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Capitalization Moderates the Role of Statutory Reserve Requirement and Macroprudential Intermediation Ratio on Sharia Financing

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Abstract

Background: Excessive credit increases access to the financial sector anad can create financial sector vulnerabilities through prudent credit standards and excessive credit growth. The Statutory Reserve Requirement and Macroprudential Intermediation Ratio are implemented to mitigate vulnerabilities within the financial sector by promoting prudent lending practices and limiting excessive credit expansion, which could otherwise contribute to economic instability.
Objective: This is to show effect of statutory reserve requirement and macroprudential intermediation ratio on sharia financing, moderated by capitalization.
Methods: It employs a regression analysis using the 2SLS method. The sample consists of 120 observations sourced from the OJK covering the period from 2016 to 2025.
Results: The results demonstrate a positive effect of the macroprudential intermediation ratio on Sharia financing, whereas the statutory reserve requirement shows no significant effect. Capitalization influences Sharia financing; when interacted with the macroprudential intermediation ratio, it is shown to strengthen the relationship—a phenomenon termed "quasi-moderation." Conversely, when capitalization is interacted with the statutory reserve requirement, it does not strengthen the relationship—a case of "predictor moderation." Macroprudential intermediation ratio is the variable that has the biggest effect on sharia financing.
Conclusion: The study offers original insights for regulators and practitioners regarding the role of capitalization in amplifying the effect of the macroprudential intermediation ratio on financing.

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INTRODUCTION

Banks and other serving as intermediaries between those who require funds for working capital and investment and those who have surplus financial resources. By providing credit and other financial services, banks support economic activities and contribute to the stability and growth of both domestic and international economies (Lobo, 2017). From an Islamic perspective, activities such as receiving deposits, providing funds for personal consumption and business needs, and facilitating financial transfers have been practiced since the time of Prophet Muhammad S.A.W. These activities were conducted in accordance with principles compatible with Sharia. Before the Prophet migrated to Medina, he entrusted Ali bin Abi Thalib R.A. with the responsibility of returning all deposits held in his care to their rightful owners (Fajri, 2008).

Among ASEAN nations, Malaysia leads with an asset market share exceeding 20%, far surpassing Indonesia. OJK as of December 2025, total Sharia banking assets in Indonesia reached IDR 1,067.73 trillion reflecting year-on-year growth of 8.92% with financing totaling IDR 705.22 trillion and a market share of 7.69% within the national banking industry (OJK, 2025).

While increased credit availability can broaden access to financial services and stimulate economic growth, excessive credit expansion may also pose significant risks to financial sector stability. Inadequate lending standards and uncontrolled credit growth can increase financial vulnerabilities and raise the likelihood (Pramono, 2021). The concept of macroprudential policy gained widespread attention within the financial sector. The crisis was widely attributed, in part, to the insufficient implementation of effective macroprudential measures in developed economies.

Indonesia has incorporated a macroprudential framework into its economic recovery strategy. The lessons gained from the crisis enhanced the country's resilience and preparedness during the 2007–2008 global financial crisis, which was largely associated with the collapse of subprime mortgage instruments in the United States. In general, macroprudential policy refers to prudential regulatory measures established by BI to safeguard. Its primary purpose is to limit excessive fluctuations in credit and liquidity, particularly credit boom-and-bust cycles that may contribute to broader economic instability. As the country's monetary authority, Bank Indonesia has introduced macroprudential measures applicable to Islamic banking, particularly in relation to financing management. These measures include the implementation of reserve requirements through the Statutory Reserve Requirement ratio and compliance with the Macroprudential Intermediation Ratio (Agung et al., 2021).

The implementation of Statutory Reserve Requirements as a macroprudential measure is considered necessary because this instrument can address several key policy objectives. These objectives involve regulating credit cycles, mitigating systemic risks by strengthening banks' funding structures, and supporting credit distribution (Tovar et al., 2012). Previous studies have explored how reserve requirements influence credit conditions. In several Latin American countries have improved monetary control, enhanced the transmission of monetary policy, and helped mitigate financial imbalances resulting from excessive credit expansion (Montoro & Moreno, 2011). In Indonesia, Zulkhibri (2018) found that macroprudential policies based on Statutory Reserve Requirements were effective in controlling financing by Islamic banks. Likewise, Rossy (2017) reported that Statutory Reserve Requirements had an impact on financing.

The macroprudential intermediation ratio encourages a balanced and quality intermediation function of Islamic banking, not only concentrated on financing but also on deepening investment in securities in the Islamic money market and Islamic capital market. This is needed as a macroprudential policy through investment diversification in securities products so that financing risks can be distributed and not concentrated solely on financing distribution. The difference between this study and others lies in the use of the macroprudential intermediation ratio as a development of the existing liquidity ratio. Kaban and Hanggraeni (2024) shows that the macroprudential intermediation ratio significantly affects MSME's credit growth in 40 public conventional banks in Indonesia. Meanwhile, research by Audya et al. (2023) shows that the macroprudential intermediation ratio significantly affects credit in 60 commercial banks.

The inconsistency of previous research results creates a gap that needs to be further investigated by this study by adding capitalization as a moderating variable. Several factors can contribute to the expansion of bank credit, including substantial inflows of capital. Greater capital inflows increase the amount of funds available to banks, which subsequently enhances their ability to provide loans and stimulate credit growth. Previous empirical studies have also indicated that stronger bank capitalization is positively associated with the expansion of credit (Behncke, 2023). Capitalization refers to capital that serves as a credit buffer during periods of economic expansion and can be utilized during economic contractions. Capitalization is necessary to absorb potential losses arising from excessive credit growth, which can pose risks to financial stability. High capital levels incentivize banks to manage their macroprudential intermediation ratios thereby maintaining prudent credit growth by facilitating asset diversification into low-risk securities (Yoel, 2016). This study uses gross domestic product and non-performing financing as control variables. Previous studies have shown a correlation between gross domestic product and credit (Shala & Toçi, 2021; Pramono et al., 2021; Soedarmono et al., 2017) as well as non-performing financing and credit (Ryad & Yuliawati, 2017).

Grounded in agency theory, this study has two primary objectives. First, it investigates the influence of the Statutory Reserve Requirement and the Macroprudential Intermediation Ratio on financing. Second, it analyzes whether bank capitalization moderates the relationship between these macroprudential instruments and financing.

METHOD

Data from Indonesian Islamic banking at the Financial Services Authority from 2016 to 2025 with sample of 120. Purposive sampling excludes sharia rural banks. The unit of analysis for this study is Islamic banks. This study uses panel regression with the Two-Stage Least Squares (2SLS) model using the Eviews application. Selection of the 2SLS panel regression model to address the issue of endogeneity (correlation between independent variables).

The equation in this study refers to Zulkhibri (2018):

$$FIN = \alpha + \beta 1GWM1 + \beta 2RIM2 + \beta 3GWM*CAP3 + \beta 4RIM*CAP4 + \beta 5NPF5 + \beta 6GDP6 + \varepsilon$$

This study defines and measures each variable using specific operational indicators. The dependent variable, FIN is calculated using the natural logarithm of the nominal amount of Islamic bank financing, following Zulkhibri (2018). The independent variables include GWM, represented by the current account balance at Bank Indonesia, which is determined as a certain percentage of third-party funds in accordance with BI provisions, following Rossy (2017). RIM is measured by the ratio of financing plus securities held to third-party funds plus securities issued. CAP is determined by the proportion of equity relative to total asset, following Zulkhibri (2018). The control variables consist of NPF, measured as problematic financing relative to total financing, following Ryad and Yuliawati (2017), and GDP, measured using the gross domestic product value, following Zulkhibri (2018).

RESULTS AND DISCUSSION

Results

The study comprises 120 observations, with the descriptive statistical results presented in Table 1. Since the mean value of financing is greater than its standard deviation, the observed financing level in the Islamic banking sector over the 2016–2025 period can be considered relatively high. A similar pattern is also observed for GWM, RIM, CAP, NPF, and GDP. These findings suggest that the Islamic banking industry was able to navigate the economic challenges associated with the COVID-19 pandemic and subsequently move through the recovery period relatively well. The standard deviation value is smaller than the mean value of the level during the 2016-2025 period is considered data tends to be stable and uniform, without extreme dispersion or variation around the mean value, indicating that the measure of mean value is sufficiently representative in describing the overall data.

Table 1

Descriptive Statistics Results

Variable	Observations	Minimum	Maximum	Mean	Std. Deviation
FIN	120	10.552	12.680	11.850	0.638
GWM	120	4.650	7.820	5.748	0.547
RIM	120	91.605	109.790	101.779	3.932
CAP	120	0.058	0.140	0.091	0.023
NPF	120	0.030	6.168	3.748	1.583
GDP	120	4.281	6.891	5.427	0.689

Note: FIN = Sharia Financing, GWM = Statutory Reserve Requirement, RIM = Macroprudential Intermediation Ratio, CAP = Capitalization, NPF = *Non-Performing Financing*, GDP = *Gross*

Domestic Product

This study examines several classical assumption tests. The multicollinearity test results correlations among independent variables not exceeding 0.90. The Breusch-Pagan-Godfrey heteroscedasticity test results show an Obs*R-squared value of 33.876. Meanwhile, the stationarity test with the ADF-Fisher Chi-square value of 0.000, which is below 0.05, indicates that the data in this study is stationary so that the statistical model can identify patterns accurately.

Table 2
Moderation Regression Analysis

Variable	Sign	Coefficient	t-Statistic	Std. Error	Prob.	Decision
C		-6.890	-1.743	3.954	0.084	
GWM	+	-0.276	-1.098	0.251	0.275	Not Supported
RIM	+	0.191	5.048	0.038	0.000*	Supported
GWM*CAP	+/-	-1.577	-0.590	2.672	0.556	Not Supported[b]
RIM*CAP	+/-	2.323	5.292	0.439	0.000*	Supported[a]
CAP		250.936	5.350	46.902	0.000*	
NPF		-0.198	-8.297	0.024	0.000*	
GDP		-0.114	-2.264	0.050	0.026**	
R-Squares		0.713	F-statistic		39.748	
Adjusted R-Squares		0.695	Prob(F-statistic)		0.000	

*significant at 1%, **significant at 5%, ***significant at 10%

[a] Quasi Moderation: Capitalization acts as both moderator and independent variable in the effect of statutory reserve requirement and macroprudential intermediation ratio on sharia financing.

[b] Predictor Moderation: Capitalization acts only as an independent variable and not as a moderator in the effect of statutory reserve requirement and macroprudential intermediation ratio on sharia financing.

Note: FIN = Sharia Financing, GWM = Statutory Reserve Requirement, RIM = Macroprudential Intermediation Ratio, CAP = Capitalization, NPF = *Non-Performing Financing*, GDP = *Gross Domestic Product*

The regression findings indicate that GWM does not have a significant relationship with FIN. In contrast, RIM demonstrates a significant positive effect on FIN, suggesting that an increase in RIM is associated with higher FIN. The model also shows that GWM, RIM, CAP, NPF, and GDP collectively explain a substantial proportion of the variation in FIN, while the remaining variation is attributable to other factors that are not incorporated into the research model.

The moderation analysis indicates that CAP functions as a predictor moderator in the relationship between GWM and FIN. The interaction term has a coefficient of -1.577, a t-statistic of -0.590, and a probability value of 0.556, indicating that CAP does not significantly moderate the effect of GWM on FIN and instead operates primarily as an independent variable affecting FIN. In contrast, CAP demonstrates a quasi-moderating role in the relationship between RIM and FIN. The interaction coefficient is 2.323, with a t-statistic of 5.292 and a probability value of 0.000. This finding suggests that higher CAP strengthens the positive effect of RIM on FIN.

The analysis reveals that NPF is negatively associated with FIN, indicating that higher levels of NPF are linked to lower FIN. Likewise, GDP shows a significant negative relationship with FIN, suggesting that an increase in GDP is accompanied by a decline in FIN.

Discussion

This finding is not in line with previous research (Zulkhibri, 2018; Tovar et al., 2012; Montoro & Moreno, 2011). The necessity GWM as a macroprudential instrument is considered because its management can serve various macroprudential policy objectives including acting as a tool for credit allocation. This condition is consistent with the broader liquidity constraints experienced during the pandemic. The reduction in liquidity subsequently placed pressure on bank liabilities, particularly third-party funds, during the COVID-19 period, causing a decline in the statutory reserve requirement in the current year, so that banks did not have the incentive to form statutory reserve requirements aimed at controlling excessive sharia financing growth that would affect financing risk (Dursun et al., 2023; Hessou & Lai, 2018).

The hypothesis results show that the macroprudential intermediation ratio encourages a balanced and high-quality intermediation function of Islamic banking. This function is not only concentrated on financing but also on deepening investment in securities in the Islamic money market and Islamic capital market (Lorenčič & Festić, 2021; Tabak et al., 2011). This is necessary as part of macroprudential policy through investment diversification in securities products. Such diversification can help distribute financing risks and prevent them from being concentrated solely on financing activities (Agung et al., 2021). Liquidity-based instruments can influence credit through adjustments by providing low-risk assets (Audya et al., 2023). The macroprudential intermediation ratio shows the ability of Islamic banks to diversify assets to control prudent financing growth. In the Quran, Surah Al-Hasyr (59) verse 7 advises not to hoard wealth for excessive use. he macroprudential intermediation ratio policy has encouraged a balanced and high-quality intermediation function in Islamic banking. This function is not only focused on financing but also on deepening investment in securities.

The findings for hypothesis 3 show that CAP does not significantly moderate the impact of GWM on FIN. The interaction between the two variables fails to enhance the relationship, suggesting that CAP serves as an independent predictor rather than a moderating factor. This result may be related to the inclusion of the COVID-19 pandemic period in the study, when declining financing quality reduced Islamic banks' motivation to increase their capital levels to meet GWM requirements. Consequently, banks experienced significant liquidity pressures throughout the pandemic.

The testing hypothesis 4 that capitalization good effect of the macroprudential intermediation ratio on sharia financing. These results show that the strategic role undertaken by Islamic banks through asset diversification, such as securities, is significant. Asset diversification is intended as diversification of asset instruments into low-risk securities products so that provision for loss risks can be distributed and not concentrated on credit classified as high risk (Agung et al., 2021; Utari et al., 2012). Asset diversification beyond credit is a strategic step taken by Islamic banks to generate income that provides incentives for additional capitalization, which ultimately strengthens the macroprudential intermediation of Islamic banks during crises.

The analysis of the control variables reveals that NPF has a negative relationship with FIN. This finding may be attributed to the deterioration in financing quality during the COVID-19 pandemic, which falls within the study period. A similar pattern is observed for GDP, which also demonstrates a negative effect on FIN.

CONCLUSION

This research analyzed the relationship between GWM, RIM, and FIN, while considering CAP as a moderating factor over the 2016–2025 period. The results demonstrate that GWM does not have a significant impact on FIN, while RIM contributes positively to FIN. Although CAP has an effect on FIN, its interaction with GWM does not enhance the influence on financing, indicating a predictor moderation effect. Conversely, the interaction between CAP and RIM strengthens the effect of RIM on FIN, confirming a quasi-moderating role. The findings further indicate that CAP, supported by asset diversification strategies.

From an academic perspective, this study is expected to enrich the limited empirical literature and provide additional theoretical perspectives on macroprudential policies and financing. For banking practitioners, the results can serve as a reference for evaluating the role of macroprudential intermediation in maintaining prudent and sustainable financing growth. For regulators, especially OJK and Bank Indonesia, the findings provide further empirical evidence regarding the implementation of macroprudential intermediation policies during and after the COVID-19 pandemic. Nevertheless, this study is subject to a limitation because the observation period includes the COVID-19 pandemic, meaning that the findings may not fully reflect conditions under a normal economic environment. Future research on GWM, macroprudential instruments, and FIN could consider incorporating additional variables, such as the net foreign exchange position, to examine whether fluctuations in foreign exchange affect the implementation of macroprudential policies and the growth of financing.

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AUTHOR CONTRIBUTION STATEMENT

The corresponding author declares full responsibility for all aspects of the manuscript, including conceptualization, methodology, data analysis, writing, and revision. There are no contributions from any co-authors to report.

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