the existing literature in the field, Alkhazali et *al*. (2024) performed an empirical investigation of 819 banks across 26 emerging economies after COVID-19 and revealed that banks with quality capital (e.g., Tier 1 and total regulatory capital) were more profitable despite macroeconomic shocks. Also, the researchers argued that quality capital and not leverage was crucial for enhancing resilience and profitability of banks during financial crises, particularly for large banks. Similarly, Ozili (2025) found that while quality capital is good for financial stability, it reduces intermediation efficiency in developing economies.

In addition to the findings in Indonesia, Anis et al. (2023), have noted that even with the increased regulatory capital, there is still very little marginal impact of increased CAR on profitability and firm value as long as operational efficiency is low. The CAR measures how sufficient the bank's capital is in relation to the risks involved. Investment theories predict that banks with sufficient capital create a good signal to investors that they are stable and capable of growing, hence making the banks more valuable in the markets. Novianti and Kuswanto (2020) observed that CAR affects firm value via earnings management where a high CAR enhances management's credibility in managing earnings.

H1: Capital Adequacy Ratio (CAR) has a positive effect on firm value.

Furthermore, liquidity has gained much importance as another factor affecting firm value. Higher liquidity increases a bank's ability to satisfy its short-term liabilities in consonance with Keynesian theory of liquidity preference. However, the market tends to punish banks that are highly

liquid as liquidity is considered a sign of inefficiency or risk aversion. Almaqtari et *al.* (2019) found that higher levels of liquidity reduce the profit making potential in Indian banks, while Andrieș, Cazan and Sprincean (2021) reported the same effect in Central and Eastern European banks engaged in merger operations. Concerning the analysis regarding the Western Balkan scenario, Prenaj, Miftari and Berisha (2024) found out that macroeconomic indicators such as real GDP growth, unemployment rate, and inflation are highly positively correlated with the level of profitability, namely ROA and ROE, whereas non-performing loans and bank competition are negatively associated with the profitability indicator. This finding suggests that the relationship between the elements affecting the level of profitability is somehow linked with liquidity.

LATA is an index that reflects the relationship between liquid assets and total assets. Theoretically, liquidity has a positive effect on a bank's capability to meet its short-term liabilities. Excessive liquidity is seen as inefficiency since money is not allocated for productive lending. Olalere et *al.* (2021) concluded that LATA had a negative impact on firm value for banks in the ASEAN-5. This implies that banks that have more liquid assets are perceived as nonaggressive and inefficient in earning money. Despite the theoretical duality of liquidity, this study expects the inefficiency effect to dominate in post-pandemic banking conditions.

H2: Liquid Assets to Total Assets (LATA) negatively affects firm value

Net Interest Margin (NIM) is an index measuring a bank's performance as an intermediary activity and has been identified as one of the critical determinants in firm value creation activities. NIM reflects the net interest income minus interest expense, indicating the extent of pricing power and effective risk management. Different from other performance indexes such as ROA and ROE, NIM highlights the sustainability aspect of earnings from its core business activities. Regarding the profitability drivers of Indonesian banks, Anis et al. (2023) mention that efficiency of operations and efficiency of interest margins are among them besides balance sheet enlargement. There is a general consensus in the literature that NIM plays a positive role in determining firm market value; however, the moderating effect of NIM between prudential indicators such as CAR and LATA and firm value has not been explored sufficiently. It might be reasonable to think that the high value of NIM can boost the positive effect of capital strength by showing the productive usage of funds.

NIM shows the capability of a bank in earning net interest income from productive assets. The ratio represents a bank's basic profit-making capacity. Novianti and Kuswanto (2020) revealed that NIM affects firm value significantly, as higher interest margin leads to higher profit. On the contrary, Sar and Panigrahi (2025) showed that NIM has a negative effect on stock price growth in India, which means there exists a different context in the market. Despite that, it is reasonable to expect that NIM will affect firm value positively due to its logical relationship.

H3: Net Interest Margin (NIM) has a positive effect on firm value.

ROA is used to measure the efficiency of the management in using the resources of the firm in order to earn profits. The higher the ROA, the higher the efficiency of resource utilization by the firm, which means higher efficiency of the management. As stated by Rakshit (2023), better cost, revenue, and profit efficiency result in higher profitability for banks, especially the banks in India. Likewise, Kasie, Onyenwe and Rita (2023) concluded that asset quality (NPL) has a significant impact on ROA in Nigerian banks. Ideally, ROA is positively associated with the level of company profitability. An improvement in company profitability will result in an increase in market value. Consequently, ROA was selected as a control variable that would have a positive effect on firm value.

However, the relationship between CAR and firm value may be conditional on the bank's profit related conditions. NIM is relevant here as it reflects the bank's ability to generate net interest income from productive assets and hence represents an important component of its intermediation performance. Kasie, Onyenwe and Rita (2023) stated that NIM is closely related to the asset quality

and credit risk. This means that the profitability generated from intermediation may influence how investors interpret the capital position of a bank. Therefore, this study examines the NIM as a moderating variable to see whether the relationship between CAR and firm value is different depending on the level of NIM.

H4: NIM moderates the effect of CAR on firm value

RESEARCH METHODOLOGY

A quantitative explanatory method will be employed to examine the effects of capital strength, liquidity, and intermediation efficiency on firm value in the case of Indonesian banks. The population of this research is 47 banking companies listed on the Indonesia Stock Exchange period 2020–2023. The sample was determined based on the following criteria: (1) the bank was listed continuously on the Indonesia Stock Exchange during the 2020-2023 observation period; (2) the bank published annual reports containing the information required for the study variables; and (3) the required financial data were available for all four years of observation. According to these criteria, 37 banking companies were qualified for the sample. The sample size was deemed sufficient to provide an adequate number of observations for the analysis. The final data set comprises 148 firm year observations (37 banks * 4 year observations for each bank).

Secondary data will be used in this study, sourced from annual financial reports of firms available in the IDX, OJK, and Yahoo Finance. Inconsistent firms, whose financial statements lack data or irregularity, will be eliminated from the sample to ensure balance. These data will provide information about a representative sample of Indonesia's banking market capitalization. The value of the firm, FV_it, is approximated using Tobin's Q, which measures the extent to which investors view the assets of a firm compared to their cost of replacement. Capital Adequacy Ratio (CAR_it) measures the ability of the capital of a bank to protect itself against risk, whereas Liquidity (LATA_it) is used to measure the percentage of liquid assets out of total assets. NIM_it is used as a measure of intermediation efficiency of banks in earning revenues from lending and deposit operations.

Model Specification:

$$\text{Tobin's } Q_{it} = \alpha + \beta_1 CAR_{it} + \beta_2 LATA_{it} + \beta_3 NIM_{it} + \beta_4 ROA_{it} + \varepsilon_{it} \quad (1)$$

$$\text{Tobin's } Q_{it} = \alpha + \beta_1 CAR_{it} + \beta_2 LATA_{it} + \beta_3 NIM_{it} + \beta_4 ROA_{it} + \beta_5 (CAR_{it} \times NIM_{it}) + \varepsilon_{it} \quad (2)$$

The interaction variable (CAR × NIM) shows the role of operational efficiency as a moderator in the link between capital strength and firm value, such that as the level of NIM increases, capital strength becomes more/less important to firm value. The regression will be estimated using panel data approach involving fixed and random effects regressions. The choice of the appropriate model will be done with the help of the Hausman test, while the diagnostics of multicollinearity, heteroscedasticity, and autocorrelation guarantee the model's robustness. All estimates will be carried out with heteroscedasticity-robust standard errors.

This design of research methodology is consistent with the signaling and trade-off theories of stability and efficiency discussed above. Capital adequacy and liquidity are signals of prudential stability, while NIM is an indicator of operational and efficiency performance. With the inclusion of NIM as a moderator in this study, there will be a dynamic evaluation of the role played by stability and efficiency in determining the value of banks. This research design contributes to the literature by examining how profitability performance interacts with prudential stability in determining bank firm value.

Model Selection

The Hausman test for Model 1 without interaction suggests that the Random Effects specification is more appropriate (χ 2 = 6.5868; p = 0.1594). For Model 2 with the NIM×CAR interaction, the Fixed Effects specification is more appropriate (χ 2 = 20.2147; p = 0.0011). The different specifications and the treatment of unobserved bank-specific effects are consistent with

the different model choices. Therefore, Model 1 is estimated using the Random Effects approach, while Model 2 is estimated using the Fixed Effects approach. Given the cross-sectional heteroscedasticity in Model 2, Panel EGLS with cross-section weights and White standard errors is used to obtain robust statistical inference (Baltagi, 2021).

Model 1 is used to test the direct association between CAR, LATA and NIM with firm value. Model 2 adds an interaction term NIM×CAR to test if the effect of NIM moderates the relationship between CAR and firm value. Consequently, the hypothesis of direct relationships is tested based on the respective coefficients in Model 1 and Model 2, and the moderation hypothesis is tested based on the interaction term in Model 2.

Table 1. Variance Inflation Factor (VIF) Results

Variable	Centered VIF
CAR	3.790
LATA	1.737
NIM	3.178
NIM x CAR	5.604
ROA	1.066
Mean VIF	3.075

The Variance Inflation Factor (VIF) was used to diagnose any multicollinearity among independent variables. According to Table 1, the centered VIF for all variables is less than 10, and their average value is about 3.07. The interaction variable (NIM×CAR) shows VIF value equal to 5.60, which is expected for product terms in moderation analysis and cannot be interpreted as a sign of multicollinearity (Aiken et al., 1991). Thus, multicollinearity does not affect the quality of estimation.

RESULTS AND DISCUSSION

Table 2. Descriptive Statistics

Variables	Mean	Median	Maximum	Minimum	Std. Dev.
TOBIN'S Q	1.038900	0.974906	3.295289	0.078423	0.377346
CAR	0.417347	0.257372	3.905051	0.069447	0.531398
LATA	0.359796	0.330095	0.946328	0.035800	0.156389
NIM	0.072040	0.059436	0.544476	0.002135	0.066050
NIM x CAR	0.051198	0.016104	1.791805	0.000248	0.182773
ROA	0.004156	0.007607	0.069896	-0.180577	0.027138
Observations	148	148	148	148	148

The following are some of the important results that have been generated through descriptive statistics analysis of banking financial variables. The firm value (Tobin's Q) had an average of 1.0389, which indicated an overvalued position with considerable differences among banks (Standard Deviation 0.3773). The CAR had an average of 41.73%, indicating adequate capital adequacy, though there were wide differences among banks (6.94% - 390.51%). The extreme values are because of small banks with very little risk weighted asset or unusual interest structure. This does not affect the estimation since panel weighting and robust estimators have been used. The Liquid Asset to Total Assets ratio had relatively small variation (average 35.98%) while the NIM had wide differences ranging from 0.21% to 54.45%. The average ROA was just 0.42%, which is below industry health standard since there are losses by banks up to -18.06%. NIM x CAR had considerable differences (standard deviation 0.1828), showing heterogeneity in the relationship between profitability and capital adequacy.

Correlation Results

Table 3. Correlation Matrix Between Independent Variables

VARIABLES	TOBIN'S Q	CAR	LATA	NIM	NIM x CAR	ROA
TOBIN'S Q	1.000					

CAR	0.039920	1.000				
	0.6300	-----				
LATA	0.234466	0.591028	1.000			
	0.0041	0.0000	-----			
NIM	0.214669	0.606178	0.529167	1.000		
	0.0088	0.0000	0.0000	-----		
NIM x CAR	0.203614	0.820744	0.503492	0.796428	1.000	
	0.0131	0.0000	0.0000	0.0000	-----	
ROA	-0.322249	-0.038263	-0.071378	0.144952	0.073288	1.000
	0.0001	0.6443	0.3886	0.0788	0.3760	-----

Correlation analysis provides evidence of heterogeneous relationship between financial indicators of banks and firm value (Tobin's Q). The Liquid Assets to Total Assets (LATA) is found to have a significant positive correlation (0.234, p=0.004) implying that greater liquid assets lead to improved market valuation of the firms. Similarly, the Net Interest Margin (NIM) shows a positive correlation (0.215, p=0.009) implying positive effect of profitability on firm value.

An unexpected result is found in Return on Assets (ROA) that exhibits a significant negative correlation (-0.322, p=0.0001) with Tobin's Q—contradicting the findings of finance theory literature and calls for further research. On the other hand, the interaction term NIM×CAR shows a positive correlation (0.204, p=0.013) implying that synergy of profitability and capital adequacy may help improve firm value.

Relationships among independent variables are found to be highly correlated. This is seen in the case of CAR that shows a strong correlation with LATA (0.591, p=0.000) and NIM (0.606, p=0.000). This implies that banks having high capital ratios have more liquid assets and high net interest margin. Correlations among independent variables are analyzed using VIF diagnostics to rule out the problem of multicollinearity.

Regression Results

Table 4. Regression Results

	Model 1		Model 2	
	Coef.	t- stats	Coef.	t- stats
CAR	-0.144054	-1.693478*	-0.006893	-0.089077
LATA	0.113049	0.410771	-0.551652	-2.307632**
NIM	1.713271	3.050180***	1.642029	1.209576
NIM x CAR			-0.155644	-0.389726
ROA	-4.386218	-4.701588***	-4.019302	-2.382274**
Constant	0.953152	9.915296***	1.146642	10.160140***
F-statistic		6.567144		6.320965
Prob(F-statistic)		0.000070		0.000000
Adj R^2		0.131558		0.597436
sample size		148		148

Notes: Model 1 is estimated using Random Effects. Model 2 is estimated using Fixed Effects with cross-section SUR (PCSE) standard errors, d.f. corrected.

***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively

Discussion

Model 1: Random Effects Estimation

According to the Random Effects estimation, CAR is negatively associated with firm value and is marginally significant at the 10% level (coef. –0.1441). This result indicates that, in the Random Effects specification, higher capital adequacy is associated with lower firm value. This finding is consistent with Sar and Panigrahi (2025) and can be discussed within the trade-off theory, whereby excessive capitalization may reduce profitability and intermediation incentives. The importance of capital adequacy may also depend on external factors, including regulatory and institutional conditions (Coccorese and Girardone, 2021; Alkhazali et al., 2024). However, this finding should be interpreted with caution because the CAR coefficient is not statistically significant in the Fixed Effects specification. Thus, the estimated CAR–firm value relationship is sensitive to the treatment of unobserved bank-specific characteristics. The result differs from Jagirani, Lim and Kosim (2023a, 2023b), who reported a positive relationship between CAR and firm value among Pakistani banks, where greater capitalization was associated with investor confidence when CAR exceeded the regulatory requirement.

The LATA coefficient is positive but statistically insignificant (coef. 0.1130) suggesting that liquidity holdings is not significantly associated with bank valuation in the Random Effects specification. This finding is consistent with Jagirani, Lim and Kosim (2023a) who found no significant association between LATA and firm value for banks in Pakistan. This finding is however, different from Olalere et al. (2019) who found that the liquidity-related variables had a significant relationship with bank valuation in Nigeria. The excessive liquidity was related to lower bank valuation due to inefficiencies in resource allocation. The result also suggests that the link between liquidity and firm value might depend on the macro-financial environment, risk perception and the structure of the banking market (Abbas, Ali and Ahmad, 2023). Importantly, LATA is both negative and statistically significant in the Fixed Effects specification, implying that the estimated liquidity-firm value relation is sensitive to bank-specific heterogeneity. Therefore, the positive but insignificant relationship in Model 1 should not be interpreted as a stable relationship across different model specifications.

Instead, NIM is positively related to firm value and statistically significant at 1% level in the Random Effects specification (coef. 1.7133). This finding means that interest margin profitability is positively associated with bank valuation when bank-specific heterogeneity is not accounted for by means of fixed effects. The results are consistent with Novianti & Kuswanto (2020) and Jagirani, Lim and Kosim (2023a), who reported that interest margins and intermediation performance are important for bank valuation. However, the positive association becomes statistically insignificant when we use Model 2, suggesting that the relationship may be partially due to unobserved bank-specific characteristics. Therefore, the evidence for NIM should be viewed as specification-dependent rather than as a uniformly significant relationship across the two models.

As a control variable, ROA demonstrates an unexpectedly negative relationship (coef. –4.3862; 1%). This finding may reflect the post-pandemic banking adjustment period, during which investors placed greater emphasis on sustainable intermediation performance than on short-term accounting profitability. The result differs from Bui, Nguyen and Pham (2023), who reported a positive relationship between profitability and Tobin's Q in Vietnamese firms.

The negative relationship between ROA and firm value may be related to the conditions of the Indonesian banking market in the post-pandemic recovery period. During this period, banks continued to re-shape their loan portfolios and take charges for restructuring and loan-loss provisions. Thus, the accounting profitability may not have fully captured the sustainability of banks' intermediation performance. This may be the reason why ROA was negatively associated with firm value, while NIM, which reflects the income earned from intermediation activities, was positively associated with firm value in Model 1.

The model 1 is significant at (F = 6.567; p<0.001) with adjusted R2=0.1316. This implies that the bank performance, in addition to the institution and the macro-finance environment, affects the value of firms. Value of firms is affected not only by firm-specific fundamentals but also macroeconomic perceptions, corporate governance, investor sentiments, and regulatory uncertainty. Consequently, it is understandable why the relatively low explanatory power of the model should be considered reasonable in the context of the analysis of banks and financial markets. In general, Model 1 exhibits variations on interpretation of financial signals in the market. NIM appears to be the most consistent positive signal while CAR is relatively weak and LATA insignificant. These results imply that investors value performance signals especially intermediate earnings.

Model 2 (Fixed Effects with Moderation)

As shown in Table 4, Model 2 reveals that after controlling for bank-specific heterogeneity using fixed effects with cross-section SUR (PCSE) standard errors, LATA becomes negative and statistically significant at the 5% level (coef. –0.551652; t = –2.307632). NIM remains positive but loses its statistical significance (coef. 1.642029; t = 1.209576), while CAR stays insignificant (coef. –0.006893; t = –0.089077). The interaction term between NIM and CAR is also insignificant (coef. –0.155644; t = –0.389726), indicating no moderating effect. ROA continues to show a negative and significant relationship at the 5% level (coef. –4.019302; t = –2.382274).

The differences between coefficient estimates and statistical significance between Model 1 and Model 2 are the results of the different treatment of unobserved bank-specific heterogeneity. Model 1 is the Random Effects specification and Model 2 is the Fixed Effects with cross-section SUR (PCSE) standard errors. Fixed Effects controls for unobservable time-invariant bank-specific effects, and estimates the relationships based on within-bank variation over time Wooldridge (2010), Baltagi (2021), and Greene (2018). Therefore, the differences in the estimated coefficients and statistical significance between the two specifications do not necessarily mean that the findings are contradictory but could arise from the different estimation procedures and the way bank-specific heterogeneity is handled.

More specifically, CAR is negatively associated with firm value and marginally significant in Model 1, but becomes statistically insignificant in Model 2. NIM remains positively associated with firm value but becomes statistically insignificant after the Fixed Effects specification is applied. In contrast, LATA changes from a positive and statistically insignificant coefficient in Model 1 to a negative and statistically significant coefficient in Model 2. These differences indicate that the estimated relationships between capital adequacy, liquidity, interest margins, and firm value are sensitive to the treatment of unobserved bank-specific heterogeneity. Thus, the Fixed Effects results provide evidence based on within-bank variation while controlling for time-invariant bank-specific heterogeneity, whereas the Random Effects results reflect the relationships under a different treatment of such heterogeneity.

Such findings are commonly observed in panel banking studies. As pointed out by Coccorese and Girardone (2021), this can be evidenced by investigating the effects of profitability and capital on banks in different countries. The two variables lose their significance once structural adjustments are made since they are specific to each bank. Jagirani, Lim and Kosim (2023b) have provided empirical data on the effect of such factors on the value of firms operating in Pakistan.

However, despite the positive sign of NIM in Model 2, the results are not significant because of the consideration of heterogeneity of the banks using fixed effect. The implication of this is that the main cause for the insignificance can be attributed to overlapping effects between the explanatory power of NIM and unobserved bank-specific characteristics. Notwithstanding the insignificance, the positive sign of the coefficient is in line with the findings of Jagirani, Lim and Kosim (2023a), that indicated that NIM positively related to firm value in the case of Pakistani banks.

Contrarily, this study is inconsistent with the findings of Olalere et *al*. (2019, 2021) regarding the negative relation between NIM and firm value of Nigerian banks.

LATA, however, changes from a positive and statistically insignificant coefficient in Model 1 to a negative and statistically significant coefficient in Model 2 (coef. –0.551652; t = –2.307632). This change implies that the estimated association between liquidity holdings and firm value is sensitive to the treatment of unobserved bank-specific heterogeneity as discussed in Wooldridge (2010). The negative association suggests that, after controlling for time-invariant bank characteristics, higher liquidity holdings are associated with lower firm value within banks over the study period. The result is in line with the findings of Olalere et al. (2019), who found that liquidity risk and liquid assets have negative effects on bank valuation in Nigeria and Olalere et al. (2021) who reported that liquidity has significant effect on bank firm value and stability. Similarly, Almaqtari et *al*. (2019) also found a negative relationship between liquidity and profitability and poor market performance. Thus, the negative association found in Model 2 is consistent with previous evidence, although the change from an insignificant positive coefficient in Model 1 suggests that the result is sensitive to model specification.

Contrary to the results obtained by Jagirani, Lim and Kosim (2023a, 2023b), the factor CAR did not prove to be statistically significant in the present study. Possible explanations for these differences may include different regulations, approach to investments of the investors, and market conditions in Pakistan after the pandemic. Finally, according to Ozili (2025), the notion of CAR is appropriate under certain conditions, hence it may be viewed as a regulatory indicator.

ROA remains negative and significant across both specifications, indicating that accounting-based profitability was not positively valued by investors during the post-pandemic banking adjustment period. In addition, the nonsignificant role played by the interaction of NIM with CAR shows that profitability does not enhance or mitigate the valuation effect associated with capitalization. This is consistent with the observation of Coccorese and Girardone (2021) who point out that interaction effects related to capitalization typically do not yield significant results due to the independent evaluation of profitability and capitalization by investors.

In summary, the conclusion arising out of the results of the Hausman test and differences in coefficients in Model 1 and Model 2 confirms once again the importance of controlling unobserved heterogeneity among the sample of financial institutions as emphasized by econometricians (Wooldridge (2010), Baltagi (2021), and Greene (2018). Furthermore, the results provide credence to the assumption that market players in such an environment as characterized by the current coronavirus and digitization put more emphasis on efficiency than capital and liquidity.

The results emphasize the significance of bank management's capital adequacy, while improving the efficiency of intermediation activities. CAR, asset structure and NIM can all offer investors additional information about the value of a bank. The results suggest to regulators that capital resilience and profitability are separate dimensions of banking performance.

CONCLUSION AND RECOMMENDATIONS

Conclusion

This research examines the relationship of CAR, LATA, and NIM to bank value in Indonesia in the 2020-2023 period. This study also analyzes whether CAR moderates the relationship between NIM and bank value. For the direct effect specification in Model 1, NIM is positively and significantly associated with firm value, while CAR is negatively and marginally significantly associated, and LATA is not statistically significant. In the extended Fixed Effects specification (Model 2), CAR is statistically insignificant, LATA is negatively and significantly related with firm value, and NIM is positive but is no longer statistically significant. The interaction of NIM and CAR is also statistically insignificant. Thus, the evidence does not support the role of CAR as a moderating variable in the relationship between NIM and firm value.

Overall, the results suggest that the relationships between bank performance measures and firm value vary depending on how the unobservable bank-specific heterogeneity is handled. Specifically, the positive association between NIM and firm value found in Model 1 is not statistically robust in the Fixed Effects specification, whereas the negative association between LATA and firm value appears after controlling for bank-specific effects. So, results should be interpreted according to the limitations of their respective model specifications and not as if they were relationships that are valid for all models.

The study contributes to the literature by providing empirical evidence on the relationship between capital adequacy, liquidity, interest margins and bank value in an emerging market banking context. From a practical perspective, the results suggest that bank managers should treat capital adequacy, liquidity management and intermediation profitability as independent dimensions in evaluating the factors related to market value. The lack of a significant interaction effect also suggests that an interaction should not be expected to be relevant to the valuation of NIM and CAR.

This study has several limitations. First, the analysis is limited to Indonesian listed banks over the period of 2020-2023 and the results do not necessarily generalize to other countries, industries, or periods. Second, we measure firm value by Tobin's Q, and we exclude other market-based valuation measures from the analysis. Third, the study is limited to CAR, LATA and NIM, and does not include all factors that may be related to bank value. Future research could extend the observation period, study other banking markets and include additional measures of firm value and bank specific characteristics.

Recommendations

According to those results, bank's management should improve intermediation efficiency and sustainable profitability, especially by increasing the NIM, maintaining an adequate level of capital and liquidity. Regulatory authorities should promote policies that balance prudential requirements with operational efficiency . Investors may regard NIM as an important indicator of bank valuation along with other bank-specific fundamentals. Future research could increase the period of observation, incorporate banks from other emerging markets, and consider other variables such as corporate governance, fintech competition, non-performing loans, ESG performance, interest rates, and macroeconomic uncertainty. Future research may also consider using alternative measures of firm value and dynamic panel approaches such as GMM to address potential endogeneity and to test the robustness of the findings across different specifications.

REFERENCES

Abbas, F., Ali, S., & Ahmad, M. (2023). Does economic growth affect the relationship between banks' capital, liquidity and profitability: empirical evidence from emerging economies. *Journal of Economic and Administrative Sciences*, *39*(2), 366–381. https://doi.org/10.1108/JEAS-03-2021-0056

Ahmad, N., Shah, F. N., Ijaz, F., & Ghouri, M. N. (2023). Corporate income tax, asset turnover and Tobin's Q as firm performance in Pakistan: Moderating role of liquidity ratio. *Cogent Business & Management*, *10*(1), 2167287. https://doi.org/10.1080/23311975.2023.2167287%0A

Aiken, L. S., West, S. G., & Reno, R. R. (1991). *Multiple regression: Testing and interpreting interactions*. sage.

Ali, A. (2022). Sustainability of Financial Soundness of Banks: An Evidence Form Public and Private Sector Banks. *International Journal of Sustainable Development and Planning*, *17*(8), 2463–2473. https://doi.org/10.18280/ijsdp.170814

Alkhazali, O., Helmi, M. H., Mirzaei, A., & Saad, M. (2024). The impact of capital on bank profitability during the COVID-19 pandemic. *Global Finance Journal*, 62, 100994. https://doi.org/https://doi.org/10.1016/j.gfj.2024.100994

Almaqtari, F. A., Al-Homaidi, E. A., Tabash, M. I., & Farhan, N. H. (2019). The determinants of profitability of Indian commercial banks: A panel data approach. *International Journal of Finance & Economics*, *24*(1), 168–185. https://doi.org/https://doi.org/10.1002/ijfe.1655

Andrieș, A. M., Cazan, S., & Sprincean, N. (2021). Determinants of Bank M&As in Central and Eastern Europe. *Journal of Risk and Financial Management*, *14*(12), 621. https://doi.org/10.3390/jrfm14120621

Anis, I., Gani, L., Fauzi, H., Hermawan, A. A., & Adhariani, D. (2023). The sustainability awareness of banking institutions in Indonesia, its implication on profitability by the mediating role of operational efficiency. *Asian Journal of Accounting Research*, *8*(4), 356–372. https://doi.org/https://doi.org/10.1108/AJAR-06-2022-0179

Baltagi, B. H. (2021). Dynamic panel data models. In *Econometric analysis of panel data* (pp. 187–228). Springer. https://doi.org/10.1007/978-3-030-53953-5_8

Bui, T. N., Nguyen, X. H., & Pham, K. T. (2023). The effect of capital structure on firm value: A study of companies listed on the Vietnamese stock market. *International Journal of Financial Studies*, *11*(3), 100. https://doi.org/https://doi.org/10.3390/ijfs11030100

Butt, M. N., Baig, A. S., & Seyyed, F. J. (2023). Tobin's Q approximation as a metric of firm performance: an empirical evaluation. *Journal of Strategic Marketing*, *31*(3), 532–548. doi:10.1080/0965254X.2021.1947875.

Coccorese, P., & Girardone, C. (2021). Bank capital and profitability: Evidence from a global sample. *The European Journal of Finance*, *27*(9), 827–856. https://doi.org/https://doi.org/10.1080/1351847X.2020.1832902

Ebenezer, O. O., Islam, M. A., Yusoff, W. S., & Sobhani, F. A. (2018). Exploring liquidity risk and interest-rate risk: Implications for profitability and firm value in Nigerian banks. *Journal of Reviews on Global Economics*, *8*, 315–326. https://doi.org/10.6000/1929-7092.2019.08.27

Ghazalat, A. (2025). Board characteristics, board committees and voluntary disclosure as a catalyst of investment opportunities. *Discover Sustainability*, *6*(1), 1–21. https://doi.org/10.1007/s43621-025-01434-z

Greene, W. H. (2018). Econometric analysis/Limdep users manual. *Retrieved on July*, *15*, 2022.

Hasan, Z. (2024). The Effect of Current Accounts, Savings and Time Deposits on Banking Credit: A Case Study of Regional Development Banks (RDB) in Indonesia. *Journal of International Business, Economics and Entrepreneurship*, 9(1), 24–37. https://doi.org/10.24191//jibe.v9i1.900

Hasan, Z. (2025). Bibliometric Analysis of Islamic Banking Publication in the Post-Covid 19 Pandemic Era. *Journal of International Business, Economics and Entrepreneurship*, *10*(1), 33–48. https://doi.org/10.24191/jibe.v10i1.2560

Jagirani, T. S., Lim, C. C., & Kosim, Z. B. (2023a). Determinants of the firm value of listed banks in Pakistan: A panel data approach. *Asian Economic and Financial Review*, *13*(4), 241. https://doi.org/10.55493/5002.v13i4.4764

Jagirani, T. S., Lim, C. C., & Kosim, Z. B. (2023b). Relationship between financial risks and firm value: A moderating role of capital adequacy. *Investment Management & Financial Innovations*, *20*(1), 293. https://doi.org/DOI:10.21511/imfi.20(1).2023.25

Kamran, M. R., Shoaib, T., Mumtaz, R., & Choudhary, A. A. (2022). Bank Diversification, Performance and Cash Holdings: Evidence from Pakistan. *Pakistan Journal of Humanities and Social Sciences*, *10*(3), 1028–1042. https://doi.org/10.52131/pjhss.2022.1003.0266%0A

Kasie, E. G., Onyenwe, N. I., & Rita, N. N. (2023). Non performing loans and profitability of selected deposit money banks in Nigeria (2008-2021). *International Journal of Research in Finance and Management*, *6*(1), 188–196. https://doi.org/10.33545/26175754.2023.v6.i1c.209

Novianti, R., & Kuswanto, A. (2020). Factors that Influence Firm Value with Earnings Management as Mediating Variable. *International Journal of Advance Study and Research Work*, *3*(3), 2581–5997. https://doi.org/10.18196/jai.2103149

Olalere, O. E., Islam, M. A., Yusoff, W. S., & Mumu, F. E. (2021). Modeling the determinants of firm value of conventional banks: Empirical evidence from asean-5 countries. *Asia-Pacific Social Science Review*, *21*(3), 122–136. https://doi.org/10.59588/2350-8329.1390

Osifo, O., & Evbayiro-Osagie, E. I. (2020). Foreign diversification and performance of quoted deposit money banks in selected Sub-Sahara African countries. *Oradea Journal of Business and Economics*, 5(special), 82–93. https://doi.org/10.1016/j.rdf.2020.08.001

Ozili, P. K. (2025). Financial inclusion and bank stability: evidence from capital buffer and capital adequacy ratio. *Journal of Chinese Economic and Foreign Trade Studies*, *18*(1), 109–129.

Prenaj, V., Miftari, I., & Berisha, S. (2024). The Determinants of Profitability of Western Balkan Countries Commercial Banks: A panel Data Approach. *Economic Alternatives*, *30*(2), 243–258. https://doi.org/10.37075/EA.2024.2.02

Rakshit, B. (2023). Assessing the effects of cost, revenue and profit efficiency on bank performance: empirical evidence from Indian banking. *International Journal of Organizational Analysis*, *31*(5), 1867–1898. https://doi.org/10.1108/IJOA-06-2021-2802

Sar, A., & Panigrahi, K. (2025). The dynamics of financial performance and market performance in the context of Indian banking industry. *F1000Research*, *13*, 657. https://doi.org/https://doi.org/10.12688/f1000research.151628.2

Suryanto, S., Muhyi, H. A., Kuirniati, P. S., & Mustapha, N. (2022). Banking financial performance in the industry financial technology era. *Journal of Eastern European and Central Asian Research (JEECAR)*, *9*(5), 889–900. https://doi.org/https://doi.org/10.15549/jeecar.v9i5.1075

Tarawallie, F. A. B., & Bein, M. (2025). The Moderating Effect of Size on the Relationship Between Liquidity Management and Sustainable Profitability: Evidence from BRICS Financial Firms. *Sustainability*, *17*(18), 8128. https://doi.org/https://doi.org/10.3390/su17188128

Tsekpo, S. P., & Wahua, L. (2023). Corporate governance and banks' capital adequacy in Gambia: The moderating impact of politics. *Journal of Social Sciences and Management Studies*, *2*(4), 1–14. https://doi.org/https://doi.org/10.56556/jssms.v2i4.504

Wooldridge, J. M. (2010). *Econometric analysis of cross section and panel data*. MIT press.

Yahaya, A., Mahat, F., MH, Y., & Matemilola, B. T. (2022). Liquidity risk and bank financial performance: an application of system GMM approach. *Journal of Financial Regulation and Compliance*, *30*(3), 312–334. https://doi.org/10.3390/jrfm15030112%0A