THE STRENGTH OF COMPETITION AND MARKET EFFICIENCY IN DETERMINING BANK PROFITS

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Abstract

Paying attention to developments in market competition, banking efficiency, and profitability is very important because it will update industry information so that it can be utilized by the early warning system (EWS). Market competition is important in business, so this research is interesting for the public. This research aims to find out the impact of competition and efficiency provide positive synergy on banking profitability. The theoretical basis for problem-solving will use industrial organization thinking, which focuses on the structure conduct performance-efficiency structure hypothesis (SCP-ESH) theory (Abbas & Sheikh, 2023). The research object uses 12 samples of conventional banks in Indonesia, which are included in the top 10 categories of a set of banks during 2012–2021 (quarterly data). The analysis uses panel data regression and statistical analysis. From the research results, it was found that there is a positive synergy between market spread operational cost management efficiency and the intermediation function in banking profitability. However, company size has a negative impact on banking profitability. This research is relevant to the research of Gavurova et al. (2017), who found that the market structure of the banking industry in the European Union was still concentrated. However, market structure is negatively related to banking performance.

Keywords: Market Share, Market Competition, Efficiency, Profitability, Big Banks

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1. INTRODUCTION

Competition, efficiency, and profitability in the banking sector are important aspects that need more attention. Efficiency is the best alternative to maintain the existence of banks amidst intense competition (Begum et al., 2023; Keqa, 2021). Apart from that, efficiency can also produce more appropriate quality and prices of banking products so that banks will obtain sufficient profits to increase stability through bank capital adequacy. Therefore, Berger and Mester (1997) suggest looking at it from a micro and macro perspective.

Based on data for 2012–2021, there was significant asset growth in the Indonesian banking sectors. However, asset distribution remained

concentrated. Indonesian Financial Services Authority (FSA) records show that the number of conventional banking assets from 2012 to 2021 increased significantly. In 2012, the total assets (TA) were only 7,099,564 billion rupiahs. The TA continued to grow until 2021, reaching 9,670,515 billion rupiahs, an increase of 1,362 times. Asset growth per year (YoY) was always positive. Growth assets were 8.364% (average), with the largest of 10.134% (2021) and the smallest of 5.947% (2019). The market concentration rose, and the Lerner index (LI) decreased.

The market concentration index, as indicated by the market concentration ratio CR10 and CR4, increased. CR10 = 70.80% (average) and CR4 = 54.674% (average), meaning that the majority of all conventional banking assets in Indonesia (109–115 banks) were still concentrated in the large banks, where the ten largest banks control around 70,800% of the national assets, and the four largest banks hold about 54.674% of the assets. Meanwhile, the LI indicator was 14.130% (average), which showed a decreasing trend — indicating that the banking sector's market power decreased due to increasingly tight market competition.

The increase in market concentration followed by increased competition has reduced the liquidity and profitability of ten big banks in Indonesia. The banking liquidity indicator, as indicated by loan to deposit ratio (LDR), fell from 88.130% to 83.670%, with the largest of 89.570% (2018), the smallest of 83.660% (2020), and the average of 86.734%. Furthermore, the return on assets (ROA) decreased from 3.360% to 2.510%, with the largest of 3.360% (2017), the smallest of 1.840% (2020), and the average of 2.844%.

This research was conducted because of gaps in previous research. Several studies have examined the relationship between market structure and profitability in commercial banks in Indonesia. For example, Nisa et al. (2019) found that market share (MS) has a positive effect on banking profitability. These findings indicate that banking profitability is achieved because banks can diversify their products rather than maximize monopoly power. The limitation of the research conducted by Nisa et al. (2019) is that it used data for only one year, so it only represents events over a short period. Our study will bridge this gap by expanding the research period to five years from 2017 to 2021, resulting in a total of 480 firm-year observations. It is believed that a larger observation size will be able to produce better regression results (Heckmann et al., 2014). Research by Nisa et al. (2019) produced insignificant coefficients for the variables of market concentration and MS on banking performance, which means that there is collusive behavior in the SCP hypothesis in the banking industry.

Meanwhile, research by Ejoh and Sackey (2014) found a significant positive effect of MS on bank profitability. From this research, there are research gaps that need to be re-examined by researchers. This research is important considering the increasingly tight level of banking competition, so this research can be used as a basis for determining policies in global competition.

The research question in this study is:

RQ: Do competition, differentiation strategy, efficiency, and company size provide positive synergy to the profitability of large banks in Indonesia?

This paper is structured as follows: After the introduction in Section 1, Section 2 of this paper reviews the literature on market efficiency and competition's effects on banking profitability. Section 3 discusses the methodology used in this research. Section 4 presents the results and discussion of the findings from this research. Finally, Section 5 summarizes the findings on the impact of competition and market efficiency on large banks' profits.

2. LITERATURE REVIEW

As an industry, the analysis of individual bank behaviour and the market structure in which banks operate are intimately intertwined. The study of microeconomic banking frequently focuses on examining bank rivalry and efficiency. This research can involve bank behaviour in price competition, such as decisions on deposit interest rates and credit interest rates, in addition to the non-price competition, such as differentiation of banking products and optimization of customer service. According to Phan et al. (2019), efficiency analysis is typically linked to revenue maximization, profit maximization, and cost minimization. Many academic works discuss the relationship between the efficiency of monetary policy and its transmission mechanisms at the macroeconomic empirical level. Unfortunately, not much research explicitly examines Indonesian banking practices at the industry level, both before and after the crisis. Bank actions, for example, those related to assessing credit output or deposit interest rates, are closely related to the type of market in which the bank functions (Maspupah et al., 2022).

There are three thoughts in analyzing the relationship between market structure and performance using the structure conduct performance (SCP) paradigm (Khan & Hanif, 2019). First, the traditional hypothesis is based on the preposition which states that market concentration will encourage collusion between companies in an industry which will then increase profits. Second, the differentiation hypothesis, which is based on the proposition which states that the MS obtained is the result of product differentiation behavior carried out, and third, the efficiency hypothesis, which is based on the proposition which states that efficiency will increase MS and will ultimately increase market concentration as well. However, this increase in MS and concentration is the result of efficient behavior so that ultimately it will increase profits.

Theoretically, the problem of the relationship between market structure and banking performance can be answered more precisely using SCP theory and its developments. According to Abbas and Sheikh (2023), the SCP school (market structure (S), conduct (C), and performance (P)) views the relationship between S, C, and P attributes as linear, while the relative efficiency (RE)/ESH the school views the relationship between S, C, and P attributes, not linear but causal.

The RE school refutes the SCP-theory assumption, where efficiency is seen as a key factor that makes a company's margin (performance) high so that it has the potential to increase MS. Thus, S only sometimes significantly affects performance.

This hypothesis is supported by Belkhaoui et al. (2014) in ESH theory, which states that S is the result of the role of the level of efficiency followed by P.

Another theory is Quiet Life Hypothesis (QLH), which Hicks first put forward; QLH analyzes how market concentration is related to the level of company efficiency. With greater market power, companies need to be more efficient in carrying out their business activities.

Stulz (2019) argued that banks should ensure efficiency in all operations. Inefficient banks will likely exit the market because they no longer provide competitive prices, products, and service quality. Meanwhile, from a macro perspective, an efficient banking industry will lead to lower financial intermediary costs and higher financial system stability. With high efficiency, banks can allocate their financial resources more effectively for economic growth.

The increase in market concentration followed by increased competition has reduced the liquidity and profitability of ten big banks in Indonesia. The banking liquidity indicator, as indicated by the LDR, fell from 88.130% to 83.670%, with the largest of 89.570% (2018), the smallest of 83.660% (2020), and the average of 86.734%. Furthermore, ROA decreased from 3.360% to 2.510%, with the largest of 3.360% (2017), the smallest of 1.840% (2020), and the average of 2.844 %.

Competition, which aims to increase MS and generate excess profits, should promote banking efficiency and trigger innovation that yields more variety of products, lower prices, broader access to finance, and better service (Jumono et al., 2019). The competence inherent among the big banks in Indonesia should also bring a positive effect toward a more efficient market. Meanwhile, the results of the previous studies tell a different story. In short, profitability as an indicator of banking performance could result from collusion in an industry or a company's differentiation and efficiency strategy. The question is, what about the banking performance of big banks in Indonesia? Is it the impact of a collusive market or efficiency?

According to Simatele (2015) and Tan (2016a), the market structure of the banking industry was monopolistic, while Gavurova et al. (2017) found that the market structure of the banking industry in the European Union until 2013 was still concentrated. Still, the market structure was negatively related to banking performance. Specifically, in Serbia, Bukvic (2020) and Duranovic and Filipovic (2021) found that the banking market in Serbia is an oligopoly.

As for the relationship between competition, efficiency, and profitability among Indonesian banks, a study by Cristian et al. (2020) found that competition in the credit and deposit markets does not affect ROA and net interest margin (NIM). However, market competition for fee-based income products (FBI) has a negative effect on ROA and NIM. Meanwhile, Munawar (2017), from an impulse response function (IRF) analysis, found that an increasingly competitive banking industry encourages banking efficiency in Indonesia. Furthermore, Widiasari (2015) found that bank profitability is influenced by the intensity of competition in the banking market, but high competition intensity can reduce bank profitability and stability.

Concerning how operating efficiency influences banking profitability in Indonesia, Fithriyanto (2020) found that management effectiveness in managing operating costs synergies to strengthen ROA. In contrast, according to Cristian et al. (2020), operating efficiency does not affect the ROA and NIM of Indonesian banks. Research on the effect of intermediary efficiency on profitability conducted by Mendonca et al. (2020) in Brazil showed that efficiency is associated with profitability, indicating a more significant impact on return on equity (ROE) than ROA. The previous study conducted in Latin America (Chortareas et al., 2009) found that efficiency, especially efficiency of scale, appears to be the main driving force for increasing profitability in most Latin American countries.

Concerning the influence of firm size on banking profitability, Acaravci and Çalim (2013) found that large banks tend to have a high level of product diversification compared to small banks. In addition to higher diversification potential, economies of scale can also be found in large banks. Diversification reduces risk and economies of scale that lead to increased operational efficiency. Thus, firm size has a positive effect on profitability. However, according to Dietrich and Wanzenried (2009), an extensive bank can cause a negative relationship between size and profitability caused by agency costs, bureaucratic processes, and other factors.

2.1. Efficiency towards banking profitability

According to Navila and Sujianto (2022), companies that run efficiently produce super-expected profits. Meanwhile, according to the "efficiency hypothesis theory" (Lloyd-Williams et al., 1994), companies with a higher level of efficiency than their competitors can implement two strategies to maximize profits. First, they can maintain price levels and company size; second, they can lower prices and expand the size of the company. If they implement the second strategy, their efficiency, and MS will increase, which in turn will stimulate the market penetration process. This efficiency hypothesis emphasizes operational technical efficiency (TEFF), which can reduce average costs (AC) due to increased output. Several studies in America found that efficiency is the dominant variable in explaining profitability in American banks (Shanko et al., 2019).

Tan et al. (2017) and Chamberlain et al. (2020) found that a low cost income ratio (CIR) reflects increased profit margins. Meanwhile, a high CIR indicates a bank is inefficient or has poor management quality. The finding of the negative influence of CIR on banking profitability shows that profitability is influenced by operational cost efficiency.

Research conducted by Lloyd-Williams et al. (1994) supports the findings of Chortareas et al. (2009), indicating that banking efficiency (especially scale efficiency (SEFF)) is the main driving force for increasing profitability in most Latin American countries. This research positively influences TEFF and SEFF on banking profitability.

2.2. Firm size on banking profitability

Research explaining the influence of company size on profitability conducted by Astutiningsih and Baskara (2019) shows that company size has a positive effect on profitability. Meanwhile, other research conducted by Asri and Suarjaya (2018) and Yusuf (2017) shows that partial company size does not have a significant effect on profitability.

According to Sahul Hamid (2021), larger banks will benefit from economies of scale and income diversification. However, a negative relationship can also occur if the bank experiences diseconomies of scale and inefficient management. Meanwhile, according to Shalit and Sankar (1977) and Khan and Hanif (2019), company size also has important influences such as economic scale, access to capital markets, profitability, diversification, regulation, company balance sheet, research and development (R&D), and technological innovation.

Research by Lingerih Zerihun (2021) found that bank size has a negative and significant effect on ROA, and in Lestari (2021), bank size hurts ROE. However, the results of this research contradict the findings of Budhathoki et al. (2020), which show that increasing assets can benefit banks to expand and develop more diverse products so that banks can benefit from the scale and scope of the economy. Budhathoki et al.'s (2020) research is in line with Mishra et al. (2021), Hutauruk et al. (2022), Takarini and Pratiwi (2022), Sahyouni and Wang (2018), and prove that there is a positive influence of bank size on bank size.

2.3. Market share, and market concentration on banking profitability

According to Maspupah et al. (2022), dominant firms are business actors with large MS in the industry. They act as price setters due to their considerable market power. According to Kim (2018), banks with immense market power can take more liquidity risk, thereby reducing competition, which can result in the fragility of the financial system.

Meanwhile, relative market power (RMP) theory entails that companies with large MS with differentiated products can determine output prices and generate excess profits (super regular profits). Therefore, Belkhaoui et al. (2014) confirmed that the larger the MS, the greater the funds from the public that banks can use to increase bank activities. It can eventually increase profits, for example, by increasing investment and lending. Furthermore, Ejoh and Sackey (2014) found a significant positive effect of MS on bank profitability.

Nisa et al. (2019) found that MS positively affects banking profitability; this proves that banking profitability is not achieved by maximizing monopoly power but rather by the bank's ability to diversify its products. In addition, according to Belkhaoui et al. (2014) and Ejoh and Sackey (2014), there is a significant positive relationship between MS and bank profitability.

2.4. Lerner index on banking profitability

Research by Sedera et al. (2022) suggests that competition has a positive relationship with bank profitability because it can encourage financial inclusion, thereby expanding the bank's customer base, diversifying risks, and increasing bank profitability. While the results of other studies, Tan and Floros (2013) and Hope et al. (2013) found that banking competition significantly negatively affects profitability because profits from monopolies are reduced.

In the relationship between competition and profitability, Tan (2016b) concluded that market competitiveness is lower in concentrated markets where the total MS is concentrated in a few large banks. Furthermore, Lapteacru (2014) found that an increasingly competitive market can lead to smaller market power in the banking sector. Marquez (2002) also found that when competition becomes tighter, each bank will compete for customers, and sometimes banks reduce loan terms. As a result, non-repayable loans (NPLs) increase, and banking efficiency levels decrease. Another effort to attract customers is usually by providing loans with low interest, which can reduce bank efficiency.

According to Zhao et al. (2022), Sahul Hamid and Ibrahim (2021), Căpraru et al. (2020), Ju and Tang (2022), and Apriadi et al. (2017), competition strengthens financial performance and improves service facilities and technology, ultimately increasing bank profitability.

The research results of Khattak and Ali (2021), Rakshit (2022), and Rakshit and Bardhan (2022) found that higher competition results in lower profitability. Furthermore, Tan et al. (2017) found that competition in commercial banks in China tends to reduce financial performance as measured by profitability.

The research hypotheses are as follows:

H1: Market efficiency, as proxied by cost-income ratio (CIR), scale efficiency (SEFF), and technical efficiency (TEFF), has a positive impact on company profitability.

H2: Firm size (Ln TA) has a positive impact on profitability.

H3: Strategy differentiation as proxied by the market share of bank (MS) and market concentration ratio (CR) has a positive impact on company profitability.

H4: Lerner Index (LI) has a positive impact on company profitability.

3. RESEARCH METHODOLOGY

3.1. Data and sampling

The sample in this study are conventional banks in Indonesia that have entered the top 10 based on asset criteria. Using quarterly data for the 2012–2021 period. Data was taken from bank financial reports published on the FSA's website and from various sources needed to complete this research.

3.2. Regression model analysis

The regression model that will be used adapts the research of Jumono et al. (2019), as follows:

$$\pi_{i,t} = a_0 + a_1 MS_{i,t} + a_2 CR4_t + a_3 MSCR_{i,t} + a_4 LI_{i,t} + a_5 CIR_{i,t} + a_6 SEFF_{i,t} + a_7 TEFF_{i,t} + a_8 Size_{i,t} + e_{i,t} \qquad (1)$$

where, $\pi_{i,t}$ is banking profitability, which is proxied by NIM (net interest margin); ROA (return on asset); ROE (return on equity). Meanwhile $MS_{i,t}$ = Market share of bank in year t; CR = market concentration ratio in year t; $MSCR_{i,t}$ = multiplication between MS and CR bank in year t; LI = Lerner index;

$Size$ = Ln TA; $SEFF$ = scale efficiency; and $TEFF$ = technical efficiency.

3.2. Research model

The research model in this study is presented as follows (Figure 1):

Figure 1. Research model
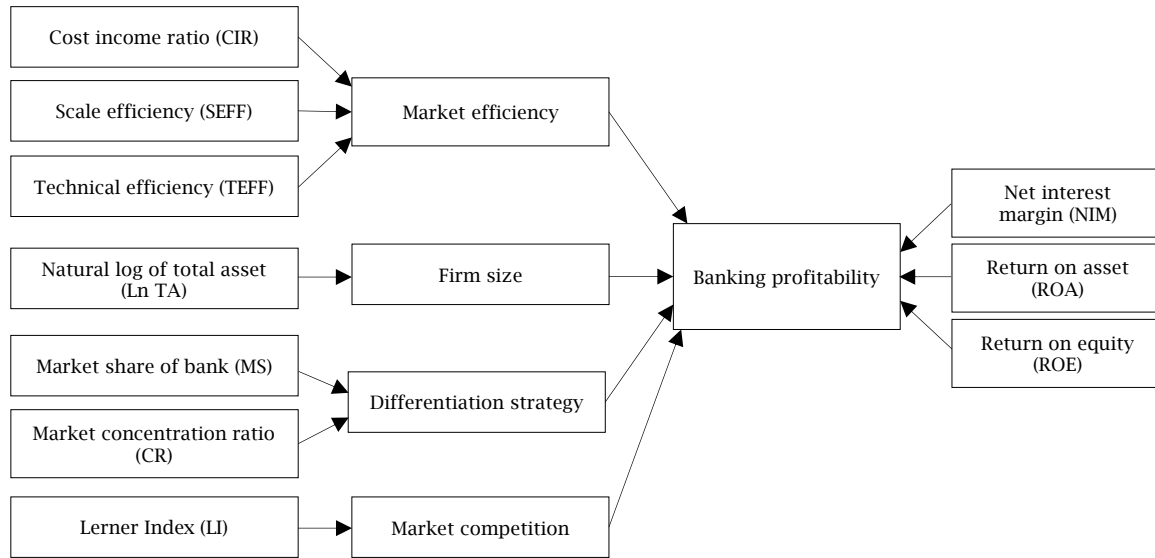
Research variables are as follows:
- Banking profitability as a dependent variable proxied by *NIM, ROA,* and *ROE.*
- Market efficiency is the independent variable 1 with *CIR*, *SEFF*, and *TEFF.*

- Firm size as independent variable 2 with proxy *Ln TA.*
- Differentiation strategy as independent variable 3 with *MS* proxy (Bank MS) and *CR.*
- Market competition as independent variable 4 with *LI* proxy.

Table 1. Definition of operating variable, and measurement

Variable	Proxies	Notation	Measurement	Directions
Market efficiency	Cost income ratio	*CIR*	Cost/Income ratio (%)	+
	Scale efficiency	*SEFF*	Output/Input, DEA approach	+
	Technical efficiency	*TEFF*	Output/Input, DEA approach	+
Firm size	Size	*Ln TA*	Ln of TA bank	+
Differentiation strategy	Market share of bank	*MS*	Asset bank/Total market assets industry (%)	+
	Market concentration ratio	*CR*	TA largest banks/TA industry (%)	+/-
Market competition	Lerner index	*LI*	(Price/Unit asset-marginal cost)/Price/Unit asset (%)	+/-
Banking profitability	Net interest margin	*NIM*	Net interest margin/Earning assets (%)	
	Return on asset	*ROA*	Operating profit/Asset (%)	
	Return on equity	*ROE*	Profit after tax/Equities	

The analysis model chosen is a panel data regression analysis model. This model is used because it can better interpret the relationship between the structure of the variables used as the basis for the analysis. From the results of the Chow test and the Housman test, the results obtained show that panel data for this research is more suitable for using the fixed effect model (FEM) where the slope coefficient is constant but the intercept is not continuous. However, this does not rule out the possibility of using alternative methods to analyze the panel data model using the random effect model (REM). In the FEM, differences in unit characteristics and periods are

accommodated in the intercept so that the intercept can change over time.

Meanwhile, for the REM, differences in unit characteristics and periods are accommodated in the error or residual of the model. Because two components contribute to error formation, namely units and periods, random errors in REM need to be decomposed into combined mistakes and errors for periods. In this research, interpretation will lead to testing a proven hypothesis. For this reason, four stages of understanding of the regression results are carried out, namely:

1) To test whether banks in Indonesia support the traditional SCP hypothesis, a limitation is applied, namely the variable coefficient $MS = 0$.

2) To test whether banks in Indonesia support the differentiation hypothesis, we limit the efficiency of the market concentration variable, $CR_x = 0$.

3) To test whether the banks studied support the efficiency hypothesis, the regression was carried out without any restrictions on the MS and CR_x variables being regressed simultaneously. If profits are greater because they are the result of efficiency, then MS and CR_x do not really affect profits, the CR_x coefficient = 0 and the MS coefficient = 0, because the relationship between MS and concentration on profitability is wrong.

4) The $MS*CR$ variable is used to further prove whether profits are the result of collusion. The research results of this variable are used to confirm the rejection or acceptance of the traditional hypothesis. If profits are the result of collusion, the $MS*CR$ coefficient > 0 (positive) means that profit sharing will increase according to the proportion of MS to industry concentration. And if there is no collusion in an industry, the $MS*CR$ coefficient <= 0 (zero/negative).

4. RESULT AND DISCUSSION

4.1. Result

The data processed is panel data, which is tested using the Housman test. There are three models in panel data, namely pool fewer squares, fixed effect model, and REM. The Hausman test will provide the best panel data model results between the fixed effect model and the REM. From the Housman test, it was concluded that this model would be better using a fixed effect model. The BLUE test will be the next test which aims to detect whether there are multicollinearity, heteroscedasticity, and autocorrelation problems in the model. From the BLUE test, the results show that there is no multicollinearity, heteroscedasticity, and autocorrelation in this model.

The researchers did not intervene in the data and data processing, so it is hoped that the results of this research will be purely from the results of processing the data obtained. This research was carried out on national banks using 12 samples of conventional banks in Indonesia, which are included in the top 10 categories of banks.

This research tests the research of Gavurova et al. (2017), who found that the market structure of the banking industry in the European Union is still concentrated. However, market structure is negatively related to banking performance.

Table 2 illustrates the effect of variables of banking market structure (*MS, CR, MSCR,* and *LI*), variables of efficiency (*CIR, TEFF,* and *SEFF*), and firm size (*Ln TA*) on banking profitability (*NIM, ROA,* and *ROE*). Overall, the results of this study indicated that banking profitability was significantly influenced by *MS* in a positive direction, but the coefficients of the variables *CR* and *LI* were not positive, but zero/negative.

Table 2. Result of impact competition and efficiency on banking profitability

Variable	Banking profitability					
	NIM		ROA		ROE	
	Coeff. prob.	Coeff. prob.	Coeff. prob.	Coeff. prob.	Coeff. prob.	Coeff. prob.
MS	0.464***	0.448***	0.284***	0.258***	3.429***	3.170***
	0.000	0.000	0.0000	0.0000	0.0000	0.0000
CR	-0.0034	-0.021	0.0112**	0.011**	-0.140***	-0.136***
	0.216	0.427	0.0301	0.0497	0.0086	0.007
MSCR	-0.847***	-0.81***	-0.390***	-0.324***	-4.756***	-4.023***
	0.000	0.001	0.0000	0.0000	0.0000	0.0000
LI	0.0231	-1.140	-0.468***	-0.479***	-3.028***	-3.556***
	0.956	0.733	0.0000	0.0000	0.0003	0.0000
CIR	-0.033***	-0.038***	-0.074***	-0.074***	-0.3182***	-0.332***
	0.000	0.000	0.0000	0.0000	0.0000	0.0000
SEFF	0.0009		0.0023***		0.0307***	
	0.773		0.0000		0.0000	
TEFF		0.006***		0.0016***		0.0296***
		0.006		0,0001		0.0000
Ln TA	0.394*	0.334*	-0.456***	-0.501***	-3.970***	-4.781***
	0.051	0.078	0.0000	0.0000	0.0000	0.0000
C	1.3940	2.1912	15.99***	16.976***	117.40***	134.39***
	0.6764	0.4623	0.0000	0.0000	0.0000	0.0000
R²	0.268	0.272	0.964	0.9633	0,887	0.884
Adjusted R²	0.257	0.262	0.963	0.9627	0.885	0.882
Pr (Rn² F-stat.)	0.000	0.000	0.000	0.0000	0.000	0.000
Observation	480	480	480	480	480	480
Panel model	LS, Ro	LS, Ro	EGLS	EGLS	EGLS	EGLS

Note: LS, Ro = Least square robust, EGLS = Cross-section SUR. *, **, *** indicates significance at the 10%, 5%, and 1% levels.

Variables of operating cost efficiency proxied by *CIR* had a negative (significant) effect. Meanwhile, the banking intermediary-efficiency variables proxied by *SEFF* and *TEFF* have a positive (significant) effect on banking profitability. Firm size (*Ln TA)* even had a significant negative effect on banking profitability.

The results of the statistical analysis above can be interpreted from an industrial economic perspective. Based on the result, Indonesia's big banks (top ten assets) have played an efficient intermediary function. Nevertheless, they just face disruptions from diseconomies of scale.

Banking efficiency in this study describes the behavior of bank management in implementing differentiation strategies, operating costs, and intermediation banking efficiency. Statistically, banking efficiency as a successful result of

the differentiation strategies is shown by a positive coefficient on the *MS* variable. As for the implementation of intermediation efficiency, it is indicated by a positive coefficient on the *TEFF* and *SEFF* variables. Meanwhile, the operating cost efficiency is indicated by the negative coefficient of variable *CIR* in relation to *NIM, ROA*, and *ROE* (banking profitability).

4.2. Discussion

4.2.1. Impact efficiency towards banking profitability

The results of this study indicate that banking efficiency synergies to strengthen banking profitability. Efficiency comes from success in carrying out the differentiation strategy, intermediary function, and operating costs. Efficiency resulted from the success of the differentiation strategies as explained in point 4.1. Impact *MS*, and market concentration towards banking profitability.

The success of efficiency in managing operating costs strengthens banking profitability. The statistical evidence can be seen in the negative *CIR* coefficient, which shows that the lower the *CIR*, the more efficient the bank's operational financing. Thus, efficiency provides positive synergy to banking performance.

The banks managed to serve the banking intermediary function. The statistical evidence can be seen in the positive coefficients of *TEFF* and *SEFF*. This shows if the score-*TEFF* and score-*SEFF* increase, the efficiency of bank intermediation increases, thereby providing positive synergy in banking profitability as well.

The findings of the negative effect of *CIR* on banking profitability, which shows that profitability is affected by operating cost efficiency, support Tan et al. (2017), and Chamberlain et al. (2020) who found that low *CIR* reflects an increase in profit margin. Meanwhile, a high *CIR* indicates that a bank is inefficient or has poor management quality.

The findings of the positive influence of *TEFF* and *SEFF* on banking profitability support the efficiency hypothesis as stated by Lloyd-Williams et al. (1994). The finding also supports the findings of Chortareas et al. (2009), which indicated banking efficiency (especially *SEFF*) appears to be the main driving force for increasing profitability in most Latin American countries.

4.2.2. Impact of firm size on banking profitability

The results of this study showed that the larger firm size actually results in decreased banking profitability. Statistically, this can be seen in the negative coefficient of the firm size variable (*Ln TA*). This is an indication of "diseconomies of scale", especially in terms of capacity. The size of the firm that has exceeded the optimal point of economies of scale can create diseconomies of scale. A continuously expanding size of the banks creates inefficiency, indicated by an increase in average cost (AC) and marginal cost (MC) so that profits/unit assets decrease.

The findings of this study provide support for Lingerih Zerihun (2021), who showed a negative and significant effect of bank size on *ROA*, and

Lestari (2021), bank size has a negative effect on *ROE*. However, the result of this study contradicts the findings of Budhathoki et al. (2020) that increasing assets can provide benefits for banks to expand and develop more variety of products so that banks can benefit from a scale and scope economy. Budhathoki et al.'s (2020) research is in line with Mishra et al. (2021), Hutauruk et al. (2022), Takarini and Pratiwi (2022), Sahyouni and Wang (2018), which proves a positive effect of bank size on *ROA*.

4.2.3. Impact market share, and market concentration on banking profitability

The success of the banking differentiation strategy which is indicated by *MS* that positively synergizes with banking profitability becomes the initial indication to accept the ESH concept. Furthermore, to convincingly accept the validity of the ESH more evidence is needed. This study result showed that banking performance is the result of market efficiency instead of market collusion. Thus, the *MSCR* coefficient should be further checked, whether it is positive or not. If the *MSCR* coefficient is positive, it means the market is collusive, but if it is not positive it means the market is working efficiently.

From the results of this research analysis, the *MSCR* coefficient was zero and negative, not positive. This result means that the market is efficient. This finding strengthens acceptance of the ESH concept, because banking profitability is the result of the role of an efficient market, not because of a collusive market. The market concentration formed by big banks in Indonesia is only an efficient collection of *MS*, which reflects the success of the differentiation strategy. With such a strategy they naturally earn excess profit.

These findings support Nisa et al. (2019) who found that *MS* has a positive effect on banking profitability, which proves that banking profitability is not achieved by maximizing monopoly power, but rather by a bank's ability to diversify products. In addition, according to Belkhaoui et al. (2014) and Ejoh and Sackey (2014), there is a significant positive relationship between *MS* and bank profitability. This supports the findings of Nisa et al. (2019) that collusive behavior in the SCP hypothesis in the national banking industry in Indonesia is not confirmed.

4.2.4. Impact of Lerner Index on banking profitability

The results of this study showed that market — concentration has no positive but negative effect on banking profitability. This negative effect shows that the market competition level and banking profitability move in opposite directions. The sharper the market concentration decreases, the higher the market competition level, as indicated by a decreasing *LI*. However, banking profitability tends to increase. Statistically, this can be seen in the negative coefficient of *LI* on *ROA* and *ROE*.

This finding provides support for Zhao et al. (2022), Sahul Hamid and Ibrahim (2021), Căpraru et al. (2020), Ju and Tang (2022), and Apriadi et al. (2017). Competition strengthens

financial performance and enhances service and technology facilities which in turn increases bank profitability. However, this result is in contrast with Khattak and Ali (2021), Rakshit (2022), and Rakshit and Bardhan (2022) that higher competition results in lower profitability. Furthermore, Tan et al. (2017) found that in commercial banks in China, competition tends to reduce financial performance as measured by profitability.

5. CONCLUSION

This research analysis shows that the ESH concept is valid and can be applied to large banks in Indonesia. These findings support the validity of the ESH theory. First, there is a positive influence of MS on profitability. The larger MS compared to other banks is due to successful efficiency in creating synergistic differentiation strategies to strengthen profitability. Thus, market concentration is a collection of MS from efficient market behavior, not collusion. This kind of market concentration can become an industrial market strength.

Second, decreasing market concentration can be interpreted as increasing competition, which leads to a decrease in banking profitability and vice versa. Statistically, this can be seen from the positive coefficient of the *MS* variable and the negative coefficient *LI* as indicators that show the positive influence of *MS* and the negative influence of the *LI* on bank profitability.

This research is very useful for readers, especially in the banking industry, because it is proven that banking profitability is influenced by the efficiency of managing operational costs and the intermediation function. Statistically, this can be seen from the negative *CIR* and the positive coefficients of the *TEFF* and *SEFF* variables on banking profitability (*NIM, ROA*, and *ROE*). However, banking has been detected to experience diseconomies of scale, which can increase MC and AC. As a result, profit/unit of assets decreases. Increasing company size hurts banking profitability.

The limitation of this research is that it only examines large banks and does not cover all banks in Indonesia.

The next research direction is how researchers can use more extensive data by adding research objects using not only large banks but also all banks in Indonesia or comparing banking conditions in Indonesia with banks abroad, which will increase the diversity of research.

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