



## The Influence of Market Structure in Indonesian Banking Performance

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### Abstract

*There are three hypotheses about structure-conduct-performance paradigm; traditional hypothesis, differentiation hypothesis and efficiency hypothesis. The objective of this research is to examine how strong the influence of market structure in banking performance. This study uses the fix effect model by applying the Weiss model. This research also tries to prove whether market share and concentration in the banking industry as a proxy to efficiency. The result of the panel data analysis conducted on a sample of 15 biggest commercial banks over the period from 2009 to 2018 is strongly reject the traditional hypothesis. The empirical findings suggest that market concentration has a negative correlation between profitability, it means that Indonesian banking industry strongly reject the traditional hypothesis and support efficiency hypothesis and there is a positive correlation between market share and profitability, supports the differentiation hypothesis.*

**Key words** : market structure, traditional hypothesis, differentiation hypothesis, efficiency hypothesis

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## INTRODUCTION

The role of banks is very important in the economy, especially in the monetary payment system. With the existence of banks, economic activities can be held at a low cost. According to Guitan & George (1997) the role of banks included 1). Asset transfer (asset transmutation). Banking functions in providing loans to parties who need funds within a certain agreed period. The source of the loan funds is obtained from the owners of the funds deposited in the bank, namely surplus units that entrust their funds to be managed by banks. In this case, the banking sector has played a role as a diversion of assets from surplus units (lenders) to deficit units (borrowers). 2). Give Ease for Transactions (transaction). Banking makes it easy for economic actors to conduct goods and services transactions. Products and services issued by banks which are a substitute for money and can be used as legitimate payment instruments such as ATM cards, credit cards, and debit cards. 3). Liquidity Guarantor. This role shows that bank financial institutions can convince their customers that funds stored as products with varying levels of liquidity, will be returned when they are determined according to their needs and interests. 4). Creating Efficiency (Efficiency). Banks can reduce transaction costs with the range of services, banks can bring together owners and users of capital and facilitate transaction needs between parties who need each other. (Warjiyo, 2007).

The existence of a gap phenomenon, namely the structure of the banking market that tends to oligopoly clearly influences the behavior of banks that have a dominant position to maintain supernormal profits, namely by being reluctant to channel low interest-rate loans and not a reflection of efficient behavior that ultimately results in

the real sector being unable to carry out its role in the economy because it is hampered by financing factors. Then it is necessary to research by reviewing and analyzing the market structure that will affect the performance of the banking industry. The findings obtained can be considered by policymakers. As an industry, analysis of individual bank behavior is inseparable from the market structure in which banks operate. Analysis of bank competition and efficiency usually refers to the analysis of banking microeconomics. This analysis can include the behavior of banks in price competition, such as the behavior of determining the interest rate on deposits and lending rates, as well as non-price competition such as differentiation of banking products and optimization of services to customers. Whereas efficiency analysis is usually related to profit maximization, revenue maximization, and/or cost minimization.

One proxy for measuring the performance of a company or industry is the profit generated by that company or industry. In general, profitability can affect and be influenced by market structure, market behaviour, and other proxies of market performance. Specifically, profitability can be influenced by collusion in an industry, product differentiation carried out, and company efficiency. Collusion that occurs in an industry usually involves some of the largest companies in the industry, so a higher level of concentration will make the cost of collusion lower or cheaper. Collusion is carried out so that the company can set a higher price level so that the company's profit in the industry will increase. A higher price level can also be obtained by the company by making product differentiation. Product differentiation carried out will then have a positive effect on profit or profitability as a proxy of performance. Furthermore, when companies make product differentiation, the company can increase its market share. High profit is not only obtained at a high price level but also can be obtained at

a low-cost level. A low level of cost can only be achieved if the company operates efficiently. Where the efficient company will then grow and be able to obtain a greater market share, and ultimately can form a high concentration as well.

Several things underlie the importance of studies that analyze the effect of market structure on the performance of the banking industry using Structure-Conduct-Performance analysis. First, that until now the Structure-Conduct-Performance concept or paradigm that is commonly used in analyzing the influence of market structures on the performance of an industry with an industrial organization approach is still being debated among experts. The results of studies conducted in various countries still show different conclusions and leave enough space to present further studies to enrich understanding of the Structure-Conduct-Performance concept or paradigm. Second, the main function of Indonesian banking is as a collector and distributor of public funds aimed at supporting the implementation of national development to improve the distribution of development and its results, economic growth, and national stability, towards improving the lives of many people so that its role is very important. The banking industry can play a good role if the performance produced is of good value. Profitability as a proxy for performance in the banking industry will be very valuable and useful if it can be analyzed, including differences in achievement of interbank profits that are allegedly influenced by the existing market structure.

Joe S. Bain defines the industry as a group of companies that produce the same product and use the same process (Carlton & Perloff, 2015). At the beginning of the study of industrial economics, the relationship between market structure and behaviour and

performance is a one-way relationship, but in line with the economic development, the three relations are increasingly complex. The market structure will determine the company's behaviour in the market and company behaviour will determine various aspects of the company's performance. Mason suspects there is a direct relationship between market structure, corporate behaviour in the market, and performance, although in reality, the influence is not direct, but rather complex and interactive. (Martin, 1989, 2002) The relationship between structure, behaviour, and performance is now a two-way relationship that influences one another. This means that industrial performance can influence corporate behaviour and corporate behaviour can affect market structure. For example, efficiency in business activities and ability in changing company strategies will change the map of each company, this means changing the existing market structure. Market structure, company behaviour, and performance can determine market conditions.

The Structure-Conduct-Performance (SCP) paradigm is a paradigm in industrial economics that is used to connect elements of market structure with the behaviour and performance of an industry. Structure refers to the market structure that is usually defined by the ratio of market concentration. Where the market concentration ratio is the ratio that measures the distribution of market share in the industry. Conduct is the behaviour of companies in the industry. This behaviour is competitive or collusive, such as pricing, advertising, production, and predation. Whereas Performance is a measure of social efficiency which is usually defined by the ratio of market power (where the greater the market power the lower the social efficiency). Another performance measure is company profit or profitability. The SCP paradigm is based on several hypotheses, namely: 1). structure

influences behaviour. The lower the market concentration, the higher the level of competition in the market. 2). behaviour affects performance. The higher the level of competition or competition, the lower the market power or the lower the company's profits. 3). structure affects performance. The lower the market concentration, the lower the level of collusion that occurs, or the higher the level of competition, the lower the market power. The results of the three hypotheses above show the market structure affects the performance of companies in an industry

Initially, the SCP paradigm was a theory of industrial-organizational structure developed by Bain in 1951 and only used in the manufacturing industry in America. After that, SCP theory began to be used in the banking industry to see the relationship between market structure and bank performance. Then several studies examining the merger of several banks (mergers) in the 60's in America have increased market concentration because banks can control the market, to increase the level of profits as revealed by Gilbert, 1984. (Martin, 2002). Furthermore, research with the SCP paradigm conducted by Caves, 1967 provides findings that the higher the market concentration in the banking industry will prevent the entry of new competitors in the Industrial market. Besides, an increase in market concentration will affect the behaviour of banks by making agreements between banks in the industry (collusive actions) such as the pricing policy, so that the banks involved in this agreement will be able to improve their performance (Sarita, 2006). Hannan, 1991 and Lucey, 1996 also confirmed that there is a positive relationship between market structure and performance. This happens because oligopoly companies in the industry enter into a pricing policy agreement. As a result,

these companies can dominate a larger market share, and indirectly will obtain greater economic benefits as well. (Sarita, 2012).

Further study by M. Nasser Katib showed that in The Malaysian Banking supports the traditional hypothesis and rejects the efficiency hypothesis, with market share results (MKSA) not having a significant effect on profitability, and concentration (CRN<sub>1</sub>) has a significant positive effect on profitability (Katib, 1997).

In the 2002 Syofriza Sofyan concluded that Indonesian Banking supports the traditional hypothesis and rejects the efficiency hypothesis, with the result of market share (MS) not having a significant effect on profitability, and concentration (CR) has a significant positive effect on profitabilitas. (Sofyan, 2002).

Structure Conduct Performance (SCP) theory believes that market structure will affect the performance of an industry. This flow is based on the assumptions that the market structure will influence the behaviour of the company which will ultimately affect the performance of the company and industry in the aggregate as revealed by Gilbert, 1984. From the perspective of business competition, a concentrated market structure tends to potentially cause a variety of business competition behaviour which is not healthy with the aim of maximizing profits. Companies can maximize profits ( $P > MC$ ) because of market power, something that is common for companies with a very dominant market share (dominant position).

According to Burgess, to analyze the banking industry needed variables that are relevant to the observed banking industry that does have different characteristics from the industry in general. So, Burgess developed what was stated by Michael R. Baye, namely that the relationship between Structure-Conduct-Performance is strongly influenced by the basic conditions of each company. The following variables are in: 1). Basic conditions, including history, law/legislation, technology, and the

elasticity of demand and supply. 2). Structure, including the variables of concentration, economies of scale, barriers to entry, and product differentiation. 3). Behaviour includes branch network, spread, NPA, Metro Branches, Staff, Diversification, Advertising, Financing, Mergers, and Operational Expenditures. 4). Performance, including ROA, ROE, stability, profitability per branch, productivity per branch, allocative efficiency, technical efficiency, and X-efficiency (Murthy & Taru, 2008).

Incomplete information theory and principal-agent problems as important branches of the new industrial economies that have special relevance to the banking market have become the basis for microeconomic theories of financial intermediation as revealed by Swank (1996); Thakor (1995); and Neuberger (1994); given that the banking industry is very vulnerable to moral hazard and adverse selection. Therefore, the usual SCP framework must be refined with incomplete aspects of information that will be useful for banking market analysis (Neuberger, 1998).

In the SCP paradigm that has been updated and adapted to the banking industry, all variables are endogenous due to the dependence between variables of market structure, behavior and performance and feedback effects on basic conditions and public policy as stated by Scherer / Ross (1990); and Schwalbach (1994) (Neuberger, 1998). To use this paradigm as an analysis of the banking industry, market imperfections (uncertainties, asymmetrical information and transaction costs) are integrated into basic conditions. In particular, asymmetric information formation between the borrower and the lender and the cost of gathering the information that has an impact on the bank's activities, structure, and performance. Important variables of basic conditions are

regarding risk, attitude towards risk and supervisor-employee relations. All three have special effects on market structure (eg diversification), on behaviour (eg information gathering, risk-taking) and performance (eg risk allocation and information). The public policies imposed on the banking industry, which include protective regulations, prudential regulations, and competitive regulations, are a reaction to market failures in the banking sector.

In the period 2002-2011, Ahamed in their investigation bolsters the SCP theory that the benefit of Bangladesh's financial market is controlled by the concentration and not by the market share of banks. It infers that concentration brings down the expense of plot among banks and results in higher than ordinary benefits for all market members. Bank performance is decidedly connected with capitalization, liquidity and resource size of the banks (Ahamed, 2012).

Sapto Jumono and friends in their research has a conclusion that concentration ratio of deposits market has a significant and positive influence on ROA, meanwhile concentration ratio of credits market, individual market share of deposits, and individual market share of credits market have no significant effects on ROA (Jumono et al., 2015). The research conducted by Ety Nurwati and friends with case studies on Islamic banking in Indonesia found that there was a significant relationship between market concentration (HHI) with Return of Equity (ROE) of Islamic Banks in Indonesia. Number of Sharia Business Unit has a positive effect on Return on Assets (ROA) and ROE of Islamic Banks in Indonesia. Meanwhile the firm ownership did not show any significant relationship to ROE and ROA of Islamic Banks in Indonesia (Nurwati et al., 2014).

In 2018 Habib Hussain Khan and friends in their study found that the higher profits in concentrated banking industries are partially attributable to the anti-competitive conduct by the banks. These findings are robust across alternative measures of market structure and bank conduct, and different time horizons. The implications of these findings require regulators to make sure that the consolidation policy for ASEAN is achieving its purpose – i.e. achieving financial stability – and not allowing the banks to earn monopoly rents (H. H. Khan, Ahmad, & Chan, 2018).

The efficiency hypothesis appears to provide alternative explanations for traditional hypotheses and differentiation hypotheses that have already existed. The SCP paradigm traditionally states that the level of market concentration directly influences competition in the banking industry, to increase the level of profitability as a measure of performance. In contrast, the efficiency hypothesis states that good bank performance which is reflected by the high level of profit obtained due to the efficiency behavior of a bank (Demsetz, 1973).

Smirlock et al., (1985) state that the efficiency obtained by a bank, is a reflection of the cost savings made so that the operational activities of a bank can be low cost and eventually can dominate the market (Smirlock 1985). Therefore, according to this paradigm, mastery of a larger market share will be able to obtain a greater level of profits (Sarita 2006).

Research conducted by Fu & Hefferman (2005) produced findings consistent with Smirlock that bank behavior at the optimum economy of scale would be able to dominate a larger market share due to lower operating costs so that it would obtain large profits in the end. Hannan, 1991, argues that the relationship between market

share and performance is a function of the difference in the efficiency of each operating bank. The higher the efficiency of a bank means the lower the cost of expenses in the bank's operations. That is, a larger market share will be able to increase greater profits. (Sarita, 2006).

Pracoyo Budi Jatmiko in his research supports the efficiency hypothesis with market share results (MS) as a proxy for efficiency has a significant positive effect on profitability and concentration (CR) has an insignificant effect on profitability. (Jatmiko, 2000)

Meanwhile, Fitri Amalia and Mustafa Edwin Nasution in their study found that Sharia Banking supports the efficiency hypothesis, with the results of market share (MS) and concentration (CR) that have no significant effect on profitability, but the value is positive which means an increase in profitability due to the efficient behavior of Islamic banking. Whereas conventional banking supports the differentiation hypothesis with market share (MS) significantly positive effect on profitability due to product differentiation behavior carried out, not collusive behavior so that it rejects the traditional hypothesis. (Amalia & Nasution, 2007).

Another study by Shazida Jan Mohd Khan concluded that in Southeast Asia banking reject the traditional Structure Conduct Performance (SCP) paradigm. (S. J. M. Khan 2014) In line with previous research, in research conducted by Rizky Yudaruddin prove that Indonesia Banking Industry in 2009-2013 support the efficient hypothesis (Yudaruddin, 2017).

So based on some of the research findings above, it is concluded that the Efficiency Hypothesis paradigm provides a different interpretation of the relationship between profit, performance, and concentration mentioned by the traditional Structure-Conduct-Performance view.

As a trust institution, this industry is vulnerable to the occurrence of moral hazard and adverse selection due to asymmetrical

information on an industry structure that is not perfectly competitive or oligopolistic. This condition is suspected to trigger banking players to behave in a collusive manner to increase profits above normal. Therefore, regulation and supervision in its operations are needed so that the banking industry is known as a highly regulated industry.

Regulations established and deregulation carried out by the government have and will affect the market structure of the banking industry in Indonesia. Changes in the number of banks due to consolidation have an impact on changes in the level of competition in the banking industry which also means a change in the market structure of the industry. To what extent does the influence of the market structure of the Indonesian banking industry tend to be concentrated on banking performance in terms of profitability? Is the relationship between the market structure of the banking industry and performance in accordance with the traditional Structure-Conduct-Performance concept, namely that high profits are the result of collusive behaviour in high concentrated market structures, or in accordance with the differentiation hypothesis which states that high profits are obtained due to differentiation behavior reflected by a large market share, or is it more in line with the efficiency hypothesis which states that high profitability is obtained from the company's efficiency behavior?

## METHOD

In this study, a fixed effect method (FEM) was used. The fixed effect method (FEM) model can explain dynamization between individuals (cross) or time series

(series) so that the selected FEM model is used in this study. (Gujarati N, & Porter, 2009)

The model used in this study is based on the Weiss model which states that the correct model for analyzing competition in an industry is a model that combines market share and concentration variables in one model. This model was used by Smirlock, 1985 which influenced most of the model formation in this study. Thus the market share and concentration are independent variables as a proxy of the variable market structure that will be tested for its effect on the performance of the banking industry as the object of this study. The model used in this study is the adjusted Smirlock model.

Adjustments occur in other variables that have been proven to affect profits in previous studies. In general, the models used in this study are:

$$n = a_0 + a_1 MS + a_2 CR + a_3 MSCR + C_{ai}Z_i \quad (1)$$

Where :

N = profit rate, ROA (Return on Assets)

MS = Market Share

CR = Concentration

MSCR = multiplication between MS and CR

Z = vector of additional control variables which in previous studies were found to significantly affect profit.

The use of equation (1) is to distinguish whether the profit generated comes from collusion, product differentiation or efficiency. Without using MSCR interaction variables, profitability analysis can be done. If  $a_1 > 0$  with  $a_2 = 0$ , the increase in market share is the result of product differentiation. Whereby product differentiation the company will have market power (market power) and can increase prices. Such an industry supports the differentiation hypothesis. While industries with  $a_2 > 0$  and  $a_1 = 0$  indicate that profits generated in the industry are the result of collusion by companies in the

industry, so profits will only be positively related to market concentration. Such an industry supports the traditional hypothesis. Whereas in an efficient industry, profitability is only the result of efficiency. So the way to increase profitability is only by increasing efficiency. An efficient company will be able to increase their market share so that industries consisting of efficient companies tend to be concentrated. If profit is more because it is the result of efficiency, then market share and concentration do not really affect profit,  $a_1 = 0$  and  $a_2 = 0$ , because the relationship between market share and concentration on profitability is false.

The MSCR variable is used to further prove whether profit is the result of collusion. The results of this variable study are used to reinforce the rejection and acceptance of the traditional hypothesis. If profit is the result of collusion then  $a_3 > 0$ , which means that profit sharing will increase according to the proportion of market share to industry concentration. And if collusion does not occur in an industry then  $a_3 < 0$ .

The Z variables adjusted for this study are as follows:

$$Z = a_4LDR + a_5ASET + a_6 CAR + a_7 GROWTHDPK + a_8LOANS + a_9NIM \quad (2)$$

Where:

LDR	= Loan to Deposit Ratio
ASSET	= Asset
CAR	= Capital Adequacy Ratio
GROWTHDPK	= growth of Third Party Funds
LOANS	= Loans
NIM	= Net Interest Margin

So in general, the models used in this study are:

$$n = a_0 + a_1 MS + a_2CR_4 + a_3MSCR + a_4LDR + a_5ASET + a_6 CAR + a_7 GROWTHDPK + a_8LOANS + a_9NIM \quad (3)$$

If explained more specifically following the hypotheses that were built, the equation model in this study is as follows:

Traditional Hypothesis

$$n = a_0 + a_1 CR_4 + a_2LDR + a_3ASET + a_4 CAR + a_5 GROWTHDPK + a_8LOANS + a_9NIM \quad (4)$$

Differentiation Hypothesis

$$n = a_0 + a_1 MS + a_2LDR + a_3ASET + a_4 CAR + a_5 GROWTHDPK + a_8LOANS + a_9NIM \quad (5)$$

Efficient Hypothesis

$$n = a_0 + a_1MS + a_2 CR_4 + a_3LDR + a_4ASET + a_5 CAR + a_6 GROWTHDPK + a_8LOANS + a_9NIM \quad (6)$$

Traditional Hypothesis and verification of the presence or absence of collusion

$$n = a_0 + a_1 MS + a_2CR_4 + a_3MSCR + a_4LDR + a_5ASET + a_6 CAR + a_7 GROWTHDPK + a_8LOANS + a_9NIM \quad (7)$$

## RESULTS AND DISCUSSION

The market structure of the Indonesian banking industry in this study is known by calculating the concentration ratios of the 4 biggest banks. The value of the concentration ratio of an industry is the basis for determining the structure of the industry as expressed by Joe S. Bain. The results of the calculation of the concentration ratio of the 4 biggest banks ( $CR_4$ ) of the Indonesian banking industry from 2009 to 2018 are summarized in Table 2.

From Table 2 it is known that the concentration ratio of the 4 largest commercial banks in the three relevant market shares of the banking industry is in the share of assets, the share of third-party funds (DPK), and the share of loans. From the calculation of the concentration ratio above in table 2, based on the J.S oligopoly criteria Bain, the market structure of the Indonesian banking industry for



the period 2009-2018 is in the form of low moderate concentration oligopolies or type IV oligopolies and even in the share of third-party funds (DPK) close to high moderate concentration oligopolies with CR<sub>4</sub> values reaching 50 percent or more.

Analysis of the relationship between market structure and profitability is testing which hypotheses are proven, traditional hypotheses, differentiation hypotheses or efficiency hypotheses. For this purpose four regression stages are carried out, namely: 1). To test whether banks in Indonesia support the traditional hypothesis, a restriction of the  $MS = 0$  variable is performed. 2). To test whether banks in Indonesia support the differentiation hypothesis, a  $CR_4 = 0$  variable restriction is performed. 3). To test whether Indonesian banks support the efficiency hypothesis, the regression is performed without any MS and CR<sub>4</sub> variable restrictions being regressed together. If profit is more because it is the result of efficiency, MS and CR<sub>4</sub> do not affect profit,  $a_1 = 0$  and  $a_2 = 0$ , because the relationship between market share and concentration on profitability is false. (4).

The MSCR variable is used to further prove whether profit is the result of collusion. The results of this variable study are used to reinforce the rejection and acceptance of the traditional hypothesis. If profit is the result of collusion then  $a_3 > 0$ , which means that profit sharing will increase according to the proportion of market share to industry concentration. And if collusion does not occur in an industry then  $a_3 < 0$ .

Regression results show the relationship that occurs between the market structure and profitability in the Indonesian banking industry with the study period in 2009 to 2018 summarized in Table 3. In equation I with  $R^2 = 0.75$  when only the CR<sub>4</sub> variable (concentration) as a structural

variable, it turns out that significant concentration negatively affects ROA (profitability) in the banking industry in Indonesia. The estimation results in the equation I with  $a_2 < 0$  and  $a_1 = 0$  indicate that the profit generated in the banking industry is not the result of collusion by companies (banks) in the industry, so profit is negatively related to market concentration. This rejects the traditional hypothesis that when concentration increases it will increase profitability because the cost of collusion is cheaper. Increasing market concentration due to collusion behavior does not always increase profitability, on the contrary, it decreases profitability. That is, the high profitability obtained indicates the efficiency performed by banking companies, not the result of collusive behavior due to high market concentration. (Smirlock, 1985).

Differentiation hypothesis which considers that market share is the result of product differentiation where companies that differentiate products can increase their market share and then companies can set higher price levels which means they will get high profits as well. Thus there will be a positive relationship between profitability as a proxy for performance and market share as a proxy for market structure. In the second equation with  $R^2 = 0.74$  when only the MS variable (market share) is a structural variable, the market share has a positive but not significant effect on profitability. This is consistent with the differentiation hypothesis which states that market share as a proxy for product differentiation will have a positive effect on profitability but the effect is not significant. The positive influence of market share variables indicates that an increase in market share increases profitability. However, the results of the regression of equation I and equation II cannot be considered valid if there has not been a regression in equation III.

To further prove whether profitability is more influenced by collusion, product differentiation, or efficiency, the third equation is revised wherein the third equation is regressed without any structural variables being restricted, MS (market share) and CR<sub>4</sub> (concentration) in -regress together. The results of equation III with  $R^2 = 0.75$  apparently strengthen the conclusions of the previous equation. Market share continues to have a positive effect but does not significantly affect profitability, so does market concentration consistently has a negative and significant effect on profitability. This indicates that the two structural variables which are the proxy of market power are rejected, and the two structural variables are more appropriate as a proxy of efficiency.

The statement that market share and concentration variables are proxies of efficiency in the banking industry is reinforced by positive market share coefficients. Where the positive coefficient of market share shows the bank is run efficiently so that when the market share increases, the resulting profitability will increase. This reflects that banks that already have a large market share or can be referred to as large banks tend to be more efficient that is operating at a low cost so that the profit generated will increase with increasing market share.

The results of the fourth equation of regression reaffirm a negative but insignificant relationship between concentration and profitability in the banking industry in Indonesia. This reinforces the hypothesis that high market concentration is proven to not always increase profits because market power results from collusive behavior and even proven to reduce profits. While the effect of market share on profitability in this equation becomes insignificant although the

relationship remains consistent with the previous equation which is a positive effect. The MSCR variable in equation IV has  $a_3 < 0$ , although it is not significant, which means in this fourth regression further, proves that profit is not the result of collusion which means more profit because of the results of efficiency carried out by the company or bank. The insignificance of the MSCR variable in affecting profitability means that the variable has a weak influence. Because if profit is more because it is the result of efficiency then MS and CR<sub>4</sub>, both will not significantly or not really affect profit positively,  $a_1 = 0$  and  $a_2 = 0$ , because the relationship between market share and concentration on profitability is false. The Indonesian banking industry, represented in this study by 15 of the largest commercial banks, is able to control 75 percent of the total market share, in the 2009-2018 study period this supported the efficiency hypothesis.

The negative, as opposed to a zero, the impact of concentration on profitability is, somewhat, surprising. It ought to be noticed that this negative relationship shows up principally, if not so much, due to the the negative coefficient on MSCR, which is included to separate between the competing hypotheses. In this case, negative coefficient on MSCR reflects a decrease in the capacity of leading banks to exploit efficiency advantages due to the presence of other large rivals. Accordingly, the negative concentration-profitability relationship can be seen as mirroring the expansion in competition actuated by an increase in concentration, an impact clearly not present on the off chance that it is the most efficient bank gaining market share of the overall industry. (Smirlock, 1985).

After a four-step regression starting from equation I to equation IV, it is estimated that the effect of market share on profitability is a positive but not significant effect. This shows that the banking industry in Indonesia supports the product differentiation theory/hypothesis

which states that market share as a proxy for product differentiation will have a positive effect on profitability. Companies or banks carry out product differentiation strategies to get an increasingly large market share and can then increase company profitability.

After a four-step regression starting from equation I to equation IV, a consistent estimation result is obtained that the effect of the concentration variable on profitability is significantly negative effect. This shows that the banking industry in Indonesia supports the efficiency hypothesis which provides a different interpretation of the relationship between profit, performance, and concentration mentioned by the traditional Structure-Conduct-Performance view. This view says that a high level of profit does not necessarily indicate a low market performance, because an efficient company can attract consumers without having to set high prices that harm consumers and become barriers to entry for new competitors (Demsetz 1973). The efficiency hypothesis explains that market share and concentration are not proxies of market power but are proxies of company efficiency, so high concentrations are not synonymous with collusion. Where an efficient company will be able to get a large market share, then the market structure will also tend to be concentrated, so that eventually it can obtain a high level of profit. (Smirlock, 1985).

Based on research results, concentration as a proxy for the market structure that has a negative and significant effect on profitability means that markets concentrated in this industry do not show collusive behavior, but instead, the Indonesian banking industry has proven to be quite efficient. This is reinforced by the regression results on the control variables CAR and NIM have a positive and significant effect on profitability. CAR variable which is

the Ratio of Capital Adequacy and the NIM as Net Interest Margin variable is a very appropriate indicator to measure efficiency in the banking industry. Good capital adequacy ratio conditions guarantee NIM in the study period shows a safe condition. Improving banking efficiency will optimize its contribution to the economy, while still strengthening banking resilience.

The difference in the level of profit or profitability of each bank shows the competitiveness and health of each bank are different because ROA is an indicator of performance in the banking industry. Market share and concentration are elements of market structure that have been proven to influence profitability, in addition to other performance measures that have also been shown to affect profitability. A healthy bank that can operate efficiently will produce a good performance. Good performance, indicated by a high and stable ROA (profitability level which is a proxy for performance). The instability of ROA growth or the level of profitability obtained from empirical data as presented in Table 4. is showing that throughout the observation period, the banking industry is very difficult to maintain a stable rate of profit growth due to several influencing factors such as Indonesia's macroeconomic conditions that have not recovered from the crisis and volatile world financial market conditions.

## CONCLUSION

The Indonesian banking industry during the study period had a CR<sub>4</sub> value of more than 45 percent, which means that the market structure of the Indonesian banking industry in the 2009-2018 period was in the form of a low moderate concentration oligopoly or type IV oligopoly and even in the share of third-party funds (DPK) approaching a moderate

concentration oligopoly high with a CR<sub>4</sub> value of more than 50 percent consistent since 2016.

Market concentration as a proxy for market structure has a negative and significant effect on profitability as a proxy for performance in commercial banks in Indonesia for the same period. This shows that the banking industry in Indonesia rejects the traditional hypothesis which considers that concentration is a proxy of market power, where higher market concentration causes the cost of collusion to be low so that companies in the industry will get supernormal profits. But it supports the efficiency hypothesis which states that companies that apply efficiently will be able to increase profitability without having to apply collusively. So that concentration is not a proxy for market power over collusion behaviour, but it is a proxy for efficiency. This reflects that the Indonesian banking industry in the study period accepted the efficiency hypothesis and rejected the traditional hypothesis.

Market share as a proxy for market structure has a positive and insignificant effect on profitability as a proxy for performance at commercial banks in Indonesia in the 2009-2018 period. This shows that the banking industry in Indonesia supports the product differentiation hypothesis which states that market share as a proxy for the market structure will have a positive effect on profitability despite its weak effect. The positive coefficient of market share also shows that banks in the industry are run efficiently so that when market share increases, the resulting profitability will increase. This reflects that banks that are efficient and low cost can have a greater market share or can be called a big bank which then makes the profitability obtained will increase along with increasing market share.

The results of this paper give proof that once the market share is represented appropriately, concentration adds nothing to clarifying bank profit rates. Market share, then again, it is positively related to profitability in the wake of controlling for concentration. This finding doesn't bolster the thought that concentration in banking markets brings about imposing monopoly profit being earned and recommends that any impact of concentration announced in previous studies is misleading and likely due to a correlation among's profitability and the excluded market share variable. I see these discoveries as supporting the efficient structure hypothesis over the traditional hypothesis as a depiction of banking markets. Steady with this is the statement that market concentration is not a signal of collusive behavior but rather the superior efficiency of the leading firms. Regulatory actions that punish this efficiency and additionally, urge proficient banks to be less efficient may likewise be diminishing economic welfare.

As with any empirical analysis, several limitations are in order. First, this study limits the use of only the 15 largest banks in the Indonesian banking industry. Second, concentration variables as a proxy of the market structure in this study are only calculated from the share of Third Party Funds, so it may produce different findings on the share of credit market and the share of asset market. Third, this paper does not explain the results of the control variable regression because it only focuses on the effect of market structure on profitability and fourth, the proof support the product differentiation hypothesis depends on just a couple of studies. Before definitive statements regarding the source of the profitability/market share relationship can be made, more research should be finished.

Future research should endeavor to provide additional evidence on the issue addressed in this paper, not only explaining the relation to profit, market share, and

concentration in banking, but also should be able to extend the analysis to explore potential sources of differences in efficiency between banks. At least, the results of this paper demonstrate that the role of the market structure on bank profitability and the efficient structure hypothesis deserves further examination.

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## APPENDICES

### TABLES AND FIGURES

**Table 1.** The Market of The 5 Biggest Banks : Commercial Banks 2018

Name of Bank	Asset	Third Parties Fund	Loan
BRI	1.296,9	944,26	843,6
Mandiri	1.202,3	840,9	820,1
BCA	823,78	629,81	538,1
BNI	808,57	578,78	512,7
CIMB Niaga	266,78	190,72	188,5
Total	4.399,26	3.184,5	2.903,3
Total commercial banks	8.068,34	5.630,44	5.358,01
<b>Market Share (%)</b>	<b>54,52%</b>	<b>56,55%</b>	<b>54,18%</b>

Source: Statistik Perbankan Indonesia (data processed)

**Table 2.** Concentration Ratio The 4 Biggest Banks (CR4)

Tahun	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Cr4 Dpk	51,14	51,51	48,88	48,40	48,09	47,82	48,39	50,08	50,83	51,84
Cr4 Aset	48,20	47,43	46,61	46,06	45,26	46,78	47,43	49,38	50,24	51,22
Cr4 Kredit	45,30	44,68	44,30	44,33	44,69	44,25	45,43	47,34	48,65	49,69

Source: Commercial Bank Financial Report Publication, Bank Indonesia (data processed)

**Table 3.** Overview Of Regression Results

ROA	MS	CR <sub>4</sub>	MSCR	LDR	ASET	CAR	G-DPK	LOANS	NIM
Regressi I	-	-0,08**	-	-0,01	-8,48***	0,04***	0,005	1,23***	0,36*
R <sup>2</sup> = 0,75		(-2,2)		(-1,09)	(-1,8)	(1,73)	(0,97)	(1,73)	(3,95)
Regressi II	0,03	-	-	-0,007	-1,04**	0,032	0,006	1,49**	0,33*
R <sup>2</sup> = 0,74	(0,31)			(-0,54)	(-2,2)	(1,16)	(1,06)	(2,05)	(3,57)
Regressi III	0,03	-0,08**	-	-0,01	-8,73***	0,05***	0,005	1,26***	0,36*
R <sup>2</sup> = 0,75	(0,28)	(-2,2)		(-0,96)	(-1,85)	(1,74)	(0,95)	(1,74)	(3,95)
Regressi IV	0,23	-0,06	-0,003	-0,012	-8,18***	0,048***	0,005	1,18	0,36*
R <sup>2</sup> = 0,75	(0,54)	(-1,23)	(-0,48)	(-0,95)	(-1,68)	(1,71)	(0,95)	(1,60)	(3,9)

Source: processed from regression output

**Table 4.** The Development of Profitability Level (ROA) of 15 Largest Commercial Banks 2009-2018

Year	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Mandiri	3,13	3,5	3,37	3,55	3,66	3,57	3,15	1,95	2,72	3,17
BRI	3,73	4,64	4,93	5,15	5,03	4,73	4,19	3,84	3,69	3,68
BNI	1,7	2,5	2,9	2,9	3,4	3,5	2,6	2,7	2,7	2,8
BCA	3,4	3,5	3,8	3,6	3,8	3,9	3,8	4	3,9	4
BTN	1,47	2,05	2,03	1,94	1,79	1,12	1,61	1,76	1,71	1,34
CIMB	2,1	2,75	2,85	3,18	2,76	1,33	0,47	1,09	1,7	1,85
PANIN	1,75	1,76	2,02	1,96	1,85	2,23	1,31	1,69	1,61	2,16
OCBC	1,91	1,29	1,91	1,79	1,81	1,79	1,68	1,85	1,96	2,1
Maybank	0,07	1,14	1,13	1,62	1,71	0,68	1,01	1,6	1,48	1,74
Danamon	1,5	2,7	2,6	2,7	2,5	1,4	1,2	2,5	3,1	3,1
Permata	1,4	1,98	1,66	1,7	1,6	1,2	0,2	4,9	0,6	0,8
BJB	3,24	3,15	2,65	2,46	2,61	1,92	2,04	2,22	2,01	1,71
Bukopin	1,46	1,65	1,87	1,83	1,78	1,23	1,39	0,54	0,09	0,22
UOB	3,03	3,31	2,3	2,6	2,38	1,24	0,77	0,77	0,32	0,71
BTPN	3,4	4	4,4	4,7	4,5	3,6	3,1	3,1	2,1	3,1

Source: Commercial Bank Financial Report Publication various years (data processed) (Statistik Perbankan Indonesia, 2018)