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Measurement of Competitiveness and Market Concentration of Indonesian Banking Sharia

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Abstract

This study aims: (1) The extent of competitiveness of sharia banking in Indonesia's current economic development; (2) How far the strength of the sharia banking market in Indonesia today. The research conducted to measure the competitiveness of sharia banking in Indonesia and market forces encountered, using the observation period 2010-2016, and the data used is time series and cross section data. The research design used in research is quantitative research, by using model Lerner Index, PR-H Statistics Model, and multiple regression. Based on the results of the study, 1. Using the Lerner index model, for 10 Indonesian sharia banks, especially murabahah products with observation period 2010 - 2016, shows that the competitiveness of Indonesian sharia banks is still very low. The Lerner index for each sharia banks with competitiveness of murabahah products is Bank Mega Sharia, Bank BRI Sharia, Maybank and BSM. As for other sharia banks is still very low; 2. The measurement of market forces using the PR-H Statistics model, murabahah products of Indonesian sharia banks during 2010-2016 fall into the category of the monopolistic competition market. This indicates that, the murabahah product of each sharia banks is basically almost the same, only slightly differentiated by the deficated products in such a way between one bank and another bank; 3. Regression result model of factors affecting competitiveness, only ROA variable that influence to competitiveness, it shows that ROE variable, capitalization and efficiency not become determinant of competitiveness of a bank, especially for murabahah product.

Keywords: Competitiveness, Sharia Banking, Murabahah

1. Introduction

Development undertaken by a country can not be separated from the development of all sectors of the economy one of them is the financial sector. The role of the financial sector in development as the intermediation of the real sector in allocating existing resources becomes a very important thing. Whether realized or not, the financial sector becomes one of the actors in development to be able to utilize the resources they have. As the financial sector develops better there will be more financial resources that can be allocated to productive sector investment, the formation of physical capital and will ultimately provide a stimulus to economic growth.

The last two decades of the Islamic finance industry have grown quite rapidly not only in countries with Muslim majority but also in other non-Muslim countries, even the development of sharia finance industry globally is

growing rapidly. Based on World Islamic Banking Competitiveness Report 2014-2015, the growth of Islamic finance industry reaches an average growth of 17 percent from 2009 to 2013. International sharia banking assets reach more than US \$ 778 million in 2014. In particular with 6 largest markets among others Qatar, Indonesia, Saudi Arabia, Malaysia, the United Arab Emirates (UAE) and Turkey, will reach US \$ 1.8 billion in 2019. Demand for Islamic banking products around the world is not only done by the Muslim population but also non-Muslims as a means diversification of capital owners' investment.

The World Bank also mentions, in the year 2014 was recorded only 36.1% of adults in Indonesia who have accounts in formal financial institutions. Thus most Indonesians still do not have access to formal financial services, so the opportunity for shariah-based financial growth is still very wide open. On the other hand, shariah-based finance comprising of banking, capital markets and non-sharia bank financial services and other sharia-based business activities has grown and flourished, but growth is still needed to be optimized. Based on data from OJK, up to March 2015 the sharia financial market was recorded at 4.7%, with business volume amounting to Rp. 268.4 trillion. The development of sharia banking in Indonesia is still far behind compared to Malaysia. Meanwhile, Indonesia is a country with the majority of the largest Muslim population in the world. Currently, the market share of sharia banks in Malaysia reaches 40-50%, while in Indonesia only reaches 5% (OJK, 2016).

Several studies have done more emphasis on how important the development of Islamic finance for economic development. Even some studies emphasize the shariah and conventional differences, but do not see how far the stability and efficiency of the Islamic financial industry in the economic growth of a country. From the various problems that exist, the focus of this study problem is: 1. How far the competitiveness of sharia banking in Indonesia's current economic development 2. How far the strength of the sharia banking market in Indonesia today.

Sharia Bank

Sharia Bank is a banking system that conducts its business activities and other services in payment traffic that are ideally suited to the principles of sharia. According to Law number 21 Year 2008, Sharia bank is a bank conducting its business activities based on sharia principles. By type consists of Sharia (BUS), Sharia (Islamic) Financing Bank (BPRS), and Sharia (Islamic) Business Unit. Joe S Bain (1956) using a deductive and empirical approach saw the development of industrial sectors impacting the banking industry. Banking as an intermediary institution plays a significant role in economic growth. Where the banking industry today is not only conventional but also sharia banking. The existence of two kinds of banking not only affects economic growth but also competition.

Competitiveness

The context of the global economy requires every country, especially the banking sector to face a very tight competition. In the banking context, there are several approaches to measure competitiveness / competition, namely structural approach and non structural approach. Weill 2011 in Risfandy, et.al (2016) competitiveness is the ability of banks to influence the price of banking products and services charged to customers.

A frequently used competitiveness study basically uses two approaches, namely structural and non structural approaches, Biker (2004). Measuring competition of an industry or often called market power of late has become one thing that is often discussed. According to Biker (2004), market power is the ability of a company (market participants) to raise prices in the market, making the market inefficient.

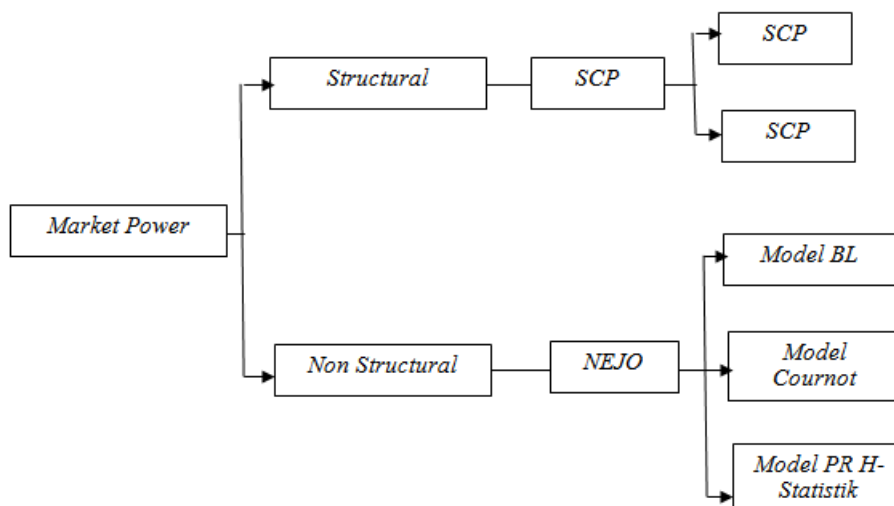


Figure 1: Market Power Measurement Approach in Industry (Bikker, 2006)

Competitiveness Approach

Structural Approach

The structural approach uses the SCP (Structure Conduct Performance) model. This measurement focuses on the use of accounting data related to profit and costs. This approach was developed by Bain, 1956 on the behavior of the manufacturing industry in the United States. This approach began to be used in the banking industry conducted by Howe (1978) with the aim of seeing the concentration level of the banking industry more collusive. In industry, the SCP model approach in measuring general competition uses the Hirschman Herfindal Index (HHI) and Concentration 4 (CR 4) approach.

Hirschman Herfindall Index (HHI)

This measurement is relatf, where the value of HHI coefficient ranges between 0 and 1. If the HHI number approaches 0, the weight distribution of output or variable observed between companies in the industry more evenly, meaning the level of competition between banks is greater. Conversely, if close to 1, then the distribution is more uneven, or the industry is in the market is not perfect competition. However, the high or low Herfindal index value does not necessarily reflect evenness or inequality in the distribution of output, and this becomes irrelevant in the determination of industrial concentrations according to Berger, Demirguc, Levie, and Haubrich (2004). The Herfindal-Hirschman index formula is mathematically as follow :

$$IH = \sum_{i=1}^{n=k} \left\{ \frac{X}{TX} \right\}^2 \dots\dots\dots(1)$$

Concentration Ratio (CR)

The economic context of the industro, the concentration ratio is often referred to as M-Ratio, and in general the often-observed industry consists of 4.8, and the 20 largest companies that dominate the market. For the banking sector in Biker (2004) which only uses 8 banks, it is said to be enough to represent the entire banking share. The banking variables used are total loans, total assets, and third party funds. The concentration value ranges from 0 to 1, closer to 0, then the market structure is perfect competition, and if close to 1 then the market structure faced is monopoly.

Non Structural Approach

In the structural approach with the SCP model is a one-way approach, it is characterized where the performance of a banking can be seen from its structure, while this is not in accordance with the actual conditions. Because banking performance will be more visible than its ability to compete, and this is what causes the emergence of New Empirical Industrial Organization (NEJO) model.

Bresnahan and Lau Model

First developed by Timothy F. Bresnahan and Lawrence J. Lau in 1982. Basically this model is structural that describes the relationship between demand and supply curves on the oligopoly structure. The BL model as follows:

$$\pi = Pq - C(q, W) - F \dots\dots\dots(2)$$

Where: π = profit; q = output; P = price; C = variable cost, W = exogenous variable affecting the cost of supply; and F = fixed costs The function of market demand. Is an aspect of the price on the profit equation whose components are as follows:

$$P = f(Q, Z) = f(q_1 + q_2 + q_3 + \dots \cdot q_n, Z) \dots\dots\dots(3)$$

Meanwhile, the supply equation is an inverse function of the demand equation. The BL model has an index value of 0 to 1, if the value indicates the number 0, then the market is facing competition is perfect, whereas if close to 1, then the market structure faced is a collusion oligopoly.

Cournot Model

This model was first introduced by Augustin Cournot in 1838. This model tends to occur in the oligopoly structure, where the firm produces homogeneous goods and each company treats its competitors output as a fixed one and all companies decide simultaneously how much output to produce. This means that the company in the market, must really know the condition of its competitors in order to obtain accurate information and will ultimately win the press and master the market, Pyndick & Rubinfeld (2010).

PR-H Statistic Model

The model that is often used in the banking industry is Panzar-Rose model or better known as PR-H Statistics. This model was developed by Panzar and Rose in 1987, which is used to measure the degree of competition in an industry, especially banking and its derivatives and long-term competition, monopoly and monopolistic competition. In the analysis using this model, there are two factors in the acceptance of banking, namely input prices and control variables. Assuming, an input n itself and output production function. Model PR-H Statistics can be written as follows:

$$\log TR = \alpha + \sum_{i=1}^n \beta_i \log W_i + \sum_{j=1}^n \gamma_j \log CF_j + \varepsilon \dots\dots\dots(4)$$

Where: TR = total revenue W_i = factor input consists of wage labor, cost of funds and fixed capital costs CF = control variables include total capital to total assets and total debt to total assets.

$$PR - H \text{ Statistik} = \sum_{i=1}^n \beta_i \dots\dots\dots(5)$$

The value of PR-H Statistics shows the market structure of competition, and is the sum of the elasticity coefficients on the control variables.

Table 1: PR-H Statistic Value

PR-H Statistic	Explanation
0	Monopoly
Negative	Colluding Oligopoly
0 to 1	Monopolistic Competition
1	Perfect Competition

Source: Panzar & Rose, 1987

Excess model of PR-H Statistics in measuring the level of market forces of the banking sector, among others: (1) able to see the market structure more broadly; (2) can be estimated using a linear regression model; (3) requires only a few variables for testing. This model is very comprehensive if used to analyze the competition, especially the banking industry.

Shaffer (1982) using a sample bank in New York, shows banking competition in the monopolistic competition market, and the model used is the PR-H Statistics Model. Molyneux and Forbes (1995), using banking in the European region, such as; France, Germany, Spain and Britain in the period 1986 to 1989. For Italy, the banking sector is indicated on the monopoly market.

Sufian & Abdul (2008), using the PR-H model of Statistics and the Lerner Index, indicates that the sharia banking industry in Indonesia operates at a high market power level and lacks competitive power. Islamic banking earns revenue on monopolistic competition market conditions. This study also shows a negative and insignificant influence between the level of industry concentration and competitiveness, while the market power for the leading companies for sharia banking has begun to decline.

Berger, T., Demircic, Kunt, A (2009), the high concentration of banks and cross-border markets, indicating a declining stability in the high-income banking sector, suggesting that banks and markets with high levels of concentration are vulnerable to financial stability faced.

Berger, A.N., Klapper, L.F & Turk Arris (2009), Competition erodes market power, lowers profit margins and reduces franchise interests. Banks with strong competition will reduce the market power of the bank and will ultimately reduce the level of profit margins and the desire for franchising.

Bikker, B., et al. (2006), a study involving 18,000 banks, in 101 countries for over 16 years. It shows that as many as 28% of the 101 countries are in the monopoly market, and 38% are in perfect competition markets. The monopoly power that occurs in some of these countries will lead to inefficiency in banking this is due to the strong dominance of some banks to other banks, while in some other countries tend to enter the perfect competition, this indicates that banks in some countries are required to act efficient and ability to have a good market share.

Soedarmono, W., Machrouh, F., Tarazi, A (2014), a study conducted involving commercial banks for 12 countries over the period 2011-2007, empirical findings highlight that higher market forces in the banking market result in more instability high. Although banks are better capitalized in less competitive markets, their default risks remain higher. A deeper investigation shows that such behavior depends on the economic environment. Higher economic growth contributes to neutralizing higher risk taking and higher instability in less competitive markets.

Abduh, M (2017) uses the PR-H model of Statistics and the Lerner Index, indicating that the sharia banking industry in Indonesia operates at a high market power level and lacks competitive power. Islamic banking earns revenue on monopolistic competition market conditions. This study also showed a negative and insignificant influence between the level of industry concentration and competitiveness, while the market power for the leading companies for sharia banking has started to decline. And the pooled square model for the estimation of several Islamic banks in Indonesia.

Indeks Lerner

This index is a measuring instrument that measures the competitiveness of each bank individually. This index is a direct gauge for market competition, because this index focuses on the ability of banks to determine the price of products or services for its customers, Weill (2011). The Lerner index explains the difference between the price of the product charged to the consumer and the marginal cost incurred by the bank. The higher the price of the product over the marginal cost, the higher the Lerner index is generated and it indicates the higher competitiveness of the bank. The Lerner index calculation method in this study is in accordance with Weill (2011) and Turk-Arris (2010) in Risfandy (2016).

Risfandy, et al (2016), using the Lerner index model and competitiveness, shows that sharia banking in Indonesia has enormous strength compared to conventional banking. However, using the Lerner index, it turns out that sharia in Indonesia has a low market power.

Arris (2010), Sahut et al. (2012) shows that there is a positive and significant influence between market power on profitability. The level of profitability is influenced by internal variables, such as; total assets and lending.

2. Method

The research conducted to see the competitiveness and concentration of sharia banking market in Indonesia, using observation time during 2014, and the data used is cross section. The research design used in research is quantitative research. The variables used are total cost (TC), total assets (TA), and cost inputs issued by banks as marginal cost components, consisting of: labor cost (W1), capital cost (W2), and funding cost (W3).

In this study, the unit of analysis focused on sectors in the economy. Data obtained from other parties or data already available. The data used in this study are secondary data obtained from: a. Indonesia Central Bank ; b. Central Bureau of Statistics ; c. Institutions / Agencies other related institutions, and d. 10 Sharia Banking in Indonesia, by using time series data for 7 years (2010-2016).

Empirical Model

The analytical model used in this study to look at competitiveness and market concentration, as well as the factors affecting market concentration are:

The Lerner Index

Lerner index calculation model from Fernandez de Guevara, Maudos and Perez (2005: 2007), Klapper and Turk-Arris (2009). With the following formula

$$\ln TC = \alpha_0 + \alpha_1 \ln(TA) + \frac{1}{2} \alpha_2 (\ln TA)^2 + \sum_{j=1}^3 \beta_j \ln(W_j) + \sum_{j=1}^3 \sum_{k=1}^3 \beta_{jk} \ln(W_j) \ln(W_k) + \sum_{j=1}^3 \gamma_j \ln(TA) \ln(W_j) + \varepsilon \dots \dots \dots (6)$$

$$MC = \frac{TC}{TA} (\alpha_1 + \alpha_2 \ln(TA) + \sum_{j=1}^3 \gamma_j \ln(W_j)) \dots \dots \dots (7)$$

$$LI = \frac{(P-MC)}{P} \dots \dots \dots (8)$$

PR-H Statistic Model

Using equations from Claessens Leaven (2004) and Bikker et al (2006). The equation as follows

$$\ln TR_{it} = \alpha + \beta_1 \ln W_{1it} + \beta_2 \ln W_{2it} + \beta_3 \ln W_{3it} + \beta_4 \ln Z_{1it} + \beta_5 \ln Z_{2it} + \beta_6 \ln Z_{3it} + \varepsilon_{it} \dots (9)$$

$$\ln ROA = \alpha + \beta_1 \ln W_{1it} + \beta_2 \ln W_{2it} + \beta_3 \ln W_{3it} + \beta_4 \ln Z_{1it} + \beta_5 \ln Z_{2it} + \beta_6 \ln Z_{3it} + \varepsilon_{it} \dots (10)$$

Regression Model Factors Affecting the Level of Competition

By using multiple regression between the Lerner index and the factors that affect it. The model regression equation as follows:

$$LI = \alpha + \beta_1 ROA + \beta_2 ROE + \beta_3 Capitalisasi + \beta_4 Effisiensi + \varepsilon_i \dots \dots \dots (11)$$

3. Result

Description Results of the study

Table 2: Descriptive Statistic

	N	Range	Minimum	Maximum	Mean		Std. Deviation	Variance
	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Statistic
Ln TR	70	6.696398281	10.88260284	17.57900112	15.22969377	.1758046854	1.470887527	2.164
Ln BBH	70	6.631051105	7.103322063	13.73437317	10.25219604	.2059473932	1.723079514	2.969
Ln Margin	70	11.38800505	7.862497197	19.25050225	13.24697928	.2845614134	2.380811597	5.668
ROA	70	12	-8	4	.91	.166	1.388	1.926
ROE	70	107.0	-49.1	58.0	8.520	1.4498	12.1299	147.135
Ln DPK	70	11.26741841	12.64356277	23.91098118	17.20715079	.2899860099	2.426197027	5.886
CAR	69	65.8	10.6	76.4	20.073	1.4441	11.9957	143.896
Ln BOPER	70	11.13128962	9.543521484	20.67481111	14.99975438	.3742512617	3.131210705	9.804
Ln BTK	70	9.888787464	8.834045641	18.72283310	13.10330579	.3572638031	2.989083429	8.935
Ln TC	70	10.41763390	10.38979505	20.80742895	15.61850972	.3512463661	2.938737940	8.636
FDR	69	108.0	55.0	163.0	89.193	1.7386	14.4423	208.580
TC/TA	70	266.0533162	.0001028676	266.0534191	10.30970171	3.991363830	33.39414568	1115.169
Ln W1	70	15.02608337	-11.32388616	3.702197208	-4.165340762	.4740939790	3.966554811	15.734
Ln W2	70	15.14434190	-9.725973423	5.418368473	-2.268892175	.4305366529	3.602128075	12.975
Ln W3	70	10.36020805	-11.82637825	-1.466170206	-6.954954748	.3645288050	3.049866797	9.302
Valid N (listwise)	68							

Source: SPSS 21

Based on the descriptive data above, it appears that some variables have negative minimum value especially for ROA and ROE variables, this is possible because several years of observation there are banks with ROA condition, ROE that minus value, this is related to the bank's ability to create profitability in some time is very small or ruigi. Likewise with operational costs, other costs and labor costs, obtained minus minimum value for some period. This can happen because the cost is quite large and not covered with operating income faced. However, some variables with minus minimum values can be overcome with some time of considerable value.

Model Function Total Cost Trans Logarithm

Based on the model used in this study, the total function model of cos trans logarithm, aims to see how the variables that make up the equation have an impact on the formation of the cost for each sharia bank. The total function calculation results cos trans logarithm can be seen in table 3. below this.

Table 3: Function Transaction Cost Estimation Result

Variable	Coeffitient	t-statistic	sig
Constant	-0.034	-0.027	0.978
Ln TA	1.030	5.057	0.000
I/2 Ln (TA)2	0.006	0.353	0.725
Ln W1	0.628	6.192	0.000
Ln W2	0.262	2.391	0.02
Ln W3	-0.097	-0.609	0.545
Ln W1 Ln W1	0.064	14.910	0.000
Ln W2 Ln W2	0.058	15.056	0.000
Ln W3 Ln W3	0.017	3.200	0.002
LN W1 Ln W2	-0.113	-40.138	0.000
Ln W1 Ln W3	-0.026	-4.257	0.000
Ln W2 Ln W3	0.007	1.254	0.215
Ln TA Ln W1	-0.014	-1.899	0.063
Ln TA Ln W2	0.014	1.800	0.077
Ln TA Ln W3	0.017	1.490	0.142
R2	0.999		
Adjusted R2	0.999		
F-statistic	3796.724		0.000
DW Test	1.525		

Source: processed data

Calculation results show that most of the independent variables used to see the total cos function, some independent variables do not affect the total cost function, among others: squared total assets, funding costs, capital and funding costs, total cost of assets and labor costs as well as total assets and financing costs. It shows that for the sharia banking used in this study, the independent variables that make up the total cost function are total assets, labor cost, capital cost. It is these variables that influence the formation of total cost in sharia banking. Thus the total management, labor costs and capital costs must be done in such a way, so as not to cause high costs and further impact on the benefits derived sharia banking.

Function Model Marginal Cost Trans Logarithm

In the marginal function model of cos involving free vaiabel is total asset, labor cost, capital cost and funding cost, and total ratio cos and total asset. The calculation results can be seen in Table 4. below this. Referring to the above data-processed results, the marginal cos functions formed from the independent variables of the total cos ratio of total assets and associated with each cost (labor cost, capital cost and cost of financing) show results that are not in accordance with the foreseeable. This means that if one independent variable is associated with another free variable it can be said that it will have no effect as if the independent variable stands alone, as this is reflected in the calculation of the total cos function in Table 4. for which the independent variables associated with other independent variables will have no effect on the dependent variable.

Table 4: Result of Estimation of Marginal Cost Trans Logarithm Function

Variable	Coeffitient	t-statistic	sig
Constant	200.066	0.633	0.529
TC/TA Ln W1	-0.126	-0.026	0.979
TC/TA Ln W2	4.776	0.484	0.630
TC/TA Ln W3	-1.864	-0.253	0.801
TC/TA Ln TA	-1.233	-0.437	0.664
R2	0.094		
Adjusted R2	0.038		
F-statistic	1.688		0.164
DW Test	1.126		

Source: processed data

Lerner Index Model

Lerner Index model, is a measuring instrument that measures the competitiveness of each bank individually or in groups. This index is a direct gauge for market competition, because this index focuses on the ability of banks to determine the price of products or services for its customers, Weill (2011). The Lerner index explains the difference between the price of the product charged to the consumer and the marginal cost incurred by the bank. The higher the price of the product over the marginal cost, the higher the Lerner index is generated and it indicates the higher competitiveness of the bank. The Lerner index calculation method in this study is in accordance with Weill (2011) and Turk-Arris (2010) in Risfandy (2016). The Lerner Index has a range of values 0 to 1, the higher the Lerner index indicates the higher competitiveness of the bank. According to Soedarmono, et al (2011), Lerner's index can be negative, this can happen to banks that do not work optimally, when the price of their products and services is lower than the marginal cost.

Table 5: Result of Calculation of Sharia Bank Lerner Index 2010-2016 Based on Year

Year	Observation	Average	Minimum	Maksimum	Std.Dev
2010	10	0.08770	-0.58605	0.45660	0.33850
2011	10	0.08168	-0.34620	0.46475	0.30781
2012	10	0.03585	-0.38190	0.46046	0.30331
2013	10	0.13483	-0.27268	0.46822	0.22180
2014	10	0.15124	-0.35723	0.49360	0.25117
2015	10	0.06030	-0.39439	0.46155	0.32570
2016	10	0.04396	-0.43450	0.42191	0.31086

Source: processed data

Based on Table 5. above, for sharia banking is calculated using sharia banking data for 7 years and involves 10 sharia banks in Indonesia it appears that, the average competitiveness of Indonesian sharia banks is still low, it can be seen from the average value of the Lerner index still far from expectations. This research by specializing in murabahah products, from the results obtained in line with the research conducted by Abduh (2017), that the sharia banking Indonesia has a low competitiveness and different from the study conducted by Risfandy, et al. (2016) Islamic banking in Indonesia with high competitiveness.

Table 6: Result of Calculation Sharia Bank Lerner Index 2010- 2016

Bank	Observation	Average	Minimum	Maksimum	Std.Dev
BCA'S	7	0.0824	0.3592	-0.5861	0.4936
BJB'S	7	-0.0811	0.2926	-0.3491	0.3931
BNI'S	7	0.0799	0.3526	-0.4345	0.4566
BRI'S	7	0.1844	0.2601	-0.2770	0.4682
BSM	7	0.1111	0.2421	-0.3819	0.4028
BUKOPIN'S	7	0.0945	0.2728	-0.3944	0.3754
MEGA'S	7	0.2403	0.1414	0.0892	0.4605
MUAMALAT	7	0.0315	0.3169	-0.3903	0.4616
PANIN'S	7	-0.0312	0.3066	-0.3572	0.4647
MAYBANK'S	7	0.1136	0.2960	-0.3526	0.4643

Source: processed data

Meanwhile, from the calculation of lerner index for each sharia bank using 7 years of observation and 10 banks, it appears that Mega Sharia bank has Lerner index value which is quite good compared with other sharia bank, followed by BRI Sharia, Maybank and BSM . The next prospect that is getting closer is Bukopin Sharia, BCA Sharia, BNI Sharia, Muamalat. Meanwhile, BJB Sharia and Panin Sharia Banks are two banks with very low levels of competition (can be seen from the negative Lerner index value), this indicates that the marginal cost of the two banks is greater than the price of the products and services produced.

PR-H Statistic Model

The results of calculations performed for the PR-H model of the 10 Indonesian sharia banks for 7 years of observation, in the results as in Table 7. following.

Table 7: Function Estimation Results Total Revenue Trans Logarithm

Variable	Coeffitient	t-statistic	sig
Constant	-56.255	-7.697	0.000
Ln W1	0.179	4.790	0.000
Ln W2	0.058	1.56	0.124
Ln W3	0.111	1.924	0.059
Ln Z1	0.504	0.745	0.459
Ln Z2	24.545	10.606	0.000
Ln Z3	0.989	9.177	0.000
R2	0.749		
Adjusted R2	0.725		
F-statistic	30.85		0.000
DW Test	0.894		

Source: processed data

In an effort to measure the level of competition or measure the degree of competition in an industry, especially banking and its derivatives and long-term competition, whether entering the monopoly market and monopolistic competition market. By using the PR-H provisions of the above calculations, Indonesian sharia banking over the period 2010-2015 (by summing the coefficients for W1, W2 and W3) in the values of $(0.179 + 0.058 + 0.111 = 0.348)$, this indicates that the PR-H value of 0.348 is included in the monopolistic competition market. The consequences of sharia banks that enter into such markets are facing considerable competitors with differentiated products based on sharia banks that are considered as representative for other banks (tight competition).

By using murabahah products, the results of this study provide an illustration that the results of the study are in line with the research conducted by Shaffer (1982), Suffian & Abdul (2008), and Abduh (2017), that the market conditions facing sharia banking is a monopolistic competition market. This study is different from Soedarmono, where banks with high market power are accompanied by high instability as well.

Similarly, when viewed from the calculation of ROA trans logarithmic function that can be seen in Table 8. the following.

Table 8. The Results of ROA Trans Logarithm Function Estimation

Variabele	Coeffitient	t-statistic	sig
Constant	9.792	1.249	0.217
Ln W1	-0.031	-0.833	0.408
Ln W2	-0.050	-1.370	0.176
Ln W3	-0.050	-0.861	0.393
Ln Z1	0.106	0.157	0.876
Ln Z2	-3.823	-1.575	0.121
Ln Z3	-0.096	-0.930	0.356
R2	0.109		
Adjusted R2	0.018		
F-statistic	1.199		0.319
DW Test	1.297		

Source: processed data

Using the ROA Function model and PR-H provisions from the above calculation results, Indonesian sharia banking over the period 2010-2015 (by summing the coefficients for W1, W2 and W3) in the values of $(-0.031 - 0.050 - 0.050 = -0.131)$, this indicates that the PR-H value of sebebstar -0.131 is included in the oligopoly market. The consequences of sharia banks that enter such markets are facing very strict competitors with differentiated products but with one another working together (collusion) in certain respects.

Regression Model Factors Affecting the Level of Competition

The calculation to find out the factors that affect the competitiveness of Indonesian sharia banking for murabahah products, get the results as in Table 4.8. below this. Based on the calculation to see the factors that influence the competitiveness of sharia banking in Indonesia especially murabahah products, only ROA variables that affect the competitiveness of murabahah products sharia banking, while ROE, Capitalization and Efficiency does not affect the competitiveness of these products. The results of this study are in accordance with the research of Arris (2010) and Sahut, et al. (2012), but not in accordance with research Risfandy, et al (2016).

The results of this calculation, especially for murabahah products that affect the competitiveness of sharia banks 2010-2016 period is the ability of banks in creating profitability, especially ROA variable, this is a question why only ROA variable that has a positive impact on competitiveness but not with other variables, efficiency.

Table 9: Estimated Results of Factors Affecting Competitiveness

Variable	Coeffitient	t-statistic	sig
Constant	0.423	2.476	0.016
ROA	-0.091	-1.975	0.05
ROE	0.008	1.572	0.121
Capitalisation	-0.003	-1.242	0.219
Efficiency	-0.003	-1.852	0.068
R2	0.099		
Adjusted R2	0.044		
F-Statistic	1.791		
DW-test	1.228		

Source: processed data

4. Discussion

The results of the study conducted using the Lerner Index model, PR-H Statistic, as well as factors affecting competitiveness, can be concluded the following points.

1. Using the Lerner index model, for 10 Indonesian sharia banks, especially murabahah products with observation period 2010 - 2016, shows that the competitiveness of Indonesian sharia banks is still very low. The Lerner index for each sharia bank with competitiveness of murabahah products is Bank Mega Sharia, Bank BRI Sharia, Maybank and BSM. As for other sharia banks is still very low.
2. The measurement of market forces using the PR-H model of statistics, murabahah products of Indonesian sharia banks during 2010-2016 fall into the category of the monopolistic competition market. This indicates that the murabahah product of each sharia bank is essentially almost the same, only slightly differentiated from the defended product in such a way that one bank with another bank.
3. Regression result model of factors affecting competitiveness, only ROA variable that influence to competitiveness, it shows that ROE variable, capitalization and efficiency not become determinant of competitiveness of a bank, especially for murabahah product.

The implications of the study conducted in measuring the level of concentration and competitiveness of the market of sharia banks in Indonesia with murabahah products, indicate that most banks have low competitiveness and market strength indicated in the monopolistic competition market. this shows that the murabahah products of Indonesian sharia banks are basically the same and there is little difference between the bank's products with each other. while in terms of competitiveness only ROA variable that becomes a factor affect the ability of competitiveness of sharia banking.

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