



Analysis Of Market Structure And Profitability In The 10 Largest Banks In Indonesia Using The Structure Conduct Performance Method

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ABSTRACT

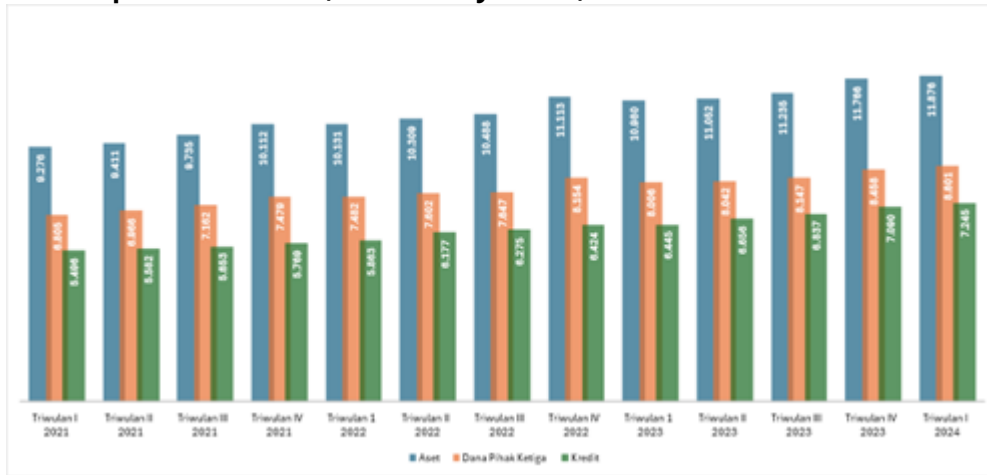
This study aims to analyze the influence of market structure on the profitability of the largest commercial banks in Indonesia during the 2021–2024 period. The main focus of the study is on the relationship between market concentration (CR), market share (MS), and its interaction with Return on Assets (ROA), with the Structure-Conduct-Performance (SCP) approach. The research method used a descriptive quantitative approach with panel data analysis on the 10 largest banks, covering more than 65% of the assets of the national banking industry. The estimation model used is the Random Effect Model, with control variables such as Loan to Deposit Ratio (LDR), total assets (ASSET), cost efficiency (CIR), and non-performing loans (NPL). The results showed that the CR and MS variables generally had a negative effect on ROA, while control variables such as LDR and ASSET had a significant positive effect. The interaction between MS and CR (MSCR) is also negative, suggesting that market dominance in a concentrated structure is not always advantageous. Implicitly, a bank's profitability is influenced more by operational efficiency and risk management than market forces. Therefore, regulators are advised to focus on improving efficiency through stricter supervisory policies, instead of encouraging market concentration as a means of improving banking performance.

INTRODUCTION

Economic growth is an increase in a country's productive capacity, which is reflected in the increase in national income or gross domestic product (GDP) after inflation adjustment. This success shows the existence of effective economic development. Economic growth is supported by a healthy and efficient financial system, which provides access to capital to individuals and companies, encourages investment, and business development, through the provision of credit,

financial services, and risk management, the financial system helps companies expand production, expand employment, and encourage economic activity (Hidayati, 2009). An efficient system also allocates resources to the most productive areas, encourages innovation, and increases productivity, making it an important pillar for sustainable economic growth.

Figure 1. Development of Assets, Third-Party Funds, and Commercial Bank Loans



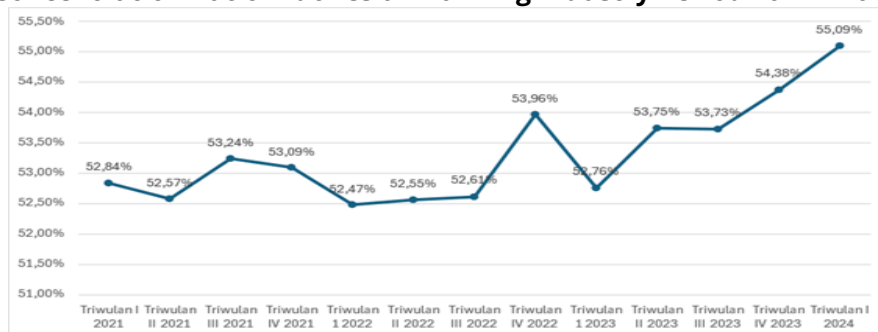
Period 2021 – 2024

(Source: OJK Indonesian Banking Statistics, processed)

Based on Figure 1 data, Indonesia's banking sector grew rapidly from the first quarter of 2021 to the first quarter of 2024. Bank assets increased from IDR 9,276 trillion to IDR 11,876 trillion (an average of 8.57% per year), deposits increased from IDR 6,805 trillion to IDR 8,601 trillion (8.15% per year), and loans grew from IDR 5,496 trillion to IDR 7,245 trillion (9.62% per year). This growth reflects banking stability and an improving economy. According to the rules, banks play an important role in collecting public funds and distributing them as credit to support economic development and policies.

Indonesia's banking structure is dominated by several large banks, which shows a high level of market concentration. This concentration can affect competition and market behavior, because the higher the concentration, the greater the influence of large banks. This can increase their profits, but it also risks creating monopolies or oligopolies that harm consumers. Figure 2 shows the ratio of banking market concentration in Indonesia.

Figure 1. Concentration Ratio Indonesian Banking Industry Period 2021 – 2024



(Source: Quarterly Financial Statements, Processed)

In the Indonesian banking industry between 2021 and 2024 in Figure 1.2, through *Concentration Ratio* analysis, in the Indonesian banking sector, the dominance occurred by four main banks, namely PT Bank Rakyat Indonesia Tbk. (BRI), then PT Bank Mandiri Tbk (Bank Mandiri). in second place, PT Bank Central Asia Tbk, (BCA) in third place, and PT Bank Negara

Indonesia Tbk. (BNI) in fourth place, which allows the identification of market structures. The CR4 value above indicates an oligopoly tendency. During the period, CR4 ranged from 52% to 55%, signaling significant dominance by several major banks. Despite small fluctuations, the figure indicates a high concentration of the market, in accordance with the oligopoly theory introduced by Joe S. Bain (1951).

The increase in CR4 at the end of 2022 and 2023 shows the strategies of the big banks in strengthening market dominance, in line with the oligopoly market character, where large players tend to maintain positions and are difficult to compete with. This reflects Indonesia's oligopolistic banking market structure with moderate to high levels of concentration, which affects competition, revenue, and the ability of banks to attract funds. Under Indonesian law, banking consists of commercial banks and BPRs, with commercial banks having a wider scope, including conventional and sharia operational flexibility. The focus of the research on Commercial Banks is relevant because they dominate the market and have the potential to set prices, which can trigger collusive practices. In this industry, market share and market concentration greatly affect profitability, as they both determine market strength and potential competition. The rapid growth and dominance of big banks in recent years has raised concerns about collusion that disrupts healthy competition.

Based on this, it is important to analyze the relationship between market concentration, market share, and bank profitability to understand the dynamics of the banking industry that focuses on the 10 largest banks in Indonesia. This study refers to the *Structure-Conduct-Performance* (SCP) method approach to study the relationship between industrial profitability and market share and market concentration, using market share and market concentration as indicators of market structure to explore the possibility of collusion behavior in the Indonesian banking sector. This study aims to analyze how market concentration affects the profitability of the 10 largest commercial banks in Indonesia during 2021–2024, as well as the role of market share in these relationships. This is important because the structure of the banking market in Indonesia tends to be oligopolistic, which can have an impact on the competition, efficiency, and performance of banks. The results are expected to be useful for academics, the banking industry, and regulators in understanding market dynamics and formulating appropriate strategies or policies.

METHODS

This study uses a descriptive quantitative approach to systematically describe the impact of market structure on the profitability of the banking industry in Indonesia, focusing on the 10 largest commercial banks. The data used is in the form of secondary panel data from the bank's financial statements obtained from OJK, Bank Indonesia's SEKI, online media, and the bank's official website. The sample represents more than 65% of the total assets, deposits, and loans of the banking industry, covering the period 2021–2024, especially post-merger of Bank Syariah Indonesia. This study adopts the (Strickland & Weiss, 1976) model with modifications from the Smirlock model, and uses control variables that are relevant to the context of the Indonesian banking industry

$$\pi_{it} = \alpha_0 + \alpha_1 MS + \alpha_2 CR + \alpha_3 MSCR + \sum \alpha_i Z_i \quad (3.8)$$

Where:

π	<i>Return on Asset</i>
MS	<i>Market Share</i>
CR	<i>Concentration Ratio</i>

MSCR	Multiplication between MS and CR
Z	Additional control variable vectors that were previously shown to significantly affect profitability in previous studies.

The purpose of the above equation is to identify the source of the company's profitability, whether from collusion, product differentiation, or efficiency. This analysis makes it possible to evaluate profitability without using MSCR interaction variables. If with the increase in market share it may be due to product differentiation, which allows the company to raise the price, it supports $\alpha_1 > 0$ $\alpha_2 = 0$ the *Differentiation Hypothesis*. Industries with and demonstrating profitability from collusion, where profits are positively correlated with market concentration, support $\alpha_2 > 0$ $\alpha_1 = 0$ the *Traditional Hypothesis*. An efficient industry only derives profitability from efficiency, increasing profits through operational efficiency. Efficient industries tend to be concentrated because they are able to increase market share. If profitability comes from efficiency, the relationship between market share, market concentration, and profitability is insignificant, with and $\alpha_1 = 0$ $\alpha_2 = 0$

The estimation method in this study is panel data due to differences in characteristics between banks and unobserved effects that affect the model, but cannot be measured directly. The three methods that can be used in the estimation model using panel data, are as follows: 1) *Pooled Least Squares* (PLS) or the *Common* method; 2) *Fixed Effect Model* (FEM); *Random Effect Model* (REM).

RESULTS AND DISCUSSION

Descriptive Statistics Of Bank Profitability Characteristics

In a financial system dominated by banks such as in Indonesia, the role of banks is very important in supporting sustainable economic growth. Banks play a role in providing credit, financial services, and managing risk, which supports investment and business development. This contributes to job creation and increases economic activity, in line with Law No. 4 of 2023 which regulates the Indonesian financial system, including financial services institutions, financial markets, and financial infrastructure. Table 1. shows a summary of the variables used in this study. This study uses panel data for the period 2021 – 2024 at the Bank level, with a total of 130 observations.

Table 1. Statistics Descriptive

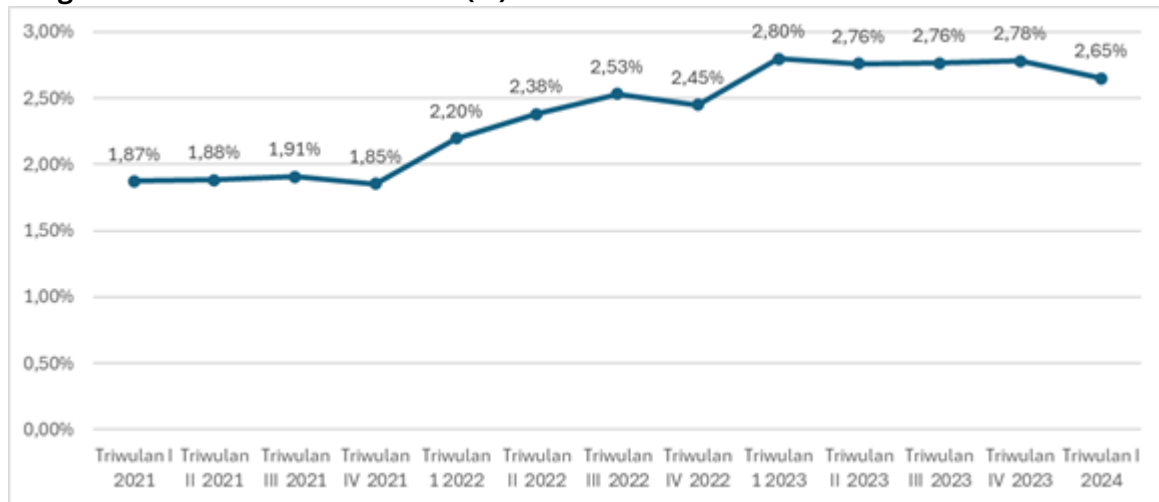
Variable	Unit	Observation	Mean	Std. Dev.	Min.	Max.
LENGTH	Percentage	130	2,247	,897	,68	4,11
MS	Percentage	130	7,011	5,411	1,585	17,214
CR	Percentage	130	53,3	,008	52,5	55,0
MSCR	Percentage	130	3,739	2,889	,837	9,483
LDR	Percentage	130	81,803	8,997	60,54	100,04
ASSET	Trillion Rp	130	691	5,449	174	1.850
CIR	Percentage	130	44,276	6,249	32,41	59,53
NPL	Percentage	130	2,763	,646	1,02	4,25

(Source: Stata 18 2024, processed)

Based on Table 1, the ROA of banks in Indonesia varies, reflecting differences in efficiency in managing assets. The average ROA is around 2.25%, with BRI being the highest (4.11% in the

first quarter of 2023) and the lowest BTN (0.68% in the second quarter of 2021). BRI shows high efficiency with an average ROA of 3.35%, while BTN still needs to improve its strategy because the average is only 0.99%. External factors such as the pandemic, digitalization, and government policies also affect the bank's performance. Large banks such as BRI, Mandiri, and BCA performed stable, while BTN and BSI faced efficiency challenges. In banking, deposits are the main asset, and profitability is highly dependent on the bank's ability to manage assets efficiently. ROA is used as a key indicator to measure and compare financial performance between banks.

Figure 3. Return on Assets Ratio (%) of Commercial Banks for the Period 2021 – 2024



(Source: Indonesian Banking Statistics - OJK, processed)

Based on ROA data for all commercial banks in Indonesia for the 2021–2024 period in Figure 3., it can be seen that ROA fluctuates but tends to rise, from around 1.87% in early 2021 to 2.80% at its peak in the first quarter of 2023, then decreased slightly but remained high in the range of 2.65%–2.78% until the first quarter of 2024. Meanwhile, the average Market Share (MS) of all banks is 7.01% with a standard deviation of 5.41%, showing significant variation between banks, where BRI has the highest MS of 17.21% (first quarter 2024) and Danamon the lowest of 1.58% (fourth quarter 2022), reflecting the difference in ability to attract customers. Of the total 107 commercial banks, the dominance of the 10 large banks is clearly visible, controlling 65.65% of assets, 68.80% of Third-Party Funds (DPK), and 69.54% of loans as of March 2024. Banks such as BRI, Mandiri, and BCA occupy the top positions, with BRI excelling in all categories assets (15.58%), deposits (16.39%), and credit (16.32%) demonstrating high market concentration and the important role of large banks in the stability and growth of the national banking sector.

Table 2. Bank Rating Based on Asset Ownership, Third-Party Funds (DPK) and Credit Period of March 2024 (in Trillion Rupiah)

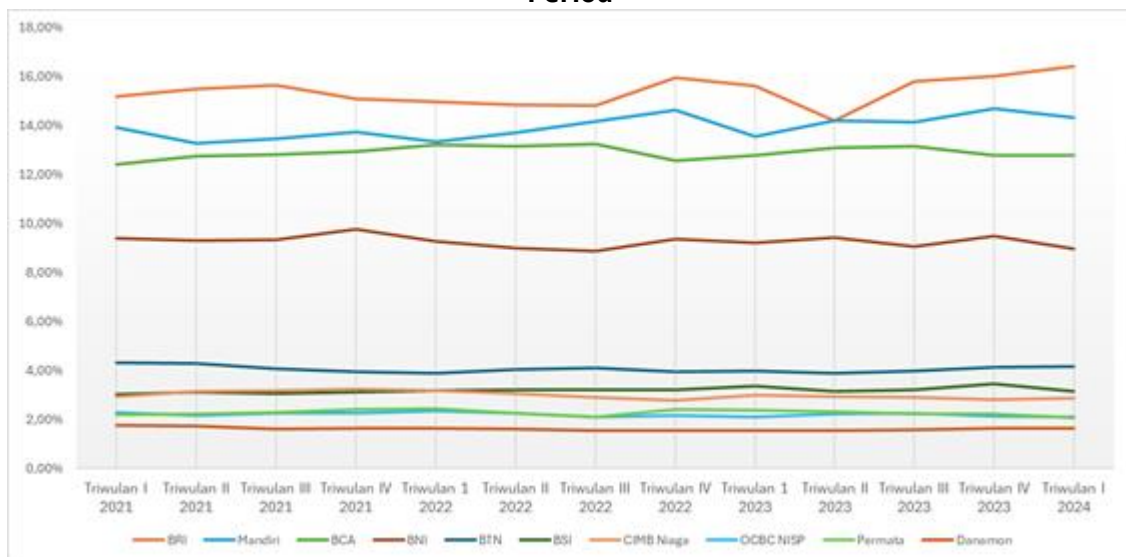
No.	COMPANY NAME	ASSETS		DPK		CREDIT	
1	PT BANK RAKYAT INDONESIA (PERSERO) Tbk	1.850	15,58%	1.410	16,39%	1.182	16,32%
2	PT BANK MANDIRI (PERSERO) Tbk	1.666	14,03%	1.233	14,34%	1.114	15,38%
3	PT BANK CENTRAL ASIA Tbk	1.405	11,83%	1.100	12,79%	812	11,21%
4	PT BANK NEGARA INDONESIA (PERSERO) Tbk	1.026	8,64%	771	8,96%	686	9,47%

No.	COMPANY NAME	ASSETS		DPK		CREDIT	
5	PT BANK TABUNGAN NEGARA (PERSERO) Tbk	454	3,82%	358	4,16%	344	4,75%
6	PT BANK SYARIAH INDONESIA Tbk	358	3,01%	297	3,45%	247	3,41%
7	PT BANK CIMB NIAGA Tbk	325	2,74%	248	2,88%	204	2,82%
8	PT BANK OCBC NISP Tbk	253	2,13%	180	2,09%	152	2,10%
9	PT BANK PERMATA Tbk	253	2,13%	179	2,08%	148	2,04%
10	PT BANK DANAMON INDONESIA Tbk	206	1,73%	142	1,65%	149	2,06%
TOTAL		7.796	65,65%	5.918	68,80%	5.037	69,54%

(Source: Bank Publication Financial Report Quarterly 2024, processed)

Ten commercial banks surveyed show a fairly varied market share of deposits. Based on Figure 3, BRI, Mandiri, BCA, and BNI dominated the market with a percentage above 9%, where BRI and Mandiri showed an increasing trend, while BCA and BNI were relatively stable. In contrast, BTN, BSI, and CIMB Niaga are in the range of 2–4% with a stagnant or declining trend, indicating challenges in competing with large banks. This high concentration of the market favors the efficiency of fundraising and influences competition, where the dominance of large banks also contributes to the increase in ROAs over the same period.

Figure 4. Market Share (%) of Commercial Bank Third-Party Funds for the 2021 - 2024 Period



(Source: Quarterly 2024 Publication Financial Report, processed)

Banks such as BRI, Bank Mandiri, and BNI, which are mostly owned by the government and privately owned BCA, these four largest banks are the main drivers in this industry by controlling more than 52% of the existing third-party funds (DPK).

Currently, banks in Indonesia, including Islamic banking, are still actively pursuing increasing market share as a top priority. Although the market share of Islamic banking has grown to 7.38% in March 2024, this figure is not considered optimal. One of the great advantages achieved by Islamic banking is the success of Bank Syariah Indonesia (BSI) in the 10 banks with the largest assets in Indonesia after the merger. This success not only enhances BSI's

competitive position in the national financial market but also provides a significant boost to the overall growth of the Islamic banking market share. Efforts to expand market share continue to be carried out through initiatives encouraged by the Financial Services Authority (OJK) through the Roadmap for the Development and Strengthening of Indonesian Islamic Banking 2023-2027 (RP3SI), which emphasizes product differentiation, strengthening resilience, and expanding Islamic financial inclusion, reflecting the commitment to increasing the contribution of Islamic banking to inclusive and sustainable national economic growth.

Increasing market share is a crucial strategy to strengthen competitiveness and operational efficiency. The literature shows that a larger market share allows banks to achieve more efficient economies of scale, reduce cost per unit, and increase profitability (Porter, 2008). (Demsetz, 1973) added that significant market share provides greater market power, allowing banks to offer products and services that are more innovative and different from competitors. In addition, (Berger, 2003) stated that banks with large market shares are better able to absorb risks and adapt to economic changes, which are important for long-term stability. By aiming for a larger market share, banks in Indonesia can strengthen their position in the market, face increasingly fierce competition, and support sustainable growth in the banking industry.

The Concentration Ratio (CR) phenomenon, which is calculated based on CR4 in the Indonesian banking industry from the first quarter of 2021 to the first quarter of 2024, shows how large the market share is dominated by the four largest banks: BRI in first place, Bank Mandiri in second place, BCA in third place, and BNI in fourth place. Data shows that CR4 ranged from 52.8% in the first quarter of 2021 to peaking at 55.1% in the first quarter of 2024, with an average of about 53% and a small variation (standard deviation of 0.0078). In general, CR4 shows an upward trend, which indicates an increase in market concentration in the hands of the four banks. This increase can be attributed to the faster growth of large banks, the potential for acquisitions or mergers, as well as the strengthening of their market position. With the growing dominance of these big banks, there are significant impacts on competition in the banking industry, consumer choice, and systemic risks that need to be monitored by regulators.

Based on the previous data in Figure 1.2, the Concentration Ratio shows that the structure of the Indonesian banking market from 2021 to 2024 can be categorized as an oligopoly, in accordance with J.S. Bain's criteria, with moderate to high levels of concentration. This dominance includes not only asset ownership, but also dominance in fund-raising and the credit sector, which reinforces the strategic role of the largest group of banks in the national economy.

Big banks have the ability to set interest rates while maintaining their market share, a skill called market power in economics. (Samuelson & Nordhaus, 1976) define market power as the capacity of a firm or group of firms to control price and production decisions in a given industry. In a monopoly market, the market power of the firm is high, whereas in a perfectly competitive market, the firm has no control over the price and cannot influence the market. Concentration ratio is a common way to assess whether a company has market power or not. This ratio reflects whether the market or industry is inclined toward monopolies, oligopolies, or close to perfect competition by measuring market dominance by a particular firm or group of firms. The higher the concentration ratio, the greater the market power of the company.

The variable Market Share Concentration Ratio (MSCR) is the result of multiplication between MS and CR. MSCRs in the 10 (ten) largest banks in Indonesia show significant market dominance variability, with an average MSCR of 3.73% and a standard deviation of 2.88. BRI recorded the highest value of 9.48% in the first quarter of 2024, indicating strong market dominance, while Danamon had the lowest value of 0.83% in the third quarter of 2022, reflecting very low market dominance.

BCA, Mandiri, and BRI have consistently shown high and stable market dominance, while other banks such as BSI, CIMB Niaga, and Danamon have lower market dominance. This variation reflects the different levels of competition in Indonesia's banking sector, with some banks having a greater influence when compared to others.

Loan to Deposit Ratio (LDR) is a variable ratio between the amount of credit or loan provided by a bank and third-party funds, indicating how much the bank allocates its credit. The average LDR is around 81.80%, with variations ranging from 60.54% owned by BCA in the first quarter of 2022 to the highest of 100.04% owned by Danamon in the third quarter of 2023. The LDRs of major banks in Indonesia show significant variation from 2021 to 2024, reflecting different strategies in responding to economic dynamics. During this period, banks adapted to the post-pandemic economic recovery, government stimulus policies, and increased credit demand. BCA and Permata tend to maintain high liquidity, while Danamon shows the maximum use of funds for loans. BRI and BSI are increasing their LDRs to support key sectors of the economy such as MSMEs and Islamic banking. These dynamics show the strategic adaptation of banks to changing economic conditions, with a focus on financial stability and credit growth.

The average total assets of banks are around IDR 691 trillion, with significant variations from IDR 174 trillion owned by Danamon in the 3rd quarter of 2021 to the highest of IDR 1,850 trillion owned by BRI in the first quarter of 2024. This indicates differences in the scale of operations between the banks in the study sample.

Cost to Income Ratio (CIR) is calculated as the ratio between operating costs to operating income of banks. CIR is the main indicator in assessing the operational efficiency of banks. Analysis of CIR data from several major banks in Indonesia from 2021 to the first quarter of 2024 shows that the average CIR is 44.28% with a standard deviation of 6.25, reflecting a moderate variation in the operational efficiency of these banks. The CIR value ranges from 32.41%, owned by BCA in the first quarter of 2024, to 59.53%, owned by Permata in the first quarter of 2021.

Banks such as BCA and Mandiri, which have lower CIR, show higher efficiency in managing operational costs compared to banks such as Permata which have higher CIR. During this period, several economic phenomena and government policies affected the banking sector in Indonesia, including the impact of the COVID-19 pandemic which caused a decline in economic activity and an increase in operational costs.

The government provides various incentives and relaxation policies, including lowering the benchmark interest rate and credit restructuring policies to support the stability of the banking sector. The increasing trend of digitalization also plays a role in improving bank operational efficiency, especially for banks that have successfully adopted technology well, such as BCA and Mandiri. Overall, the CIR analysis shows significant differences in operational efficiency among major banks in Indonesia, influenced by various external factors and policies implemented during the period.

During the 2021-2024 period, Indonesia's banking sector experienced significant changes in the Non-Performing Loans (NPL) ratio, reflecting complex dynamics in credit risk management and external factors affecting the industry. The average NPL is around 2.76% with a standard deviation of 0.65, indicating significant variation between banks. For example, Bank Mandiri has a low NPL rate, only 1.02% in the first quarter of 2024, demonstrating good asset quality and effective ability to manage credit risk.

On the other hand, Bank BTN recorded high NPLs, reaching 4.25% in the first quarter of 2021, indicating the need for improvements in risk management to reduce non-performing loans and improve asset quality. These changes are reflected in banks' efforts to adjust their strategies in the face of economic challenges, such as the impact of the COVID-19 pandemic and digital transformation, which have also affected their credit performance.

In this analysis, BRI showed superior performance among major banks in Indonesia, mainly supported by strong operational efficiency, wide market penetration, and the ability to maintain high profitability ratios, such as ROA. BRI managed to maintain a dominant market share and minimize NPLs, which demonstrated effective risk management. The optimal LDR ratio also supports BRI in maintaining liquidity and healthy credit growth. In addition to BRI, other major banks such as Bank Mandiri and BCA also showed solid performance, but BRI still

excelled in several key indicators that significantly affected the overall performance of banking in Indonesia.

The significant differences in the financial performance of these banks highlight the importance of understanding their individual characteristics, from asset utilization efficiency, market share, operational efficiency, to asset quality. This analysis provides a better understanding of these characteristics, which can assist decision-makers in identifying opportunities to improve performance and manage risk more effectively.

Analysis And Regression Results

Based on the independent variables that have been explained earlier, data analysis is then carried out to see the impact of market structure on the profitability of 10 (ten) commercial banks with the largest assets in Indonesia. The results of panel data analysis on the 10 (ten) banks with the largest assets from 2021 - 2024 with the Random Effect Model can be observed in Table 3 as follows.

Table 3. Data Analysis Results Random Effect Model

Variable	LENGTH	LENGTH	LENGTH	LENGTH
	Model 1	Model 2	Model 3	Model 4
MS		-0,185*** (0,0506)	-0,233*** (0,0503)	0,734** (0,301)
CR	-9,740** (4,110)		-14,47*** (3,922)	-2,654 (5,220)
MSCR				-1,975*** (0,603)
LDR	0,0232*** (0,00641)	0,0161*** (0,00615)	0,0209*** (0,00601)	0,0178*** (0,00604)
ASSET	0,141*** (0,0255)	0,266*** (0,0454)	0,329*** (0,0463)	0,428*** (0,0530)
CIR	-0,0272** (0,0122)	-0,0328*** (0,0115)	-0,0228** (0,0113)	-0,0210* (0,0108)
NPL	-0,396*** (0,0724)	-0,203*** (0,0685)	-0,294*** (0,0702)	-0,233*** (0,0693)
Constant	6,866*** (2,191)	2,401*** (0,887)	9,433*** (2,100)	3,056 (2,763)
R-squared (Overall)	0,7284	0,7253	0,7150	0,7198
Observations	130	130	130	130
Number of id	10	10	10	10

The ***, **, * signs indicate the significance of 1%, 5% and 10%, while the standard error is in parentheses.

After displaying the results of the Random Effect Model in Table 3, the regression results using the Fixed Effect Model are then presented for comparison. Table 4 shows the results of the analysis with this approach, which makes it possible to examine the differences between the two models.

Table 4. Fixed Effect Model Data Analysis Results

Variable	LENGTH	LENGTH	LENGTH	LENGTH
	Model 1	Model 2	Model 3	Model 4
MS		-0,364*** (0,103)	-0,327*** (0,0993)	0,815** (0,381)
CR	-15,40*** (4,189)		-13,98*** (4,043)	-2,923 (5,285)
MSCR				-2,078*** (0,670)
LDR	0,0335*** (0,00683)	0,0177** (0,00707)	0,0248*** (0,00706)	0,0236*** (0,00682)
ASSET	0,278*** (0,0434)	0,295*** (0,0463)	0,350*** (0,0470)	0,448*** (0,0553)
CIR	-0,0191 (0,0121)	-0,0276** (0,0118)	-0,0180 (0,0116)	-0,0168 (0,0112)
NPL	-0,280*** (0,0752)	-0,167** (0,0723)	-0,247*** (0,0729)	-0,192*** (0,0724)
Constant	7,419*** (2,140)	2,989** (1,243)	9,027*** (2,111)	2,109 (3,021)
R-squared	0,619	0,616	0,652	0,679
Observations	130	130	130	130
Number of id	10	10	10	10

The ***, **, * signs indicate the significance of 1%, 5% and 10%, while the standard error is in parentheses.

Based on the test results (attached), the Random Effects (RE) model is more appropriate than Fixed Effects (FE). The Hausman test yielded a p-value of 0.651, well above 0.05, which showed no significant difference between the FE and RE coefficients, so the RE model could be used without worrying about bias (Wooldridge, 2010). In addition, the Breusch-Pagan Lagrange Multiplier test showed a p-value of 0.000, indicating a significant individual effect, supporting the use of a RE model that is able to capture interbank variation (Baltagi, 2005).

In the RE model, Market Share (MS) initially has a negative and significant effect, but turns positive and significant when interacting with the Concentration Ratio (CR). CR itself has a negative and significant effect, except when interacting with MS. Meanwhile, the variables LDR, Assets, and NPL consistently show significant influence in both models. This difference arises because the RE model considers variations between and within entities, whereas FE focuses only on variations within entities. The test results show that the RE model is more efficient and suitable for use in this study.

Based on the test with the Random Effect model, the results of the analysis for each hypothesis are described in Table 4. In model 1, which uses Concentration Ratio (CR) as a structural variable, it was found that market concentration has a negative and significant effect on Return on Assets (ROA). This means that the higher the market concentration, the lower the bank's profitability. This result contradicts the traditional hypothesis that market concentration increases profits through collusion and cost efficiency.

Market Share (MS) is also an important part of the market structure. Large market share usually reflects strength in meeting demand or operational efficiency, which should increase profitability (Prasetyono, 2020). In this study, the market share is calculated from the total third-party funds (DPK) of each bank to the total industrial deposits. In model 2, regression results showed that MS had a negative and significant effect on ROA. This is contrary to the differentiation hypothesis, which assumes that a large market share increases profitability. This

negative influence can occur because banks with a large share may face high operating costs or fierce competition, so they are not automatically more profitable.

The regression results in model 3 show that operational efficiencies, such as increased LDR, asset size (ASSET), cost efficiency (CIR), and credit risk management (NPL), have a positive effect on bank profitability, in line with the Efficient Structure Hypothesis (ESH) theory. However, Market Share (MS) and Concentration Ratio (CR) have a negative effect on ROA, which contradicts ESH's assumption that large market share reflects market efficiency and strength.

In model 4, it was found that MS has a positive and significant influence on ROA, supporting the Traditional Hypothesis and Structure-Conduct-Performance (SCP) theory, that banks with large market shares tend to be more profitable due to economies of scale, efficiency, and market strength. These findings are also in line with the theories of (Porter, 1979), who explain that large market shares help reduce costs, strengthen market position, and create barriers for competitors.

In contrast, CR has no significant effect on ROA, thus rejecting the Traditional Hypothesis that associates high market concentration with profitability through collusion. In addition, the interaction between MS and CR (MSCR) has a negative effect on profitability, indicating that in a more concentrated market, large market shares are not always profitable and do not support collusion between large banks in Indonesia.

The addition of MSCR variables in regression models changes the direction and significance of MS and CR because MSCR captures the complex interactions between market share and market concentration. When MS and CR are combined, there is a significant negative impact on profitability that is not seen when analyzed separately, suggesting that market dominance in a concentrated structure is not always profitable, and can even be detrimental due to the potential for collusion or fierce competition.

Meanwhile, the LDR and ASSET variables had a positive effect on ROA, showing that the loan ratio and the size of assets drove profitability. CIR has a negative influence close to significant, demonstrating the importance of cost efficiency. NPLs show a significant negative influence, indicating that non-performing loans are depressing banks' profitability. Overall, the results of the four models show that operational efficiency and risk management play a greater role in increasing the profitability of banks in Indonesia compared to market dominance. These findings support the principle of the Efficient Structure Hypothesis (ESH), while also showing that the Structure-Conduct-Performance (SCP) assumption does not always apply, as a concentrated market structure does not guarantee higher profits. Therefore, the bank's strategy should be focused on operational efficiency, asset management, cost control, and credit risk management, rather than just relying on market share.

Analysis Of The Influence Of Research Control Variables

1. Influence of Asset Variables

The estimation results show that the ASSET variable is very strong, indicating that the total assets (ASSET) have a significant positive impact on ROA. Banks with larger assets have advantages in operational efficiency, portfolio diversification, and access to financial resources, which contributes to higher profitability.

However, previous research has shown mixed results regarding the influence of assets on ROA. (Mazroah, 2008) found that assets have a negative influence in the conventional and sharia banking industry because product differentiation can reduce risk but also reduce profitability. (Dina, 2013) did not find a significant influence of assets on ROA, although FDR factors that are more focused on financing risk management are related to Return on Deposits (ROD). (Naylah, 2010b) found variations in the influence of assets on ROA, with some similarities showing negative and others positive. (Smirlock, 1985) also stated that the relationship between assets and ROA is often insignificant and tends to be negative.

Overall, although general theory supports the positive influence of asset size on ROA (Beck, 2007), the results of different studies reflect the complexity of this relationship. Factors such as product differentiation, risk management, and the characteristics of the banking industry can moderate or reverse this relationship (Dina, 2013; Naylah, 2010a).

2. Influence of Variable Loan to Deposit Ratio (LDR)

The independent variable Loan to Deposit Ratio (LDR) in this research model representing credit risk management turned out to show positive results and indicated an influence on the profitability of the 10 (ten) largest commercial banks.

However, the results of LDR-related studies show significant variation in the literature. (Mazroah, 2008) found that LDR has a positive but not significant effect on Return on Assets (ROA) in the conventional banking industry. This study reflects that although LDR is positive, the effects are not strong enough to affect ROA significantly. On the other hand, (Prasetiono, 2020) found that LDR has a negative influence on ROA in state-owned banks, which shows that a high LDR ratio has the potential to cause bad loans and a decrease in profits. This study shows that in the context of state-owned banks, high LDRs tend to have a negative impact on profitability.

On the other hand, research by (Awwaliyah, 2018a) found that the Financing to Deposit Ratio (FDR) in the Islamic banking industry has a significant negative influence on ROA. This is due to the increase in Non-Performing Financing (NPF), which results in a decrease in the quality of financing and, ultimately, a reduction in ROA. This finding is consistent with the research of (Mazroah, 2008), that FDR has a significant negative coefficient in the Islamic banking industry.

In this context, efficient LDR management and good credit risk control can contribute positively to ROA. Banks that are able to keep LDRs within healthy limits often also have stable or increasing ROAs, as efficiency in the use of deposit funds to provide loans is reflected in better financial performance (Poudel, 2012).

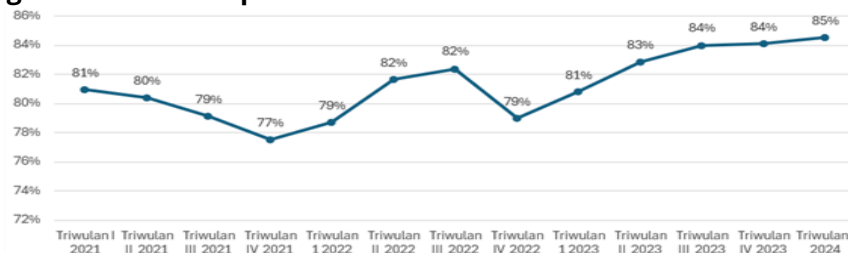
The integration between LDR management, credit risk management, and financial performance evaluation such as ROA is an integrated strategy in maintaining the stability and growth of banks. By understanding the relationship between these indicators, banks can design more effective policies to achieve their strategic objectives and meet the regulatory demands set by the OJK (Antwi, 2019).

The Financial Services Authority's (OJK) support to carry out strict supervision and updated regulations, along with looser monetary policy, is instrumental in strengthening banks' liquidity positions. This allows banks to manage LDRs more effectively. LDR is a key indicator in evaluating a bank's ability to manage its liquidity. Bank Indonesia Regulation (PBI) No. 17/11/PBI/2015 regulates the LDR, which sets the value of the lower and upper limits allowed for this ratio.

- a. The LDR is at a minimum of 78%. This means that banks are expected to maintain their LDRs above this figure to maintain a balance between liquidity and credit disbursement.
- b. The upper limit of LDR is at a maximum of 92%. This means that banks are not allowed to have an LDR above this figure to avoid excessive financial risk and maintain financial stability.

Graph in Figure 5. shows the fluctuations of LDR in the Indonesian banking industry, as seen in the following table:

Figure 5 Loan to Deposit Ratio Commercial Banks Period 2021 - 2024



(Source: OJK Indonesian Banking Statistics, processed)

From Graph 5. It can be seen that LDR has varied over the four-year period. Despite fluctuations, LDRs are generally within the range considered healthy by banking regulations, which allows banks to manage the balance between lending and the availability of deposits. The increase in LDR from the first quarter of 2021 (81%) to the first quarter of 2024 (85%) shows a tendency for banks to be more active in lending disbursement, which can reflect the changing economic climate and credit demand over time.

3. Influence of Non-Performing Loans (NPL) Variables

The results of the regression analysis showed that Non-Performing Loans (NPLs) had a significant negative effect on profitability, highlighting the importance of effective credit risk management to maintain profitability. These findings are in line with previous research, such as those conducted by (Kingu et al., 2018), which found that NPLs are negatively related to the profitability of commercial banks in (Awwaliyah, 2018b; Yuhanah, 2016) which show that Non-Performing Financing (NPF) has a significant negative effect on Return on Assets (ROA) in Islamic banks in Indonesia. Research by (Putri & Purwohandoko, 2021) also supports this finding by showing that NPF has a significant impact on ROA, where high NPF reduces revenue and increases reserve costs, thereby lowering bank profits. Overall, this empirical evidence underscores that both NPLs and NPFs consistently negatively impact ROAs, both in Indonesia and Tanzania, with a visible impact on increased non-performing loans and higher reserve costs.

Figure 6. Development of Commercial Bank Loans and NPLs for the 2021 – 2024 Period



(Source: OJK Indonesian Banking Statistics, processed)

Figure 6. shows the development of the number of credit disbursements and Non-Performing Loans (NPLs) in Indonesian commercial banks from the first quarter of 2021 to the first quarter of 2024. During this period, the amount of credit provided by commercial banks increased significantly, reflecting the economic recovery and the bank's post-COVID-19 pandemic expansion strategy, which began to have a serious impact in early 2020. Despite the increase in lending, the NPL level had reached its peak in the first quarter of 2022 due to the continued impact of the pandemic. However, the downward trend in NPLs began to be seen from mid-2022 to the first quarter of 2024, showing the success of banks' efforts to improve credit risk management and improving economic conditions.

The COVID-19 pandemic that began to hit Indonesia in early 2020 led to a spike in NPLs in 2021 as many companies and individuals faced severe financial difficulties. The government and the Financial Services Authority (OJK) implemented credit restructuring policies such as payment deferment and loan restructuring to help affected debtors, suppressing further increase in NPLs. Sectors such as tourism, transportation, and MSMEs have been hit hard, increasing the number of non-performing loans in these sectors. These interventions, along with various economic stimulus programs and liquidity support, have succeeded in reducing the larger spike in NPLs.

In 2022 and 2023, banks in Indonesia will play a crucial role in supporting the national economic recovery and managing credit risk more effectively. Through improved risk management integrated with digital technology and data analytics, banks are able to identify and manage non-performing loans more appropriately and efficiently. This move not only helps stabilize NPL levels, but also improves overall banking liquidity.

At the end of 2023, the decline in the NPL rate to around 2.19% indicates a significant recovery from the impact of the pandemic. This reflects the readiness of banks to deal with future credit risks, which is in line with their efforts to keep the balance of the LDR in a healthy corridor. Thus, the integration between effective credit risk management and good LDR management is the key to building a solid foundation for Indonesia's banking sector towards a more stable and sustainable future.

4. Influence of Variable Cost to Income Ratio (CIR)

The results of the CIR estimate are almost significant at the level of 5% and show a negative influence on ROA. The CIR, while insignificant in this model, can reflect the operational efficiency of the bank; the lower the CIR, the more efficient the allocation of operational costs, which in turn can increase the ROA (Pasiouras & Kosmidou, 2007).

Banks that are more efficient in managing costs to revenue tend to be more profitable. Based on the Circular Letter of the Financial Services Authority of the Republic of Indonesia No. 9/SEOJK.03/2020 and No. 9/SEOJK.03/2020 regulates the transparency and publication of reports for banks. One of the aspects regulated is the obligation to include information related to financial performance, including financial ratios such as the Cost to Income Ratio (CIR). This demonstrates the OJK's commitment to increasing transparency and ensuring that information on the bank's financial performance is widely available and clearly accessible to the public.

Policy Implications

The regression results show that operational efficiency is the main key in increasing the profitability of large banks in Indonesia. This proves that the bank's profits are determined by efficient management rather than relying solely on market share or concentration. Regulations from the OJK and Bank Indonesia play an important role in creating a climate that encourages efficiency. POJK No. 12/POJK.03/2021 requires banks to maintain sufficient capital, while POJK No. 14/POJK.03/2022 and PBI No. 13/1/PBI/2011 emphasize the importance of risk management and efficient operations.

Bank Indonesia also issues regulations such as PBI No. 23/2/PBI/2021 and PBI No. 15/12/PBI/2013 to maintain the quality of credit and bank liquidity. OJK Circular Letter No. 12/SEOJK.03/2021 requires reporting of efficiency ratios such as BOPO and overhead load ratios, although a standard limit has not been set. To improve efficiency, the OJK is advised to set efficiency ratio limits such as Cost to Income Ratio (CIR) and BOPO, as well as tighten overhead supervision.

Indonesia can also adopt international efficiency indicators such as the Cost Efficiency Ratio used in Europe and the US. OJK needs to provide training and assistance for banks in implementing efficiency practices, as well as encouraging the use of technology such as automation and data analytics. With proper regulation, strong supervision, and adopted international practices, the bank's operational efficiency can be improved, so that long-term profitability and financial stability are more guaranteed.

CONCLUSION

This study analyzes the relationship between market structure and profitability in the 10 largest commercial banks in Indonesia during 2021–2024, and finds that operational efficiency and risk management play an important role in increasing profitability, as shown by the

significant positive impact of Loan to Deposit Ratio (LDR), asset size (ASSET), and Cost to Income Ratio (CIR) on Return on Assets (ROA), while Non-Performing Loans (NPL) have a negative effect. These findings support the principle of the Efficient Structure Hypothesis (ESH), but are contrary to the Structure-Conduct-Performance (SCP) theory because Market Share (MS) and Concentration Ratio (CR) show a negative correlation with ROA, suggesting that high market concentration does not necessarily improve performance. The results also indicate a low level of collusive behavior in Indonesia's banking industry, emphasizing that improved efficiency and risk management are more important for profitability than market dominance. Therefore, banks need to focus on cost efficiency and credit risk management, as well as consider other approaches such as the Quiet Life Hypothesis (QLH) that highlight how market forces can influence efficiency and cost behavior, complementing understandings beyond the SCP framework.

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