THE DETERMINANTS OF CREDIT DISTRIBUTION AND ITS PROFITABILITY IMPLICATIONS: REVISITING STRUCTURE-CONDUCT-PERFORMANCE IN INDONESIA'S BANKING INDUSTRY

Mohammad Sofyan*, Jaja Suteja, Mokhamad Anwar*****

*Postgraduate Program Universitas Pasundan, Bandung – Indonesia
Email: m.sofyan229010016@mail.unpas.ac.id

**Postgraduate Program Universitas Pasundan, Bandung – Indonesia
Email: jajasuteja@unpas.ac.id

***Padjajaran University, Bandung – Indonesia
Email: mokhamad.anwar@unpad.ac.id

ABSTRACT

This study revisits the Structure–Conduct–Performance (SCP) framework to examine the determinants of credit distribution and their profitability implications in Indonesia's commercial banking sector from 2010 to 2024. Utilizing a combination of ARCH/GARCH, Autoregressive Distributed Lag (ARDL), and Moderated Regression Analysis (MRA), the research investigates the interplay between internal bank-specific factors—such as operating efficiency (CIR), capital adequacy (CAR), credit risk (NPL), and liquidity (LAR)—and external macroeconomic variables, including inflation and the policy interest rate (BI Rate). The findings reveal that credit distribution is significantly influenced by both bank-level efficiency and macroeconomic conditions. Market structure analysis based on Bank Groups by Core Capital (KBMI) shows increasing concentration, particularly among KBMI 3 and KBMI 4 banks, which correlates with greater stability in credit allocation and profitability. Furthermore, the study confirms that bank size acts as a significant moderating variable, with larger banks better able to convert credit growth into sustainable returns, as measured by Return on Assets (ROA). The study concludes that the SCP framework remains highly relevant in the Indonesian banking context, particularly when integrated with modern econometric techniques. It provides critical policy implications for financial regulators and monetary authorities regarding risk management, size-based regulatory oversight, and the promotion of stable credit growth to support inclusive economic development.

Keywords: Structure–Conduct–Performance, Credit Distribution, Bank Profitability, ROA, ARCH/GARCH, ARDL, MRA

I. INTRODUCTION

The banking sector plays a pivotal role in maintaining national economic stability and fostering sustainable growth, primarily through its function as a financial intermediary. In the Indonesian context, banking intermediation is instrumental in channeling funds from surplus units to deficit units, with a significant focus on productive sectors such as micro, small, and medium enterprises (MSMEs). These enterprises account for more than 60 percent of the country's gross domestic product (GDP), underscoring their vital contribution to the economy. The effectiveness of the banking sector in performing its intermediation role not only enhances financial inclusion but also drives employment generation and promotes broader socioeconomic welfare.

Nevertheless, the performance of banking intermediation is considerably influenced by a combination of internal and external factors. Internally, variables such as operational efficiency (Operating Expenses to Operating Income/CIR), capital adequacy (Capital Adequacy Ratio/CAR), credit risk (Non-Performing Loan/NPL), and liquidity (Loan to Assets Ratio/LAR) are critical in shaping a bank's ability to allocate credit effectively. Externally, macroeconomic conditions—including inflation and the policy interest rate (BI Rate)—affect credit demand, funding costs, and the overall systemic risk within the financial sector. Previous studies have demonstrated that the interplay between internal efficiency and external macroeconomic pressures significantly influences bank lending behavior and financial performance, particularly in terms of profitability as measured by Return on Assets (ROA) (C. J. Anwar et al., 2023); (Nuhadilah & Laila, 2021).

The structure of Indonesia's banking industry has undergone substantial transformation over the past decade, particularly in the aftermath of the 2008 global financial crisis and the COVID-19 pandemic in 2020. The landscape has been reshaped by accelerated digital transformation, increased bank consolidations, and the growing presence of new entrants from the financial technology (fintech) sector. According to (Mulyaningsih & Daly, 2012), market concentration in the Indonesian banking industry has risen, with large banks increasingly dominating in terms of total assets, third-party funds, and credit distribution. This trend not only influences overall operational efficiency but also leads to strategic behavioral differences across bank categories, particularly in how they respond to external shocks and evolving market dynamics. Empirical findings by (Settlements, 2011) further support this, showing that larger banks exhibit higher resilience and are more responsive in adjusting credit portfolios and interest margins during periods of economic volatility, compared to smaller banks that tend to adopt more conservative credit expansion strategies.

The Structure–Conduct–Performance (SCP) paradigm serves as a comprehensive theoretical framework for understanding the causal relationship between the structure of a market, the strategic behavior of institutions, and their resulting financial performance. Initially developed by (Mason, 1939) and formalized by (Bain, 1951), the SCP framework posits that market structure—typically characterized by concentration levels, efficiency, operational scale, and risk exposure—significantly influences institutional conduct, including pricing strategy, credit allocation, and risk management practices. In the banking sector, particularly in emerging economies like Indonesia,

this framework remains highly relevant due to the industry's dual exposure to internal institutional dynamics and external macroeconomic volatility.

Within this framework, structure is represented by indicators such as operational efficiency, capital adequacy (CAR), credit quality (NPL), liquidity (LAR), and bank size, all of which reflect the bank's ability to operate competitively and manage financial risk. These structural characteristics shape conduct, specifically how banks formulate strategies for credit distribution, adjust to shifts in funding conditions, and respond to market competition. Ultimately, these behavioral outcomes influence performance, commonly measured through profitability indicators such as Return on Assets (ROA) and Return on Equity (ROE) (Khan & Kutan, 2021).

The Indonesian banking sector presents a compelling case for applying the SCP framework due to its evolving market structure and the increasing complexity of its operating environment. Over the past decade, Indonesian banks have faced significant challenges, including digital disruption, rising competition from fintech firms, regulatory reforms, and heightened sensitivity to macroeconomic shocks. External pressures—such as exchange rate volatility, inflationary trends, interest rate adjustments (BI Rate), and global financial spillovers—further compound the operational risks faced by banks. These dynamics necessitate an empirical approach capable of capturing both institutional behavior and macroeconomic variability (Santoso et al., 2023).

To address this complexity, the current study employs a two-pronged econometric strategy. First, the Autoregressive Conditional Heteroskedasticity / Generalized Autoregressive Conditional Heteroskedasticity (ARCH/GARCH) models are utilized to measure the volatility of key macroeconomic variables—such as inflation and the BI Rate—which are critical in shaping banks' credit and risk management behavior. These models are particularly suited for detecting time-varying volatility and conditional heteroskedasticity in financial and macroeconomic time series data (Engle et al., 2008). Second, the study applies the Autoregressive Distributed Lag (ARDL) bounds testing approach to explore both short-term dynamics and long-term cointegration among the key variables of interest. This methodological combination allows for a nuanced analysis of how internal bank characteristics and external macroeconomic shocks interact to influence credit distribution and bank profitability (Handoyo et al., 2023).

This integrated approach enhances the explanatory power of the SCP model by bridging the gap between micro-level institutional variables and macroeconomic volatility, thereby offering more policy-relevant insights for regulators, policymakers, and bank management. It also responds to the growing need for dynamic models that can accommodate asymmetric effects, structural breaks, and transitional dynamics within the banking system (Pricillia, 2015).

Furthermore, bank-specific characteristics—most notably bank size—are hypothesized to function as a moderating variable in the relationship between credit distribution and bank profitability. The theoretical rationale rests on the premise that larger banks possess distinct structural advantages, such as broader access to low-cost funding sources, superior credit risk management systems, diversified loan portfolios, and greater operational efficiencies due to economies of scale. These advantages potentially enhance the impact of credit expansion on financial performance, as measured by indicators like Return on Assets (ROA) (Mwangi, 2018).

Empirical studies, such as those by (T. Beck et al., 2013; A. N. Berger & Mester, 1997) , support the notion that bank size significantly influences both the capacity and efficiency of lending activities, and may condition the profitability outcomes associated with those activities. In the Indonesian context, this relationship becomes particularly relevant, given the structural dualism between large, systemically important banks and a wide base of smaller, regionally focused institutions.

To empirically assess this moderating effect, the present study employs Moderated Regression Analysis (MRA), a statistical technique designed to evaluate interaction effects between an independent variable (in this case, credit distribution) and a moderating variable (bank size) on a dependent variable (ROA). By introducing interaction terms into the regression model, MRA allows for a rigorous test of whether the strength or direction of the credit-profitability relationship varies across different bank size categories. This approach provides deeper insight into the heterogeneity of bank behavior and performance outcomes, thereby enriching the explanatory power of the overall model (Shafira et al., 2022).

Although several previous studies have explored the relationship between internal bank variables and macroeconomic conditions on intermediation and profitability performance, there remain significant research gaps. First, there is limited research integrating the SCP framework with dynamic models such as ARCH/GARCH and ARDL simultaneously in the Indonesian banking context. Second, the role of macroeconomic volatility as a direct determinant of credit distribution and ROA remains underexplored. Third, the interaction between bank size and the effectiveness of credit intermediation as a determinant of profitability has not been thoroughly examined, particularly within the SCP framework and using moderation models (Mohammad, 2022).

Given the multifaceted nature of internal bank-specific factors, external macroeconomic conditions, and the structural dynamics of the banking industry, this study seeks to provide a comprehensive empirical analysis of the determinants of credit distribution and their implications for banking profitability in Indonesia during the period 2010–2024. The research framework integrates four methodological components: (1) the Structure–Conduct–Performance (SCP) paradigm as the overarching theoretical foundation; (2) the ARCH/GARCH model to quantify the volatility of macroeconomic variables such as inflation and interest rates; (3) the Autoregressive Distributed Lag (ARDL) model to capture both short-run dynamics and long-run equilibrium relationships among the core variables; and (4) the Moderated Regression Analysis (MRA) to examine the moderating effect of bank size on the credit–profitability linkage.

This multi-methodological approach is designed to yield a nuanced understanding of how structural, behavioral, and environmental variables interact to shape credit allocation strategies and financial outcomes within Indonesia's banking sector. The findings of this study are expected to offer theoretical contributions by refining the SCP framework in a developing country context and practical implications in the form of evidence-based policy recommendations for monetary authorities, financial regulators, and banking practitioners. In particular, the study aims to support the formulation of policies that enhance the effectiveness of financial intermediation, strengthen

banking sector resilience, and improve alignment between credit growth and sustainable economic development.

II. LITERATURE REVIEW

2.1. Market Structure and Bank Performance: The SCP Perspective

The Structure–Conduct–Performance (SCP) framework is a widely accepted theoretical model used to examine the interrelationship between market structure, institutional behavior, and organizational performance, including within the banking sector. Originally introduced by (Mason, 1939) and further developed by (Bain, 1951), the SCP paradigm posits that the structure of a market—characterized by the level of market concentration, firm size, and entry barriers—directly influences the strategic conduct of firms, which in turn affects performance outcomes. In the context of the banking industry, market structure encompasses factors such as market dominance, bank size, and the degree of competition; conduct refers to decisions related to credit allocation strategies, risk management practices, and operational efficiency; while performance is typically measured through indicators such as Return on Assets (ROA), Return on Equity (ROE), and cost efficiency ratios.

Numerous empirical studies affirm the continued relevance of the SCP approach within financial sectors. (Shaffer, 2004) argued that despite regulatory constraints, the SCP model remains effective in explaining banking market dynamics and institutional efficiency. (A. N. Berger et al., 1999) further refined the model by incorporating dimensions of internal cost structure and managerial efficiency, highlighting the importance of micro-level operational variables in shaping conduct and performance. In the Indonesian context, (Yudaruddin, 2018; Zahrah et al., 2022) provided evidence that higher levels of market concentration are associated with improved banking performance, particularly due to the strategic advantages enjoyed by dominant banks, such as better pricing power, scale economies, and more efficient operational conduct. These findings support the applicability of the SCP paradigm in analyzing banking competitiveness and profitability in emerging markets.

2.2. Determinants of Credit Distribution

Credit distribution represents a fundamental function of the banking system in promoting economic activity, particularly through its role in financial intermediation. A range of both internal and external factors has been identified in the literature as key determinants influencing banks' credit allocation behavior.

First, the Non-Performing Loan (NPL) ratio serves as a primary indicator of asset quality and the effectiveness of credit risk management. High NPL levels signal deteriorating credit portfolios and increase banks' risk aversion, thereby constraining their willingness and ability to extend new credit. (Khemraj & Pasha, 2009) highlighted this negative association in the context of emerging markets, while (C. J. Anwar et al., 2023) confirmed similar findings in Indonesia, demonstrating a statistically significant inverse relationship between NPL levels and credit growth.

Second, the Capital Adequacy Ratio (CAR) is a crucial indicator of a bank's solvency and its capacity to absorb potential losses. A higher CAR reflects stronger capital buffers, which enhance the bank's resilience to credit risk and enable more aggressive credit expansion strategies. (Tahir et al., 2016) found a positive correlation between CAR and credit growth, suggesting that well-capitalized banks are better positioned to support lending activity without compromising financial stability.

Third, indicators of liquidity such as the Loan to Deposit Ratio (LDR) and Third-Party Funds (DPK) play an instrumental role in determining the availability of funds for lending. An optimal LDR reflects efficient transformation of deposits into credit while maintaining liquidity buffers. (Berwal et al., 2023; M. et al., 2023; Othman et al., 2020; Prastiyo & Kristijadi, 2023) identified a significant positive relationship between LDR and credit distribution, indicating effective intermediation. In addition, (Jessica & Chalid, 2021) emphasized the strategic importance of DPK as a primary source of loanable funds, with increases in deposit mobilization directly enhancing banks' lending capacity.

Fourth, bank size is another important determinant that influences credit distribution capabilities. Larger banks tend to benefit from access to diversified and lower-cost funding sources, superior risk assessment frameworks, and economies of scale, all of which contribute to greater credit extension capacity. (T. Beck et al., 2013) demonstrated that larger banks are more likely to expand their lending portfolios; however, such expansion must be balanced with effective regulatory oversight, particularly concerning systemic risk posed by institutions categorized as "too big to fail."

Taken together, these determinants underscore the multifaceted nature of bank credit distribution, which is influenced by institutional strength, financial resilience, liquidity conditions, and broader macroprudential considerations. A nuanced understanding of these factors is essential for formulating sound banking policies that promote sustainable credit growth while safeguarding financial stability

2.3. Credit Distribution and Its Implications for Performance (ROA)

Efficient and high-quality credit distribution has a direct and measurable impact on bank performance, primarily through increased net interest income and more effective asset utilization. When executed prudently, credit expansion enhances the income-generating capacity of banks and strengthens their intermediary function. (Alper et al., 2011) found that credit growth contributes positively to Return on Assets (ROA), provided that credit risk is adequately managed. This highlights the critical importance of maintaining asset quality in tandem with lending growth. Supporting this view, (Bikker, 2004) identified a pro-cyclical relationship between credit expansion and bank profitability, whereby profitability tends to increase during periods of credit growth and economic expansion, and decline during downturns when asset quality deteriorates.

In the broader ASEAN context, (Masrizal et al., 2023) emphasized that the key drivers of bank profitability extend beyond credit growth to include operational efficiency, cost control, and loan quality. These findings suggest that while aggressive credit expansion can yield short-term gains, long-term financial performance is more robustly sustained through strategic management of cost structures and risk exposures. Banks that effectively control operating expenses, maintain low non-performing loan (NPL) ratios, and optimize loan-to-asset allocation tend to exhibit superior profitability metrics over time.

Taken together, these studies underscore the need for a balanced approach to credit distribution—one that not only targets growth but also prioritizes prudential standards and efficiency benchmarks. For policymakers and regulators, this implies that initiatives to stimulate lending must be accompanied by supervisory frameworks that safeguard against excessive risk-taking and operational inefficiencies, particularly in a dynamic and potentially volatile macroeconomic environment.

2.4. The Relevance of the SCP Approach in the Indonesian Banking Sector

The structural transformation of Indonesia's banking sector—marked by bank consolidation, rapid digitalization, and the implementation of financial inclusion policies—necessitates a contextual refinement of the Structure–Conduct–Performance (SCP) framework. Although the Indonesian banking market is considered moderately concentrated, it remains relatively competitive due to the significant presence of mid-sized and small-scale banks, which collectively contribute to market diversity. Within this dynamic environment, the SCP model retains its analytical value by providing a systematic approach to examine how market structure influences bank behavior (conduct) and ultimately affects financial performance.

However, the evolving characteristics of the Indonesian banking landscape require the SCP framework to move beyond its traditional structure. (Yudaruddin, 2018) emphasized the need to incorporate internal bank-specific factors, including corporate governance, technological innovation, and organizational adaptability, alongside external influences such as regulatory interventions and shifts in supervisory frameworks. These dimensions are essential in understanding the heterogeneity of bank conduct, particularly in response to rapid digital transformation and increased regulatory scrutiny.

Further, (Zahrah et al., 2022) found empirical evidence that higher market concentration can enhance banking performance—particularly Return on Assets (ROA)—by promoting more efficient credit allocation behavior and improved risk management practices. This suggests that dominant banks, by virtue of their scale and resources, are better equipped to respond strategically to market shocks, thereby securing more stable profitability outcomes.

Accordingly, while the SCP approach remains a relevant and useful analytical tool for evaluating Indonesia's banking sector, it must be expanded and modernized through empirical models that account for the interaction between internal capabilities (e.g., management efficiency,

operational resilience, digital infrastructure) and external pressures (e.g., regulatory policy, market structure, macroeconomic conditions). Such a refined framework would enable a more accurate diagnosis of sectoral dynamics and inform better policy and strategic decisions in the context of financial system stability and inclusive economic growth.

III. METHODOLOGY

3.1 **Research Design and Approach**

This study employs a quantitative explanatory research design aimed at analyzing the determinants of credit distribution and their implications for bank profitability in Indonesia. The explanatory approach was selected due to its ability to identify causal relationships between variables based on empirical data (Creswell, 2020). The study utilizes a panel dataset comprising 105 commercial banks operating in Indonesia over the period 2010–2024, enabling a longitudinal analysis of the national banking sector's intermediation behavior.

The analytical framework is grounded in the Structure–Conduct–Performance (SCP) paradigm developed by (Bain, 1951), which posits that market structure influences firm conduct, ultimately affecting performance. In this context, market structure is reflected in internal bank characteristics such as capital strength, operational efficiency, and asset size; bank conduct is represented by strategic credit allocation decisions; and performance is measured by financial returns, specifically *Return on Assets* (ROA).

In addition, the study examines the moderating role of bank size, as larger banks typically possess stronger risk-absorption capacity and more efficient credit allocation mechanisms, potentially strengthening the link between credit distribution and profitability (Berger & Bouwman, 2009).

3.2 Data and Operational Definitions

This study uses annual secondary data sourced from audited bank financial statements, the Financial Services Authority (OJK), and official publications from Bank Indonesia. Secondary data were chosen for their reliability and ability to represent actual conditions in the banking industry (Gujarati & Porter, 2008).

In this study, Return on Assets (ROA) is employed as a measure of bank profitability, reflecting management efficiency in generating earnings from total assets (Rani & Zergaw, 2017). To assess the determinants of credit distribution, several internal banking indicators are utilized. Non-Performing Loans (NPL) represent credit risk and asset quality, while the Capital Adequacy Ratio (CAR) indicates the bank's capital strength and resilience. Loan to Deposit Ratio (LDR) and Loan to Asset Ratio (LAR) serve as proxies for liquidity and funding efficiency, capturing the bank's ability to convert liabilities into productive assets. Operating Expenses to Operating Income (CIR) is used to assess operational efficiency, where a lower ratio reflects more efficient management of operating costs. Additionally, Third-Party Funds (DPK) are considered as the primary source of funding for banks and reflect depositor confidence and liquidity availability (Athanasoglou et al., 2008; Mohammad, 2022; O'Connell, 2023).

To capture the influence of external economic conditions, two macroeconomic variables are included: inflation and the BI Rate, which serve as proxies for macroeconomic pressures that can affect banking intermediation and credit dynamics (Mishkin, 2007). The key mediating variable, Credit Distribution, is measured by the total annual loans disbursed by each bank, reflecting the effectiveness of financial intermediation. Furthermore, the Size of the Bank is incorporated as a moderating variable and is proxied by the natural logarithm of total assets (LnSize), in accordance with prior studies on bank performance and structural efficiency (Pasiouras & Kosmidou, 2007).

3.3 Analytical Framework and Econometric Methods

The conceptual model in this study is constructed based on the Structure–Conduct–Performance (SCP) framework to explain the relationship between the structure of the banking industry, banks' strategic behavior in credit distribution, and financial performance measured by profitability (Return on Assets/ROA). Within this framework, the banking industry structure is represented by several internal bank variables, including operational efficiency (Operating Expenses to Operating Income, capital adequacy (Capital Adequacy Ratio/CAR), liquidity (Loan to Assets Ratio/LAR), and credit quality (Non-Performing Loans/NPL). Additionally, external variables such as inflation, the BI Rate, and a dummy variable representing crisis or policy intervention are used to control the influence of macroeconomic conditions on banking intermediation behavior (A. Berger, 2017; Demirgüç-Kunt et al., 2022).

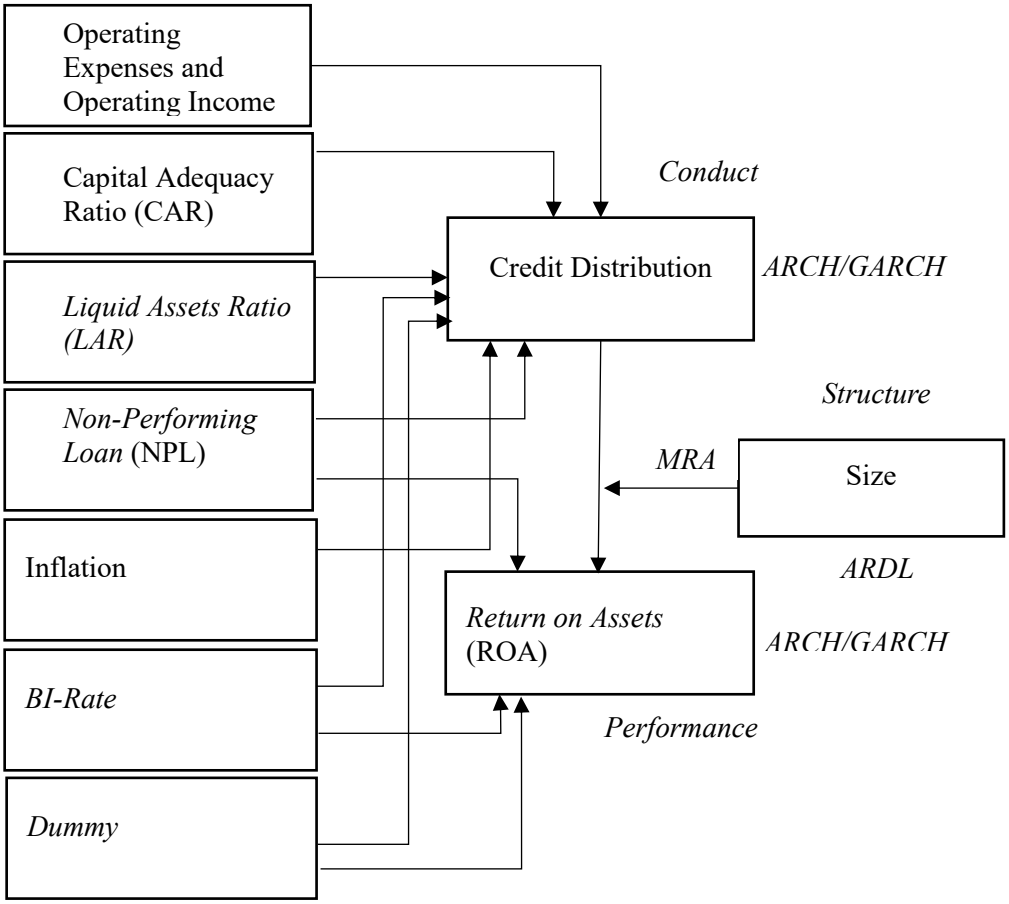


Figure 1. Analytical Framework

The conduct component of the model is represented by credit distribution, which reflects the strategic decision of banks in carrying out their intermediation function (Bain, 1956). Meanwhile, the performance component is measured by Return on Assets (ROA), the primary indicator of bank profitability (Athanasoglou et al., 2008). In essence, this study investigates how industry structure and external conditions influence banks' credit behavior and how this behavior ultimately impacts banking performance.

To address the dynamic and multivariate nature of the research questions, the study employs a combination of statistical and econometric methods. First, the Autoregressive Distributed Lag (ARDL) model is employed to analyze the short- and long-term relationships between credit distribution and bank profitability (Pesaran et al., 2001). Second, the ARCH/GARCH model is applied to assess the impact of macroeconomic volatility (inflation and BI Rate) on credit distribution and ROA (Bollerslev, 1986; Engle et al., 2008)). Third, to evaluate the moderating role of bank size on the relationship between credit distribution and ROA, the study uses the Moderated Regression Analysis (MRA) approach (Baron & Kenny, 1986).

Overall, this conceptual model not only enables the investigation of structural relationships among variables in Indonesia's banking system but also provides empirical insights into how bank characteristics and macroeconomic dynamics influence the intermediation function and banking performance over the 2010–2024 period. The findings are expected to serve as a strong foundation for the formulation of more targeted policies to enhance the stability and effectiveness of the national banking sector.

3.4 Model Specification

The first model investigates the determinants of bank credit distribution using a log-linear specification to capture elasticity effects. The model is structured as follows:

$$\log(\text{Credit})_t = \beta_0 + \beta_1 \text{CIR}_t + \beta_2 \text{CIR}_{t-1} + \beta_3 \text{CAR}_t + \beta_4 \text{NPL}_t + \beta_5 \text{LAR}_t + \beta_6 \text{LAR}_{t-1}$$

$$+ +\beta_7 \text{Inflatio}_t + \beta_8 \text{BI\_Rate}_t + \beta_9 \text{BI\_Rate}_{t-5} + \beta_{10} \text{Dummy}_t + \varepsilon_t$$

This model integrates both microeconomic and macroeconomic variables to capture the short- and medium-term drivers of credit growth. The inclusion of lagged terms for CIR, LAR, and BI Rate enables the analysis to account for delayed responses and persistence in banking behavior. The Cost-to-Income Ratio (CIR) serves as a proxy for operational efficiency, while Capital Adequacy Ratio (CAR) and Non-Performing Loans (NPL) represent capital strength and credit risk, respectively. The inclusion of inflation and the BI Rate reflects the influence of monetary policy and macroeconomic stability. A dummy variable is included to control for structural breaks such as regulatory reforms or economic shocks.

The second model estimates the effect of credit distribution on bank profitability, measured by Return on Assets (ROA), while considering other bank-specific and macroeconomic factors:

$$\mathrm{ROA}_t = \beta_{11} + \beta_{12}\mathrm{ROA}_{t-1} + \beta_{13}\log(\mathrm{credit}_t) + \beta_{14}\mathrm{NPL}_t + \beta_{15}\mathrm{BI\_Rate}_t + \beta_{16}\mathrm{Size}_t + \beta_{17}\mathrm{Dummy}_t + \varepsilon_t$$

This model applies a dynamic specification by including the lagged dependent variable (ROA), which captures the inertia or persistence in bank profitability over time. The log-transformed credit variable enables elasticity-based interpretation of its impact on ROA. Size (measured as the log of total assets) is included to assess the role of economies of scale, while NPL and the BI Rate reflect risk management and the cost of borrowing, respectively. The dummy variable captures policy or crisis periods that may affect profitability.

The third model adopts a Moderated Regression Analysis (MRA) framework to test whether the relationship between credit distribution and profitability is conditioned by a moderating variable such as bank size, efficiency, or other characteristics:

$$\mathrm{ROA}_t = \beta_{18} + \beta_{19}\mathrm{ROA}_{t-1} + \beta_{20}\log(\mathrm{CIredit}_1) + \beta_{21}\mathrm{Moderation} + \beta_{22}\mathrm{Dummy}_t + \varepsilon_t$$

The moderating term typically takes the form of an interaction between log credit and a bank-specific variable, allowing for the identification of heterogeneity in the credit-profitability relationship across different types of banks. The inclusion of the lagged ROA maintains the dynamic nature of the model, while the dummy variable continues to capture structural changes or exogenous events.

IV. RESULTS AND DISCUSSION

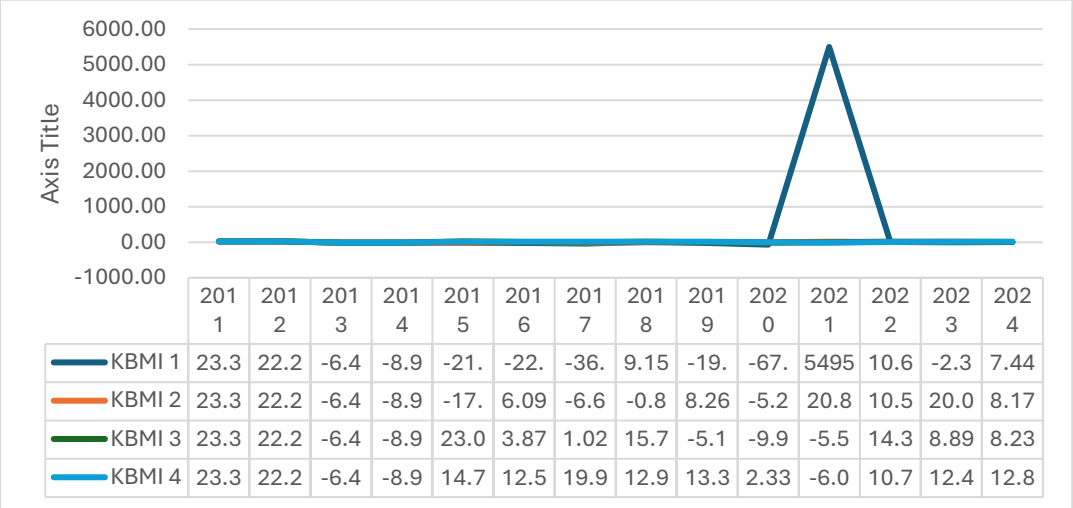
4.1. Structure, Conduct, and Performance of Commercial Banks

The analysis of Indonesia's commercial banking sector from 2010 to 2024 reveals a structural evolution aligned with the KBMI (Kelompok Bank berdasarkan Modal Inti) classification, which differentiates banks by core capital strength. Market structure trends indicate a shift from fragmentation toward increasing concentration, as reflected in the rising CR4 ratio since 2017. Banks in KBMI (Bank Groups Based on Core Capital) 1, with small capital bases, operate in highly competitive and fragmented markets with limited pricing power. In contrast, KBMI 2 and KBMI 3 banks illustrate moderate to high levels of consolidation and structured competition, while KBMI 4 banks dominate the market, controlling more than 50% of total industry assets and playing a critical role in financial system stability. These findings affirm the relevance of SCP (Structure–Conduct–Performance) theory in explaining the ongoing concentration dynamics in Indonesia's banking industry.

Tahun	Total Assets of the Big Four (Trillion IDR)	Total Assests of Commercial Bank (Trillion Rp.)	CR4 (%)
2010	1.427	3.009	47,43
2011	1.703	3.653	46,61
2012	1.963	4.115	47,71
2013	2.242	4.774	46,97

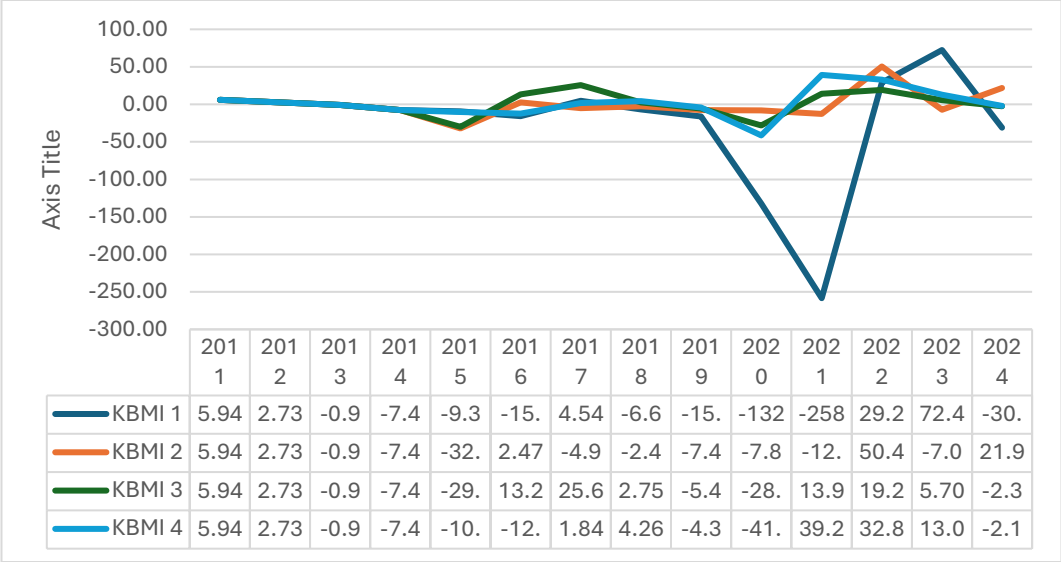
2014	2.626	5.410	48,54
2015	2.891	5.919	48,85
2016	3.323	6.476	51,32
2017	3.712	7.100	52,28
2018	4.133	7.752	53,31
2019	4.500	8.213	54,79
2020	5.119	8.781	58,30
2021	5.597	10.112	55,35
2022	6.203	11.113	55,81
2023	6.634	11.766	56,38
2024	6.999	12.461	56,17
Total	57.645	107.644	53,55

In terms of conduct, bank lending strategies vary by capital strength. KBMI 1 banks tend to pursue aggressive credit expansion to gain market share but are more exposed to credit risk due to limited capital and weaker risk management frameworks. KBMI 2 banks apply more balanced credit policies, integrating moderate risk management capacity. Larger banks in KBMI 3 and 4 adopt more conservative lending behavior, supported by advanced risk analytics, better governance, and flexible liquidity positions. These patterns reflect empirical findings emphasizing the link between capital adequacy and credit risk resilience.



	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
KBMI 1	23.3	22.2	-6.4	-8.9	-21.	-22.	-36.	9.15	-19.	-67.	5495	10.6	-2.3	7.44
KBMI 2	23.3	22.2	-6.4	-8.9	-17.	6.09	-6.6	-0.8	8.26	-5.2	20.8	10.5	20.0	8.17
KBMI 3	23.3	22.2	-6.4	-8.9	23.0	3.87	1.02	15.7	-5.1	-9.9	-5.5	14.3	8.89	8.23
KBMI 4	23.3	22.2	-6.4	-8.9	14.7	12.5	19.9	12.9	13.3	2.33	-6.0	10.7	12.4	12.8

Regarding performance, Return on Assets (ROA) patterns further reinforce the SCP framework. KBMI 1 banks exhibit highly volatile and unstable profitability, with extreme cases of negative ROA in recent years. Meanwhile, KBMI 2 banks show improved stability, and KBMI 3 and 4 banks demonstrate consistent and efficient performance, benefiting from scale, capital strength, and technological capabilities. These results suggest that core capital serves as a key determinant of bank performance, risk absorption capacity, and overall financial resilience, as supported by both theory and prior empirical studies.



	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
KBMI 1	5.94	2.73	-0.9	-7.4	-9.3	-15.	4.54	-6.6	-15.	-132	-258	29.2	72.4	-30.
KBMI 2	5.94	2.73	-0.9	-7.4	-32.	2.47	-4.9	-2.4	-7.4	-7.8	-12.	50.4	-7.0	21.9
KBMI 3	5.94	2.73	-0.9	-7.4	-29.	13.2	25.6	2.75	-5.4	-28.	13.9	19.2	5.70	-2.3
KBMI 4	5.94	2.73	-0.9	-7.4	-10.	-12.	1.84	4.26	-4.3	-41.	39.2	32.8	13.0	-2.1

4.2. The Impact of Operational Efficiency, Capital Adequacy, Credit Risk, Liquidity, and Macroeconomic Indicators on Credit Distribution in Indonesian Commercial Banks

The estimation results of the ARCH/GARCH model demonstrate that bank credit distribution in Indonesia during the period 2010–2024 is significantly influenced by both internal bank-specific variables and external macroeconomic conditions, with notable volatility characteristics. This confirms the appropriateness of using a heteroskedastic model to capture the dynamic behavior of credit distribution in a financial system marked by periodic shocks and structural adjustments.

Table 1. Determinants of Bank Credit Distribution in Indonesia

Dependent Variable: LOG(CIREDIT)
Method: ML ARCH - Student's t distribution (BFGS / Marquardt steps)
Sample (adjusted): 2010M06 2024M10
Included observations: 173 after adjustments
Convergence achieved after 65 iterations
Coefficient covariance computed using outer product of gradients
Presample variance: backcast (parameter = 0.7)
GARCH = C(12) + C(13)*RESID(-1)^2 + C(14)*RESID(-1)^2*(RESID(-1)<0) + C(15)*GARCH(-1)

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	13.96166	0.099906	139.7478	0.0000
CIR	-0.000986	0.000508	-1.939480	0.0524
CIR(2)	0.000499	0.000181	2.751806	0.0059
CAR	0.078744	0.002487	31.66788	0.0000
NPL	-0.113424	0.016353	-6.935998	0.0000
LAR	0.006157	0.002230	2.760953	0.0058
LAR(-1)	-0.001497	0.000930	-1.609367	0.1075
INFLATION	-0.023750	0.004451	-5.336254	0.0000
BI_Rate	0.020106	0.007918	2.539081	0.0111
BI_Rate(-5)	-0.032322	0.006103	-5.296300	0.0000
DUMMY	0.115513	0.014979	7.711871	0.0000

Variance Equation

C	0.000318	0.000171	1.858658	0.0631
RESID(-1)^2	1.416867	0.451552	3.137774	0.0017
RESID(-1)^2*(RESID(-1)<0)	-0.277322	0.628600	-0.441174	0.6591
GARCH(-1)	0.076378	0.045900	1.664015	0.0961
T-DIST. DOF	10.99351	9.713255	1.131805	0.2577

R-squared	0.773616	Mean dependent var	15.24839
Adjusted R-squared	0.759641	S.D. dependent var	0.415065
S.E. of regression	0.203491	Akaike info criterion	-1.883990
Sum squared resid	6.708213	Schwarz criterion	-1.592356
Log likelihood	178.9651	Hannan-Quinn criter.	-1.765675
Durbin-Watson stat	1.584379		

The operational efficiency ratio (CIR) exhibits a statistically significant nonlinear (U-shaped) relationship with credit distribution. The negative sign of the linear term and the positive sign of its squared term indicate that credit tends to decline at moderate inefficiency levels but rises again when inefficiency becomes more extreme. This pattern suggests that banks facing high inefficiencies may resort to aggressive credit expansion strategies to compensate for diminishing income margins, albeit at the cost of elevated risk. These findings are consistent with (Zahrah et al., 2022) and the framework outlined by (A. N. Berger & Mester, 1997), who noted that cost inefficiency can distort credit pricing and lead to suboptimal lending behavior.

The Capital Adequacy Ratio (CAR) is positively and strongly associated with credit distribution, underscoring the importance of capital strength in enabling banks to absorb risk and sustain credit growth. This aligns with international literature, including Siddiqui and Shoaib (2011), and supports Indonesia's regulatory emphasis on capital strengthening through Basel III implementation. A robust capital buffer enhances financial resilience and facilitates consistent credit supply, especially during periods of macroeconomic volatility.

Credit risk, proxied by the Non-Performing Loan (NPL) ratio, shows a significantly negative impact on credit. Higher NPL levels prompt greater risk aversion among banks, resulting in more conservative credit policies. This supports the findings of (A. Z. Anwar, 2019; Khemraj & Pasha, 2009), who documented a credit contraction effect when credit quality deteriorates, particularly among small and medium-sized banks with limited diversification and risk absorption capabilities.

The Loan-to-Asset Ratio (LAR) has a positive and significant impact on credit in the contemporaneous period, indicating that banks with higher credit-to-assets proportions are actively engaged in financial intermediation. The lack of significance in the lagged LAR term suggests the effect is short-term in nature. This reinforces the findings of (Adnan et al., 2021; Yudaruddin, 2020), who emphasized the role of liquidity in supporting credit growth while cautioning against over-leverage in asset utilization.

Inflation exerts a significant negative influence on credit distribution. Rising inflation erodes borrowers' repayment capacity and increases uncertainty in economic planning, thereby reducing credit demand and tightening banks' risk appetite. This result is consistent with (Sinaga et al., 2020), who highlighted inflation as a crucial determinant of credit stability in emerging economies.

The BI Rate, representing Indonesia's policy interest rate, has a mixed effect. Its contemporaneous coefficient is positive, suggesting that initial increases in the BI Rate may be interpreted by banks as a signal of macroeconomic confidence or used to lock in higher lending margins. However, the five-month lagged term is significantly negative, reflecting the delayed contractionary effects of monetary tightening on credit demand. These dynamics align with the delayed transmission mechanism described by (Jerónimo et al., 2023).

The structural dummy variable is positive and significant, suggesting that structural reforms—such as bank consolidation, digital transformation, and macroprudential policy enhancements—have contributed to improved credit distribution performance. This is in line with findings by (Mulyaningsih & Daly, 2012), who noted that post-pandemic reforms in Indonesia strengthened bank governance and encouraged more efficient intermediation, particularly among larger institutions.

The variance equation confirms the presence of short-term volatility clustering in credit behavior, as indicated by the significant ARCH term. However, the asymmetric term is not significant, implying that both positive and negative shocks affect credit volatility in a similar manner. The marginally significant GARCH term suggests a mean-reverting process in credit volatility, which aligns with the findings of (Handoyo et al., 2023), who reported similar volatility patterns in Indonesian banking sector indicators.

Overall, these findings reinforce the theoretical foundation of the Structure–Conduct–Performance (SCP) framework, where internal bank efficiency, risk management, and macroeconomic variables interact to influence bank behavior in credit distribution. The ARCH/GARCH methodology enhances the explanatory power of the model by incorporating volatility dynamics, which are essential for formulating effective macroprudential and monetary policies. The policy implication is clear: maintaining macroeconomic stability, strengthening operational efficiency, and enhancing regulatory coordination are key to ensuring sustained and prudent credit growth**.**

Table 2. Determinants of ROA in Indonesian Commercial Banks, 2010–2024

Dependent Variable: ROA
Method: ML ARCH - (BFGS / Marquardt steps)
Date: 04/24/25 Time: 05:05
Sample (adjusted): 2010M02 2024M12
Included observations: 179 after adjustments
Dependent lags: 1 (Fixed)
Dynamic regressors (0 lag, fixed): LOG(CIREDIT) NPL BI_Rate SIZE DUMMY
Fixed regressors: C

Variable	Coefficient	Std. Error	t-Statistic	Prob.*

ROA(-1)	0.689133	0.053049	12.99038	0.0000
LOG(CIREDIT)	-0.964030	0.252745	-3.814239	0.0002
NPL	-0.133959	0.042454	-3.155422	0.0019
BI_Rate	-0.028153	0.015120	-1.862019	0.0643
SIZE	1.931483	0.564402	3.422176	0.0008
DUMMY	-0.164360	0.052203	-3.148482	0.0019
C	2.906981	0.804226	3.614632	0.0004

R-squared	0.833445	Mean dependent var	2.659430
Adjusted R-squared	0.827635	S.D. dependent var	0.396803
S.E. of regression	0.164740	Akaike info criterion	-0.730572
Sum squared resid	4.667971	Schwarz criterion	-0.605926
Log likelihood	72.38619	Hannan-Quinn criter.	-0.680029
F-statistic	143.4484	Durbin-Watson stat	2.054861
Prob(F-statistic)	0.000000		

The estimation results of the ARCH model provide strong evidence that the profitability of Indonesian commercial banks—as measured by Return on Assets (ROA)—is significantly influenced by both bank-specific factors and macroeconomic conditions. The model achieves a high explanatory power, with an adjusted R-squared of 0.8276 and a statistically significant overall F-statistic ($p < 0.01$), suggesting robustness in capturing the dynamics of bank performance over the 2010–2024 period.

The lagged ROA variable (ROA(-1)) is positive and highly significant, with a coefficient of 0.6891. This indicates a strong persistence in bank profitability, where past performance substantially influences current performance. Such inertia in ROA aligns with the findings of Athanasoglou et al. (2008), who emphasize that profitability in banking exhibits autoregressive behavior due to stable business models and recurring revenue structures.

The volume of credit (LOG(CREDIT)) is negatively and significantly associated with ROA. This result may appear counterintuitive but reflects the risk-return tradeoff in credit expansion. Excessive or poorly managed credit growth can deteriorate asset quality, thereby eroding profitability. This outcome supports earlier findings by (Alper et al., 2011; Bikker, 2004), who note that credit growth contributes to profitability only when accompanied by prudent risk management.

The Non-Performing Loan (NPL) ratio has a statistically significant and negative effect on ROA (coefficient = -0.1340). This is consistent with the prevailing literature, including Klein (2013) and (Masrizal et al., 2023), confirming that deteriorating asset quality, as reflected in higher NPLs, reduces interest income and increases provisioning costs, which ultimately suppress profitability.

The policy interest rate (BI Rate) exhibits a negative relationship with ROA, albeit at the 10% significance level ($p = 0.0643$). An increase in the BI Rate may raise funding costs and depress credit demand, thereby reducing net interest margins. This finding aligns with the transmission mechanism of monetary policy discussed by (Jerónimo et al., 2023), which explains the inverse relationship between interest rate hikes and bank profitability in the short run.

The SIZE variable, representing bank size, shows a strong positive effect on ROA. Larger banks tend to benefit from scale economies, diversification advantages, and broader market access, which enhance their profitability. This is in line with the structure–conduct–performance (SCP) hypothesis and the empirical results of (T. Beck et al., 2013; Zahrah et al., 2022), who documented a positive link between size and performance among Indonesian banks.

Conversely, the structural DUMMY variable is significantly negative, suggesting that certain regulatory or systemic events during the observed period, such as the COVID-19 pandemic or financial market disruptions, adversely affected bank profitability. This highlights the vulnerability of banking performance to macroprudential shocks and supports the argument for robust systemic risk buffers, as emphasized by (Attig et al., 2006; Watts et al., 2018).

Taken together, these results underscore the complex interplay between credit behavior, asset quality, macroeconomic factors, and bank-specific characteristics in determining bank profitability. The significant presence of autoregressive dynamics and negative shocks in credit and macroeconomic conditions points to the importance of proactive risk management, prudent credit allocation, and adaptive monetary policy to safeguard bank performance**.**

Table 3. Bank Profitability with Bank Size as a Moderating Variable

Dependent Variable: ROA
Method: ARDL
Date: 04/24/25 Time: 05:31
Sample (adjusted): 2010M02 2024M12
Included observations: 179 after adjustments
Dependent lags: 1 (Fixed)
Dynamic regressors (0 lag, fixed): LOG(CIREDIT) MODERATION DUMMY
Fixed regressors: C

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
ROA(-1)	0.783480	0.045377	17.26610	0.0000
LOG(CREDIT)	-0.986029	0.379516	-2.598124	0.0102
MODERATION	0.161080	0.065210	2.470161	0.0145
DUMMY	-0.130604	0.047619	-2.742715	0.0067
C	8.355394	2.913749	2.867575	0.0046

R-squared	0.822783	Mean dependent var	2.659430
Adjusted R-squared	0.818709	S.D. dependent var	0.396803
S.E. of regression	0.168952	Akaike info criterion	-0.690873
Sum squared resid	4.966772	Schwarz criterion	-0.601839
Log likelihood	66.83310	Hannan-Quinn criter.	-0.654770
F-statistic	201.9624	Durbin-Watson stat	2.110074
Prob(F-statistic)	0.000000		

The ARDL model estimation reveals that the profitability of Indonesian commercial banks, proxied by Return on Assets (ROA), is significantly influenced by credit distribution, structural shocks, and bank size as a moderating factor. The model demonstrates high explanatory power, with an adjusted R-squared of 0.8187 and a highly significant overall F-statistic, indicating the robustness of the estimated relationships over the period 2010–2024.

The lagged dependent variable, ROA(-1), shows a strong and statistically significant coefficient (0.7835; $p < 0.01$), indicating the persistence of profitability over time. This finding is consistent with Athanasoglou et al. (2008), who note that bank profitability tends to be autoregressive due to long-term business strategies and income stability in financial institutions.

Credit distribution, as captured by the natural logarithm of total loans (LOG(CIREDIT)), negatively and significantly affects ROA (coefficient = -0.9860; $p = 0.0102$). This implies that, without proper risk management, rapid credit growth can suppress profitability, likely due to increased credit risk, mispricing, or inefficiencies in loan allocation. This supports the findings of (Bikker, 2004; Masrizal et al., 2023), who argue that aggressive credit expansion without adequate risk controls can erode profit margins.

Importantly, the interaction term representing the moderating effect of bank size (Moderation) shows a positive and statistically significant impact on ROA (coefficient = 0.1611; $p = 0.0145$). This suggests that larger banks—due to their economies of scale, stronger risk absorption capacity, and access to diversified funding—are better positioned to translate credit growth into improved profitability. This result confirms the hypothesis that bank size moderates the relationship between credit distribution and profitability, in line with the structure–conduct–performance (SCP) paradigm. Studies such as (A. K. Beck & Beck, 2022) have previously documented similar moderating roles of bank size in emerging banking markets.

The DUMMY variable, used to control for structural breaks or systemic events such as the COVID-19 pandemic or regulatory shifts, is negatively and significantly associated with ROA. This finding (coefficient = -0.1306; $p = 0.0067$) reflects the adverse impact of such external shocks on bank profitability, reinforcing the importance of regulatory agility and macroprudential safeguards, as discussed in (Attig et al., 2006; Watts et al., 2018).

The constant term (C) is positive and significant, indicating the presence of unexplained structural or institutional components contributing positively to profitability.

Collectively, these findings highlight the importance of considering bank size when analyzing profitability dynamics in Indonesia's banking sector. Larger banks are not only more resilient in the face of credit-driven profit pressures but also more capable of leveraging structural advantages to sustain returns. From a policy perspective, these insights support differentiated regulatory treatment and supervisory frameworks that recognize systemic relevance and institutional capacity, particularly during periods of macroeconomic volatility.

V. CONCLUSION

This study provides a comprehensive examination of credit distribution and its profitability implications within the framework of Structure–Conduct–Performance (SCP), using Indonesian commercial banks from 2010 to 2024 as the analytical context. The empirical results, obtained through ARCH/GARCH, ARDL, and Moderated Regression Analysis, confirm that both internal bank-specific factors (such as CIR, CAR, NPL, LAR) and external macroeconomic variables (such as inflation and BI Rate) significantly influence the volume of credit extended and the profitability achieved, measured through Return on Assets (ROA).

The study finds that market concentration has increased in Indonesia's banking industry, particularly among higher-tier banks categorized under KBMI 3 and KBMI 4. These banks demonstrate stronger financial performance, better credit allocation efficiency, and more consistent profitability, highlighting the advantages conferred by economies of scale and risk management capacity. Conversely, smaller banks under KBMI 1 and KBMI 2 face more volatility in both credit performance and profitability, indicating limited resilience to macroeconomic shocks and market fluctuations.

Moreover, the role of bank size as a moderating factor is empirically validated. Larger banks are better positioned to transform credit growth into sustainable profits, while smaller banks may face profitability erosion due to inadequate risk absorption capacity. The presence of significant structural breaks, such as during the COVID-19 pandemic, also had a negative and measurable impact on bank profitability.

These findings reaffirm the continued relevance of the SCP framework in evaluating the Indonesian banking sector and underscore the need for regulatory frameworks that take into account both market structure and institutional heterogeneity.

From a regulatory and policy perspective, several implications emerge. First, there is a critical need to strengthen differentiated supervision based on bank size. Larger banks that pose systemic importance require enhanced macroprudential monitoring to manage contagion risks, while smaller banks need support in improving governance, capital adequacy, and risk-based lending frameworks.

Second, the negative effects of NPLs and inefficient cost structures on credit and profitability highlight the urgency of enhancing credit risk assessment standards and operational efficiency, especially in banks with limited capital and fragmented markets.

Third, the moderating role of bank size suggests that scaling-up strategies—through consolidation or digital transformation—may be beneficial, particularly for mid-tier banks. These efforts could improve competitiveness and sustainability without sacrificing financial inclusion.

Fourth, given the sensitivity of credit distribution and profitability to monetary policy instruments, policymakers should promote interest rate predictability and macroeconomic stability to ensure that lending conditions remain conducive to economic growth without compromising financial soundness.

Finally, the presence of structural shocks calls for stronger crisis management frameworks, including dynamic provisioning, counter-cyclical buffers, and early warning systems, to safeguard against future disruptions.

In conclusion, aligning regulatory architecture with market realities and institutional diversity—while encouraging responsible lending, innovation, and resilience—will be key to enhancing the role of banking intermediation in supporting inclusive and sustainable economic growth in Indonesia.

REFERENCES

Adnan, N. D. A. B., Lau, W.-T., & Law, S.-H. (2021). Bank Profitability Determinants: Firm-Level Observations in the ASEAN-5 Markets. *Research in World Economy*, *12*(3). https://doi.org/10.5430/rwe.v12n3p77

Alper, D., Anbar, A., & Alper, D. (2011). Bank Specific and Macroeconomic Determinants of Commercial Bank Profitability: Empirical Evidence from Turkey. *Business and Economics Research Journal*, *2*(2). https://berjournal.com/wp-content/plugins/downloads-manager/upload/BERJ%202(2)2011%20article8%20pp139-152.pdf

Anwar, A. Z. (2019). Integrated financing model in Islamic microfinance institutions for agriculture and fisheries sector. *Investment Management and Financial Innovations*, *16*(4), 303–314. https://doi.org/10.21511/imfi.16(4).2019.26

Anwar, C. J., Suhendra, I., Purwanda, E., Salim, A., Rakhmawati, N. A., & Jie, F. (2023). Investigating the relationship between monetary policy, macro-prudential policy and credit risk in Indonesia banking industry. *Heliyon*, *9*(7). https://doi.org/10.1016/j.heliyon.2023.e18229

Athanasoglou, P. P., Brissimis, S. N., & Delis, M. D. (2008). Bank-specific, industry-specific and macroeconomic determinants of bank profitability. *Journal of International Financial Markets, Institutions and Money*, *18*(2). https://doi.org/10.1016/j.intfin.2006.07.001

Attig, N., Fong, W. M., Gadhoum, Y., & Lang, L. H. P. (2006). Effects of large shareholding on information asymmetry and stock liquidity. *Journal of Banking and Finance*, *30*(10). https://doi.org/10.1016/j.jbankfin.2005.12.002

Bain, J. S. (1951). Relation of Profit Rate to Industry Concentration: American Manufacturing, 1936-1940. *The Quarterly Journal of Economics*, *65*(3), 293. https://doi.org/10.2307/1882217

Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, *51*(6). https://doi.org/10.1037//0022-3514.51.6.1173

Beck, A. K., & Beck, P. J. (2022). Effects of ASU 2016-13 and COVID-19 on banks' loan loss allowances. *Advances in Accounting*, *56*, 100581. https://doi.org/10.1016/j.adiac.2021.100581

Beck, T., Demirgüç-Kunt, A., & Merrouche, O. (2013). Islamic vs. conventional banking: Business model, efficiency and stability. *Journal of Banking & Finance*, *37*(2), 433–447. https://doi.org/10.1016/j.jbankfin.2012.09.016

Berger, A. (2017). Internationalization and bank risk. *Management Science*, *63*(7), 2283–2301. https://doi.org/10.1287/mnsc.2016.2422

Berger, A. N., Demsetz, R. S., & Strahan, P. E. (1999). The consolidation of the financial services industry: Causes, consequences, and implications for the future. *Journal of Banking and Finance*, *23*(2). https://doi.org/10.1016/S0378-4266(98)00125-3

Berger, A. N., & Mester, L. J. (1997). Inside the black box: What explains differences in the efficiencies of financial institutions? *Journal of Banking and Finance*, *21*(7). https://doi.org/10.1016/S0378-4266(97)00010-1

Berwal, K., Bhall, R., & Singh, S. (2023). Determinants of Bank Credit by Commercial Bank in India. *International Journal of Indian Culture and Business Management*, *1*(1). https://doi.org/10.1504/ijicbm.2023.10064151

Bikker, J. A. (2004). Cyclical Patterns in Profits, Provisioning and Lending of Banks. In *Competition and Efficiency in a Unified European Banking Market* (pp. 241–274). Edward Elgar Publishing. https://doi.org/10.4337/9781781957288.00013

Bollerslev, T. (1986). Generalized autoregressive conditional heteroskedasticity. *Journal of Econometrics*, *31*(3). https://doi.org/10.1016/0304-4076(86)90063-1

Creswell, J. W. (2020). Penelitian Kualitatif & Desain Riset : Memilih di Antara Lima Pendekatan. In *Mycological Research*.

Demirgüç-Kunt, A., Horváth, B. L., & Huizinga, H. (2022). Regulatory Arbitrage and Loan Location Decisions by Multinational Banks. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.4024078

Engle, R. F., Focardi, S. M., & Fabozzi, F. J. (2008). ARCH/GARCH Models in Applied Financial Econometrics. In *Handbook of Finance*. https://doi.org/10.1002/9780470404324.hof003060

Gujarati, D. N., & Porter, D. (2008). Basic Econometric. In *Fifth Edition*.

Handoyo, R. D., Alfani, S. P., Ibrahim, K. H., Sarmidi, T., & Haryanto, T. (2023). Exchange rate volatility and manufacturing commodity exports in ASEAN-5: A symmetric and asymmetric approach. *Heliyon*, *9*(2). https://doi.org/10.1016/j.heliyon.2023.e13067

Jerónimo, J., Azevedo, A., Neves, P. C., & Thompson, M. (2023). Interactions between financial constraints and economic growth. *North American Journal of Economics and Finance*, *67*. https://doi.org/10.1016/j.najef.2023.101943

Jessica, T., & Chalid, D. A. (2021). Determinants of Bank Loans in Indonesia. *Proceedings of the Asia-Pacific Research in Social Sciences and Humanities Universitas Indonesia Conference (APRISH 2019)*, *558*. https://doi.org/10.2991/assehr.k.210531.064

Khan, H. H., & Kutan, A. M. (2021). Testing the structure-conduct-performance relationship for ASEAN: Addressing the issues in the panel mediation. *Journal of Asian Economics*, *72*. https://doi.org/10.1016/j.asieco.2020.101269

Khemraj, T., & Pasha, S. (2009). The determinants of non-performing loans: An econometric case study of Guyana. *Munich Personal RePEc Archive*, *53128*. https://ideas.repec.org/p/pra/mprapa/53128.html

M., L. B., Chakraborty, S., & N., N. M. (2023). Are Liquidity and Credit Risk Key Determinants of Corporate Credit Spreads (CCS) in India? *Indian Journal of Finance*, *17*(6), 8. https://doi.org/10.17010/ijf/2023/v17i6/172773

Mason, E. (1939). Price and production policies of large scale enterprises. *American Economic Review*, *39*.

Masrizal, Sukmana, R., Fianto, B. A., & Gultom, R. Z. (2023). Does economic freedom fosters Islamic rural banks efficiency? Evidence from Indonesia. *International Journal of Productivity and Performance Management*, *72*(9), 2538–2558. https://doi.org/10.1108/IJPPM-11-2021-0660

Mishkin, F. S. (2007). The economics of money, banking, and financial markets. In *Policy*.

Mohammad, K. U. (2022). How bank capital structure decision-making change in recessions: Covid-19 evidence from Pakistan. *Asian Journal of Economics and Banking*, *6*(2). https://doi.org/10.1108/ajeb-04-2021-0049

Mulyaningsih, T., & Daly, A. (2012). COMPETITIVE CONDITIONS IN BANKING INDUSTRY: AN EMPIRICAL ANALYSIS OF THE CONSOLIDATION, COMPETITION AND CONCENTRATION IN THE INDONESIA BANKING INDUSTRY BETWEEN 2001 AND 2009. *Buletin Ekonomi Moneter Dan Perbankan*, *14*(2). https://doi.org/10.21098/bemp.v14i2.83

Mwangi, M. (2018). The Effect of Size on Financial Performance of Commercial Banks in Kenya. *European Scientific Journal, ESJ*, *14*(7). https://doi.org/10.19044/esj.2018.v14n7p373

Nuhadilah, A., & Laila, N. (2021). PENENTU PROFITABILITAS PADA BANK UMUM SYARIAH DI INDONESIA: FAKTOR INTERNAL BANK DAN MAKROEKONOMI. *Jurnal Ekonomi Syariah Teori Dan Terapan*, *8*(6), 797. https://doi.org/10.20473/vol8iss20216pp797-807

O'Connell, M. (2023). Bank-specific, industry-specific and macroeconomic determinants of bank profitability: evidence from the UK. *Studies in Economics and Finance*, *40*(1). https://doi.org/10.1108/SEF-10-2021-0413

Othman, K., Laidin, J. B., & Ismail, N. A. (2020). Determinants of Islamic Bank Credit Risk in ASEAN Countries. *Journal of Emerging Economies and Islamic Research*, *8*(3), 1. https://doi.org/10.24191/jeeir.v8i3.8851

Pasiouras, F., & Kosmidou, K. (2007). Factors influencing the profitability of domestic and foreign commercial banks in the European Union. *Research in International Business and Finance*, *21*(2). https://doi.org/10.1016/j.ribaf.2006.03.007

Prastiyo, A. N., & Kristijadi, E. (2023). Determinant Analysis Of Credit Distribution In Regional Development Bank In Indonesia. *Media Trend*, *18*(1), 78–89. https://doi.org/10.21107/mediatrend.v18i1.19081

Pricillia, N. (2015). The Risk-Taking Behaviour of Indonesian Banks Using SCP. *Bina Ekonomi*, *19*(2).

Rani, D. M. S., & Zergaw, L. N. (2017). BANK SPECIFIC, INDUSTRY SPECIFIC AND MACROECONOMIC DETERMINANTS OF BANK PROFITABILITY IN ETHIOPIA. *International Journal of Advanced Research in Management and Social Sciences*, *6*(3).

Santoso, D. B., Suprapto, E., Zakaria, R. A., Kusumaningrum, H. A., & Jamil, H. (2023). Analysis of banking competition in Indonesia and its impact on profitability: Structure conduct performance (SCP) approach. *Journal of Innovation in Business and Economics*, *7*(01). https://doi.org/10.22219/jibe.v7i01.27156

Settlements, B. for I. (2011). The Banking System in Emerging Economies: How Much Progress Has Been Made? *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.1188516

Shaffer, S. (2004). Patterns of competition in banking. *Journal of Economics and Business*, *56*(4). https://doi.org/10.1016/j.jeconbus.2003.10.003

Shafira, C. D., Musnadi, S., & Faisal. (2022). THE EFFECT OF MODERATING CREDIT RISK ON THE INFLUENCE OF FIRM SIZE, LIQUIDITY, AND OPERATIONAL EFFICIENCY ON THE FINANCIAL PERFORMANCE OF REGIONAL DEVELOPMENT BANKS OF INDONESIA 2010- 2020. *International Journal of Business Management and Economic Review*, *5*(3), 197–210. https://doi.org/10.35409/ijbmer.2022.3400

Sinaga, J. S., Muda, I., & Silalahi, A. S. (2020). The effect of BI rate, exchange rate, inflation and third party fund (DPK) on credit distribution and its impact on non performing loan (NPL) on XYZ commercial segment bank. *Universal Journal of Accounting and Finance*, *8*(3), 55–64. https://doi.org/10.13189/ujaf.2020.080301

Tahir, S. H., Naeem, M. A., Sabir, H. M., & Aslam, K. S. (2016). Capital structure and its major determinants: evidence from banking sector of Pakistan. *African J. of Economic and Sustainable Development*, *5*(2). https://doi.org/10.1504/ajesd.2016.076091

Watts, T. W., Duncan, G. J., Clements, D. H., & Sarama, J. (2018). What Is the Long-Run Impact of Learning Mathematics During Preschool? *Child Development*, *89*(2). https://doi.org/10.1111/cdev.12713

Yudaruddin, R. (2018). MARKET STRUCTURE, CONDUCT AND PERFORMANCE: EVIDENCE FROM INDONESIA BANKING INDUSTRY. *EKUITAS (Jurnal Ekonomi Dan Keuangan)*, *19*(3). https://doi.org/10.24034/j25485024.y2015.v19.i3.126

Yudaruddin, R. (2020). Determinants of micro-, small-and medium-sized enterprise loans by commercial banks in Indonesia. *Journal of Asian Finance, Economics and Business*, *7*(9). https://doi.org/10.13106/JAFEB.2020.VOL7.NO9.019

Zahrah, Z., Widiyasti, B. D., & Josman, L. F. (2022). The Structure and Performance Analysis: Empirical Study on Commercial Banking in Indonesia 2010 – 2019. *JBTI : Jurnal Bisnis : Teori Dan Implementasi*, *13*(2). https://doi.org/10.18196/jbti.v13i2.15233

.