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Analysis of banking competition in Indonesia and its impact on profitability: Structure conduct performance (SCP) approach

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Abstract

In the past decade, the profits obtained by banks in Indonesia have generally tended to increase, except during the pandemic. However, the number of banking business actors in Indonesia has continued to decline, indicating that the banking structure is becoming more concentrated and potentially leading to an oligopoly. Therefore, the purpose of this study is to determine whether the increasingly concentrated banking market structure or weak competition has a significant impact on the growing profitability of banks in Indonesia. If this hypothesis is proven true, it would suggest that banking, as a financial intermediary, contributes to higher costs for economic development, particularly within financial markets. In this study, the Lerner index is employed to measure the level of concentration or competition among banks. Subsequently, the Treatment Effect Model is utilized to estimate the extent of the impact of competition levels on profitability within the banking sector. The findings of the study reveal two key points. Firstly, the reduction in the number of banking players has been accompanied by increased competition among banks in Indonesia, particularly evident after 2016. Secondly, a higher level of concentration or reduced competition corresponds to increased opportunities for banking profitability. Consequently, there are indications that the decrease in the number of banking business actors in Indonesia is correlated with heightened competition, suggesting improved efficiency in banking management. This phenomenon could elucidate the reason why profitability in the banking sector appears to be on the rise despite a decrease in the number of banking players.

Keywords: Competition; profitability; banking

Introduction

Since the implementation of the capital structure strengthening policy in the banking industry, the number of banks in Indonesia has declined. This policy indicates two things: improving efficiency or even efforts to avoid competition. If the second option is correct, then the banking structure in Indonesia is becoming increasingly concentrated. Many studies state that a decrease in the number of business actors in a market indicates a reduction in business competition. Researchers such as [González et al. \(2019\)](#), [Kvålseth \(2018\)](#), [Talpur \(2023\)](#), and [Yudaruddin \(2018\)](#) use the Concentration Ratio (CR) and the Herfindahl-Hirschman Index (HHI) as indicators of the competition level. The CR and HHI values depend on the number of business actors in a market. With fewer business actors, the value of the concentration index is higher, which means that the market structure is closer to an oligopoly or monopoly.

Market structures that are increasingly concentrated or that lead to monopolies tend to become major issues in economic development, particularly in relation to economic inefficiencies. [Santoso & Jamil \(2023\)](#) state that weak competition leads to price disparities and makes the market inefficient. Instead of

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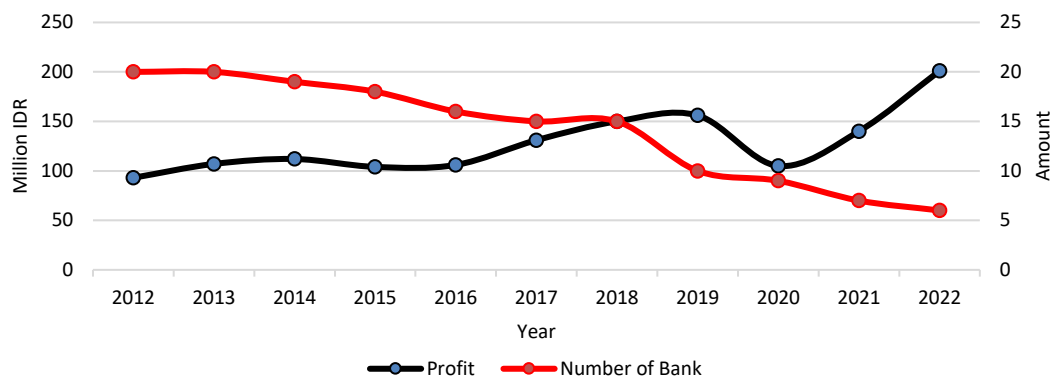
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making the banking market structure efficient, it distorts the function of banking as an efficient financial sector intermediation institution. Borrowers (debtors) are required to pay higher interest rates, while savers receive lower interest than they should. In other words, users of banking services receive services at a cost that is more expensive than in market structures with low concentration levels



Source: Indonesian Banking Statistics (2022)

Figure 1. Development of Profitability and Banking Actors in Indonesia

In Indonesia, there is intriguing banking development data that warrants further study. The decline in the number of banking players is accompanied by an increase in banking profitability. Figure 1 illustrates a rise in bank profits alongside a reduction in business actors. This situation prompts the question of whether the increased profits stem from efficiency gains in the banking industry or result from anti-competitive market behavior. Numerous researchers, including [Alhassan et al. \(2015\)](#), [Banerjee & Savitha \(2021\)](#), [Cherchye & Verriest \(2016\)](#), and [Tuyet & Ninh \(2023\)](#), confirm the strong relationship between competition intensity and profitability level. A weaker competitive intensity in an industry typically leads to higher profits.

Regarding the correlation between market concentration level and profitability in the banking sector, [Northcott \(2004\)](#) asserts that the degree of concentration, reflecting the competitive landscape in the banking industry, can either positively or negatively impact banking profitability. Furthermore, some Indonesian researchers have identified conflicting conditions concerning the effect of competition levels on profitability. [Yuanita \(2019\)](#) explains, on one hand, that mergers in the Indonesian banking sector lead to increased economies of scale, fostering efficiency at lower service costs and narrower interest spreads. Thus, this merger strategy aims to enhance efficiency, capture a broader market share, and ultimately generate profit growth. Conversely, [Naylah & Cahyaningratri \(2020\)](#) discovered instances of banking behavior that avoids competition in order to boost bank profitability. By establishing a market structure resembling an oligopoly, market participants can maximize profits by collectively controlling service prices and setting higher interest spreads.

The inconsistent outcomes of prior research highlight the necessity for more comprehensive exploration into how the reduction in the number of banking business actors influences competition levels within the Indonesian banking industry and subsequently affects bank profitability. Discrepancies in market conditions and implemented policies in Indonesia may contribute to varying research results. Through further investigation, it becomes possible to comprehensively study the factors influencing the relationship among market concentration, competition, and bank profitability. This research will offer insights into the policymaking process and the management of the banking industry in Indonesia, facilitating an understanding of how alterations in market structure can impact the overall health and efficiency of the banking sector. Hence, this study is dedicated to closely examining the trend of decreasing banking participants to determine if it corresponds with a reduced level of competition within the Indonesian financial market among banks and its implications on banking profitability.

Literature Review

The relationship between competition levels and banks' profitability can be understood through the Conduct Performance Structure (SCP) approach. [Knight & McGee \(2015\)](#) categorize markets into perfectly competitive and imperfectly competitive ones, such as monopolies and oligopolies, based on their structures. [Feeny & Rogers \(2000\)](#) and [Bikker & Haaf \(2002\)](#) use indicators of concentration levels and

competition intensity among market actors to differentiate market structures. Each market type—perfect competition, monopoly, or oligopoly—exhibits distinct behavior in terms of price control, promotional strategies, and product development and research (Charlton & Perloff, 2015). As a result, the profits attained in these markets vary according to actors' capacity to manipulate prices to maximize their gains.

Theoretically, the advantages of monopoly and oligopoly markets often surpass those of perfectly competitive markets. Monopoly and oligopoly markets feature high concentration levels, where one or a few actors control substantial market shares (Dai & Guo, 2020; Haw et al., 2010; Khan et al., 2018). These markets establish stringent entry barriers to safeguard market shares, potentially leading actors to collude in response to market demands. In oligopoly markets, production occurs when marginal revenue aligns with marginal cost, and prices are set significantly above marginal cost (Dubovik & Janssen, 2012; Hamada et al., 2018; Marrouch & Turk-Ariss, 2014). Consequently, to maximize profit, actors tend to mitigate or even lessen competition intensity to control market prices.

One behavior contributing to weakened competition intensity is the implementation of merger and consolidation policies. Within the banking sector, such policies are pursued due to intense competition levels, resulting in elevated service costs and risks. Consequently, banking entities merge to mitigate these risks, thereby reducing competition intensity and transitioning the market from perfect competition. Research jointly conducted by Bank Indonesia-Lembaga Penjamin Simpanan-Otoritas Jasa Keuangan (2021) and Hadad et al. (2013) highlights merger and consolidation as strategies within the Indonesian Banking Architecture (API) to enhance economies of scale and reinforce capital structures. This policy aims to enhance the competitive edge of Indonesia's banking sector (Zhang & Matthews, 2019)

However, the implementation of merger and consolidation policies raises concerns about the formation of anti-competitive market structures among banking players, such as oligopolies or monopolies (Chizzolini et al., 2009; Shin & Kim, 2013). In oligopoly markets, actors can engage in collusion to control prices. This action is illegal by law and leads to economic inefficiencies, losses, and consumer injustices (Andreoli-Versbach & Franck, 2015; Petit, 2016; Tirole, 2013).

Several prior studies have investigated the connection between banking competition levels and profitability across various countries. For instance, Montgomery et al. (2014) explored the impact of banking sector consolidation in Japan on cost efficiency and bank profitability. Their findings reveal that merged banks exhibit lower cost efficiency but sustain profitability. This study underscores the significance of bank consolidation in upholding financial efficiency, particularly in the aftermath of financial crises.

Conversely, Wheelock (2011) asserts that while banking consolidation has been ongoing in the United States since the mid-1980s, the concentration level of local banking markets hasn't seen significant changes. However, the concentration of deposits at the national level continues to rise, with the ten largest banks accounting for nearly 50% of total deposits in the United States. Lozano-Vivas et al. (2011) also examine the impact of banking consolidation in Europe by comparing the effectiveness of domestic and cross-border merger processes from 1998 to 2004. Their findings indicate that although domestic mergers are more frequent, banks involved in cross-border mergers tend to be more efficient. Moreover, banks engaged in cross-border mergers appear to outperform incumbent banks. These results suggest that the impact of banking consolidation can differ between domestic and cross-border mergers, contingent upon distinct market environments and contexts.

The paradox between the effects of consolidation on cost efficiency and bank profitability, and its influence on market concentration levels, is a complex issue that has captivated the attention of researchers and policymakers across different nations. Various factors and economic contexts may shape how banking competition operates on domestic and international scales. Past research has demonstrated that the effect of banking consolidation cannot be distilled into a single conclusion applicable to all countries.

For this reason, this research diverges from previous studies in several aspects. Firstly, it focuses on Indonesia, a nation with distinct market characteristics and regulations. Zeman et al.'s (2018) study underscores differences in regulatory policies among countries post-financial crisis. This research aims to explore how Indonesia's unique regulations impact the interplay between banking competition and profitability. Secondly, this study employs the Structure Conduct Performance (SCP) approach, which melds market structure analysis, actor behavior, and economic performance to comprehend the interrelationship between competition and profitability in the Indonesian banking sector. This approach offers a more holistic perspective on the dynamics of competition and banking consolidation in Indonesia. Lastly, given the country's distinct economic environment, regulations, and market characteristics, this study may unveil contradictions in the connection between banking competition and profitability in Indonesia that differ from previous research.

Research Method

This study uses Lerner Indexes (LI) to estimate the level of competition in the banking industry. [Elzinga & Mills \(2011\)](#) explain that LI is a tool to measure monopoly power by defining monopoly social disadvantage as the difference between price and marginal cost. [Ahamed & Mallick \(2019\)](#) and [Cowan \(2018\)](#) have formulated the LI as depicted in equation (1).

$$LI_{it} = \frac{P_{it} - MC_{it}}{P_{it}} \quad (1)$$

Equation (1) shows that LI is influenced by the price of banking services (P) and marginal cost (MC). The higher the LI value, meaning $P > MC$, the higher the concentration level or, the weaker the level of competition. It means that a high LI indicates that business actors have market power that is not playing big, so they can set service prices and interest spreads (P) far above their marginal costs (MC). Conversely, the lower the LI value, meaning $P \leq MC$, the lower the concentration level or higher the intensity of competition because the retail actors do not have enough market power to set the interest spread higher than marginal costs.

Next, to get the value of LI in equation (1), the P value or price is proxied from the ratio of total income to total assets. Meanwhile, the MC value is obtained based on the first derivative of the total cost function developed by [Kasman & Kasman \(2015\)](#) as illustrated in equation 2.

$$\ln TC_{i,t} = \alpha_0 + \beta_1 \ln Q_{i,t} + \sum_{j=1}^3 \beta_j \ln W_{j,i,t} + \frac{1}{2} [\alpha_{QQ} (\ln Q_{i,t})^2 + \sum_{j=1}^3 \sum_{m=1}^3 \beta_{jm} \ln W_{j,i,t} \ln W_{m,i,t}] + \sum_{j=1}^3 \beta_{Qj} \ln Q_{i,t} \ln W_{j,i,t} + v_{i,t} + u_{i,t} \quad (2)$$

Where total cost (TC) is influenced by output or total assets (Q), labor costs to total assets (W_1); interest expense on total deposits (W_2); and other operating expenses to total fixed assets (W_3). The equation of the total cost (TC) function above is estimated by the stochastic frontier analysis (SFA) method, which finally found parameter values of both (α) and (β). Thus, the concentration or competition level between banks in Indonesia can be estimated yearly. If the value of LI increases, then the level of competition between banks tends to decrease, and vice versa.

To estimate the impact of competition level on profitability, the model developed in this study to convert the value of LI into a binary variable. Where banks that have a value of $LI > 0$ are changed to one, which means that the bank has high market power. Conversely, banks that have a value of $LI \leq 0$ are changed to zero. Thus, the analysis model built in this study consists of two equations, namely (i) the competition level equation, which is a non-linear equation, and (ii) the profitability level equation, which is a linear equation. Therefore, the estimation method used in this study is the treatment effect model, as developed by [Fitzenberger et al. \(2013\)](#) and [Lechner \(2015\)](#). The structure of the treatment effect model is delineated by equations (3) and (4).

$$LI_{it} = \alpha_0 + \alpha_1 RT_{it} + \alpha_2 EcS_{it} + \varepsilon_{it} \quad (3)$$

$$Profit_{it} = \beta_0 + \beta_1 LI_{it} + \beta_2 ROA_{it} + \beta_3 BOPO_{it} + \varepsilon_{it} \quad (4)$$

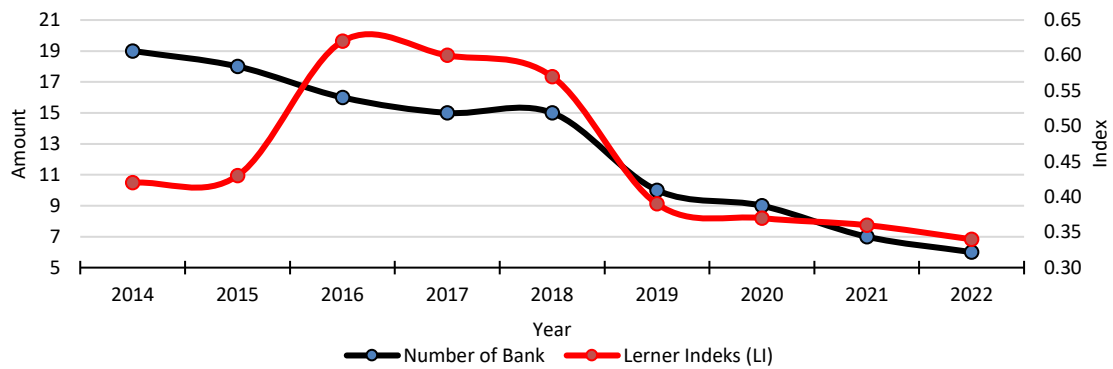
In equation 3, the level of market power measured by LI is influenced by risk-taking (RT) and bank Economies of Scale (EcS). RT is the level of bank risk, which is obtained from the value of the ratio of impairment loss reserves for financial assets to bank lending. [Craig & Dinger \(2013\)](#) stated that the courage of bank management to risk loss reflects the competitive conditions it faces are very tight, or the level of market control is low, usually new players in the trading market. Likewise, EcS in this study is measured by total asset management. [Minh et al. \(2013\)](#) proved that banks with large economies of scale tend to have a large level of market control or low competition. Furthermore, equation 4 shows that a bank's profitability (Profit) is affected by LI, Return on Assets (ROA), and Operational Cost and Operational Income Ratio (BOPO).

We use data from commercial banks listed on the Indonesian stock exchange from 2012 to 2022, sourced from Indonesian Banking Statistics

Result and Discussion

Based on the estimations presented in equations (1) and (2), the structure of the banking market in Indonesia points towards a heightened level of competition, wherein banks' overall ability to exert control over the market seems to be diminishing. Figure 2 illustrates a decline in the LI value, particularly since

2016, concurrent with a decrease in the number of noncompliant actors. This suggests that an increased competitive environment in the banking market likely contributes to the reduction in the number of banks in Indonesia. This insight implies that the prevalent mergers and consolidations carried out by banks may not inherently signify anti-competitive conduct; rather, they might indicate efforts towards efficiency enhancement. This outcome diverges from prior researchers like [Octrina & Setiawati \(2019\)](#), [Sinansari et al. \(2017\)](#), [Widyastuti & Armanto \(2013\)](#), and [Wibowo \(2017\)](#), who suggested that the Indonesian banking industry structure tends to lean towards forming an oligopoly. This, however, was primarily based on participant count within the banking market and did not consider the individual actors' ability to control the market, especially in terms of price control. Thus, the LI metric proves to be a more effective descriptor of conditions, particularly when these outcomes are juxtaposed with the treatment effect model's estimations regarding the impact of competition intensity on banking market profitability.



Source: Indonesian Banking Statistics and estimation results (2022)

Figure 2. Level of Banking Competition and Number of Perpetrators

Results from the treatment-effect model estimation indicate that an enhanced market power corresponds to increased profit potential for banks. This observation aligns with the SCP theory, which posits that industries characterized by concentrated market structures, encompassing both monopolies and oligopolies, generally exhibit higher profitability compared to those marked by dispersed market structures ([Santoso & Jamil, 2023](#)). Table 1 underscores the correlation between a bank's heightened market power and its augmented profitability. This alignment further resonates with the conclusions drawn by [Moudud-Ul-Huq et al. \(2020\)](#) and [Tan et al. \(2017\)](#), who affirmed that competition and bank profitability share an inversely proportional relationship. In other words, reduced competition intensity among banks typically translates to higher profits for the bank

Table 1. Results of Treatment Effect Estimation

Equations	Coefficients	Error Standards	Probability (α)
LI (Lerner Index) equation			
RT (Risk Taking)	-0.12	0.01	0.00
EcS (Economies of Scale)	1.42e-07	6.83e-08	0.00
Constant	-0.40	0.07	0.00
Profit (Profitability) equation			
LI (Lerner Index)	193.30	997.3	0.00
ROA (Return on Asset)	138.8	492.3	0.00
Operational Cost and Operational Income Ratio (BOPO)	-467	454	0.30
Constant	-234	455.5	0.95

Earlier studies by [Moudud-Ul-Huq et al. \(2020\)](#) and [Tan et al. \(2017\)](#) have significantly contributed to comprehending the connection between market power and bank profitability. These outcomes offer robust theoretical and empirical backing for the same relationship within the context of the banking market. Hence, banking decision-makers can adopt strategic measures to enhance profits by bolstering their market power.

The alignment of this study's findings with prior research underscores that reduced competition in the banking market presents banks with opportunities to augment their profitability. Nevertheless, it is important to note that fair competition also remains a crucial factor in fostering innovation, providing quality services, and ensuring long-term sustainability within the banking industry. Thus, the formulation of suitable policies and regulations becomes imperative to strike a balance between heightened efficiency and market power, all while maintaining equitable and sustainable competition within the Indonesian banking market.

Based on Figure 2, which illustrates a downward trend in banking competition, and Figure 1, depicting the increasing profitability trend in Indonesia, the findings in Table 1 indicate an enhancement in the efficiency level within the Indonesian banking market. This trend aligns with the observations made by [Hosen & Rahmawati \(2016\)](#) in their study on Islamic Banks, demonstrating that higher efficiency levels correspond to elevated bank profitability. Consequently, the decrease in the number of participants in the Indonesian banking market is primarily attributed to the intensifying level of competition. This suggests that banks that have managed to remain viable or abstain from merging are those that successfully elevated their operational efficiency. As a result, Indonesia's banking sector profitability has experienced ongoing growth, except for the exceptional year of 2020 during the pandemic.

The previous research conducted by [Hosen & Rahmawati \(2016\)](#) offers valuable insights into the interconnectedness of efficiency and profitability in the banking realm. The outcomes of this study furnish a foundation for comprehending the broader implications of heightened efficiency for the entire banking sector in Indonesia. The alignment between the current study's findings and the outcomes of previous research further bolsters the assertion that proficient operational practices contribute significantly to financial accomplishments and the capacity of banks to endure within a competitive market. These findings underscore the imperative for banks to continuously enhance their efficiency, ensuring a resilient stance in the face of market challenges and uncertainties, as illustrated during the COVID-19 pandemic.

While the banking sector in Indonesia has made commendable strides in profitability through improved efficiency, the exceptional circumstances of the pandemic in 2020 temporarily interrupted this positive trajectory. The extensive economic repercussions of COVID-19 have reverberated across various industries, including banking. However, the preceding research by [Hosen & Rahmawati](#) and the concurrent study's findings collectively underscore the significance of pursuing operational efficiency as a pivotal strategy for the long-term sustainability and profitability of banks in Indonesia's competitive banking landscape. Future studies can delve deeper into specific measures and practices that contribute to enhanced efficiency and examine how banks adapt to address challenges stemming from external events like pandemics. Understanding these dynamics will be essential for fostering a robust and resilient banking industry in Indonesia.

Conclusion, Suggestions and Limitations

The findings of this study affirm the ongoing applicability of the SCP approach for analyzing the influence of competition intensity on performance within the brokerage market. In this context, banking performance is inherently intertwined with market structure. In instances where the market structure is more concentrated, signifying lower competition levels, bank entrepreneurs possess greater opportunities for profit generation. Furthermore, the Lerner Index emerges as a more effective tool for delineating the potency of competition levels within the banking market, surpassing traditional measures of market concentration like IHL and CR. This efficacy stems from the Lerner Index's capacity to elucidate the degree of market control (market power) exerted by each participant in the banking market.

Furthermore, the Lerner Index computations reveal that the competition level among banks in Indonesia is increasing, despite the decline in the number of players within the banking market. This scenario indicates that banks unable to elevate their efficiency levels are compelled to exit the banking market, often resulting in mergers. Consequently, the reduction in market participants centralizes the market structure and bolsters efficiency, as evidenced by the heightened competition. Consequently, the profitability of Indonesian banks inclines towards growth. Hence, concerns about an increasingly concentrated banking market structure are unsubstantiated as long as high competition levels persist among banks, guaranteeing efficiency enhancements.

To enhance banking efficiency, banks can adopt a range of integrated strategies. Primarily, prioritizing digital banking services to curtail transaction costs and bolster customer service efficiency. Secondly, augmenting employee education and training in technology utilization and efficient operational procedures. Lastly, leveraging data analysis for informed decision-making, thereby reducing overall operational costs. By adopting these strategies, banks can enhance efficiency and profitability while navigating the challenges of an increasingly competitive market.

However, it is essential to acknowledge that this study does not factor in external influences like government policies, global economic fluctuations, or unforeseen events such as pandemics, which can significantly impact the banking market. Consequently, forthcoming research should explore these external dynamics and their effect on the relationship between competition and profitability in the Indonesian banking industry. Future studies have the potential to furnish a more comprehensive and nuanced understanding of the intricate relationship between competition and profitability in the Indonesian banking sector, coupled with implications stemming from economic shifts and governmental policies, by incorporating these variables into the analysis.

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