

1-31-2018

Market Structure and Competition of Islamic Banking in Indonesia

Sunarmo Sunarmo

University of Indonesia - Indonesia

Follow this and additional works at: <https://bulletin.bmeb-bi.org/bmeb>

Recommended Citation

Sunarmo, Sunarmo (2018) "Market Structure and Competition of Islamic Banking in Indonesia," *Bulletin of Monetary Economics and Banking*: Vol. 20: No. 3, Article 4.

DOI: <https://doi.org/10.21098/bemp.v20i3.855>

Available at: <https://bulletin.bmeb-bi.org/bmeb/vol20/iss3/4>

This Article is brought to you for free and open access by Bulletin of Monetary Economics and Banking. It has been accepted for inclusion in Bulletin of Monetary Economics and Banking by an authorized editor of Bulletin of Monetary Economics and Banking. For more information, please contact bmebjournal@gmail.com.

MARKET STRUCTURE AND COMPETITION OF ISLAMIC BANKING IN INDONESIA

Sunarmo¹

ABSTRACT

The aim of this study is to investigate the market structure and competition of Islamic Banking with H-statistics (Panzar and Rose) model using panel data over a period of July 2010 to September 2014. The result of H-statistics test for long-run equilibrium showed disequilibrium condition. It means that Islamic banking in developing stage. While the market structure and competition test confirmed that the value of the degree of H-statistics generally in monopolistic competition market with score 0.53 to 1.06.

Keywords: equilibrium, structure and competition, Islamic banking in Indonesia, H-statistics (Panzar and Rose model)

JEL Classification: C23, D40, D58, G21, L11

¹ Students of Economics and Islamic Finance Specialization, Study Program of the Middle East and Islamic University of Indonesia

I. INTRODUCTION

The implementation of the dual banking system, in 2008, stipulated that banks in Indonesia have now embraced two working systems that are based on conventional principles and islamic. A large number of banks will certainly increase banking competition in the country, not to mention the competition in Islamic banking. As of October 2014, there are 13 islamic banks consisting of four foreign exchange banks, six non-foreign exchange banks and three mixed commercial banks (www.ojk.go.id).

The size of competition and the market structure are seen from the market power, which is the ability of a company (seller) to raise its relative price compared to its competitors without losing all its sales. The market power is the difference between the price and the marginal cost expressed relative to the price, which is formulated as $L = (P - MC) / P$ where L is the Lerner index which is an indicator of market power, P is the price at which the firm sells its output, and MC is the company's marginal cost for the volume of the firm. When $P = MC$, the firm competes as in perfect competition where the product is sold homogeneously, then $L = 0$. If $P > MC$, then $L > 0$ means that monopolist profit is maximal (Pindyck and Rubinfeld, 2012).

This study uses the company's share approach on the grounds that this approach is more specific. The theory that can give a clear picture as revealed by Cruch and Ware in Teguh (2013) mentioning that there are two groups of oligopoly companies, namely oligopolies that control some sales or all sales. The first group represents the 8 largest companies that control 75% of the total output in the market. The second represents the 8 companies that control at least 33% of the total market output, if 8 companies control less than 33% of the market share, the industry can be said not concentrated. This statement is supported by Lubis (2012) which uses 8 sample banks in Indonesia.

Based on these two studies, the researcher used samples of 8 islamic commercial banks using the percentage of finance share approach which is the result of the financing amount of each islamic bank proxy to total financing of all islamic banking.

Figure 1. The Rating of Islamic Banks Based on Financing in October 2014 (Processed)

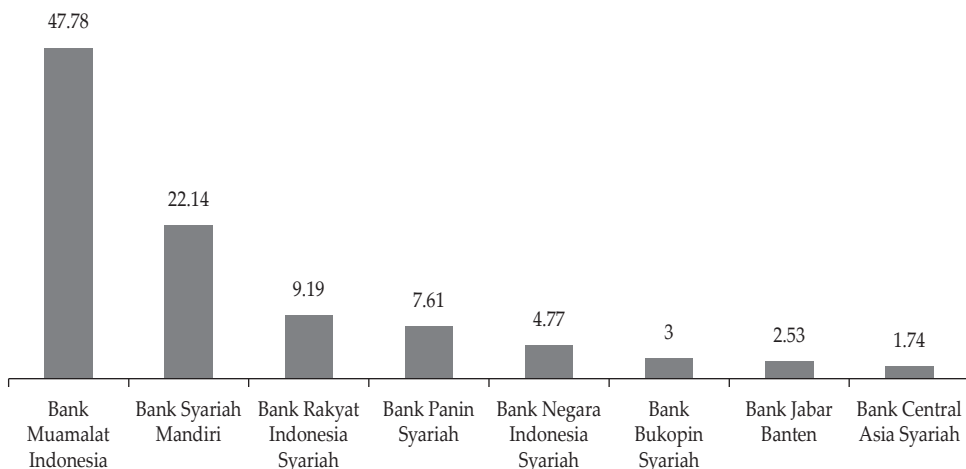


Figure 1 showed that the largest percentage of financing is owned by Bank Muamalat Indonesia (47.78%), followed by Bank Syariah Mandiri (22.14%), BRI Syariah (9.19%), Panin Syariah Bank (7.61%), BNI Syariah (4.77%), Bank Bukopin Syariah (3%), and BJB Syariah and BCA Syariah with 2.53% and 1.74%, respectively. The large difference in terms of financing between the top four banks and the four bottom banks indicates that the Islamic banking industry is sufficiently concentrated.

The banking concentration will bring competition to some banks, leading to monopoly. Uncompetitive competition is based on structural industry approach i.e. Structure-Conduct-Performance (SCP). The SCP approach assumes a one-way approach between the structure and performance (Martin, 1988). This is a disadvantage of the SCP approach. Thus, a new approach to measuring the competition parameters, based on the behavior, is the New Empirical Industrial Organization (NEIO). One form of this method is the Panzar and Rose model or better-known as the model of H-statistics. Researchers use this method as it has advantages over other models that are able to determine the broader market structures, estimates using linear regression, simple variables, and the use of individual data (cross section) which is more accurate in predicting market power (Panzar and Rose, 1987). This paper aims to determine both the competition and market structure of Islamic banking based on Panzar and Rose parameters.

The second part explores the theories and basic test models. The third section is a research methodology and the fourth section reviews the estimation results. The last part is a conclusion.

II. THEORY

2.1. The Development of Islamic Banking

The development of industrial economic calculation was very rapid after the approach of industrial economic model formulated by Bain (1956) through a combination of deductive and empirical approaches. This development has also had an impact on the banking industry. Banks, as strategic institutions in the intermediation of funds, play a significant role in the economic growth. Currently, the banking industry is not only based on the conventional principles, but also on sharia principles. The development of Islamic banking, internationally, was first initiated by Egypt at the Session of the Minister of Foreign Affairs of the Organization of Islamic Conference Organizations (ICO) in Karachi, Pakistan, in December 1970. In subsequent developments in the 1970s, efforts to establish Islamic banks began to spread to many countries. Some countries such as Iran, Pakistan, and Sudan have even transformed their entire financial system into no interest system.

The development of Islamic banking continues to the Southeast Asia countries, one of which is Indonesia. The establishment of an Indonesian Islamic bank began in 1980 through discussions on the theme of Islamic banks as pillars of Islamic economy. As a trial, the idea of Islamic banking was practiced on a relatively small scale such as in Bandung (Bait At-Tamwil Salman ITB) and Jakarta (Cooperative Ridho Gusti). Then, in 1990, the Indonesian Ulema Council initiated the

establishment of the first Islamic bank, Bank Muamalat Indonesia, which officially operated on May 1, 1992.

Today, the number of islamic banks is increasing due to at least two reasons. Firstly, the crisis of 1998 where Bank Muamalat, in that year, was stronger in facing the crisis. Secondly, Central Bank of Indonesia regulations that have officially implemented dual banking system supported by the enactment of Law Number. 21 of 2008 concerning Islamic Banking.

Both of these causes encouraged the conventional banks to open branches of islamic banks from the initial sharia units, only in the form of development into an independent islamic bank. The increasing number of islamic banks operating in Indonesia certainly pushed the level of competition between banks.

The relevant sizes of banking competition are used i.e. Panzar and Roose models (1987). The usual model, called H statistics, is based on the behavior of individuals or companies in the economy. The PR-H statistic test, in banking, was first performed by Shaffer (1982) with a sample of banks in New York, where the general results of banking in New York operate on monopolistic competition. This is similar to that of Molyneux and Forbes (1995) for banking in Europe, in countries such as France, Germany, Spain, and Britain in the period of 1986-1989, but the banking sector in Italy is indicated as a monopoly market. In addition, many economists such as Panzar and Roose (1987; 1982), Nathan and Neave (1989), Perrakis (1991), Bikker et al (2006) and Goddard and Wilson (2008) recommend the H-statistic PR models. Their study results assumed that companies are free to enter or exit the market without losing capital, and between firms, may lead to competition since it was first established (Gasaymeh, *et al*, 2014).

2.2. Non-structural approach

If in a structural approach with the SCP model prioritizing one-way approach where the performance of a banking can be seen from its structure, this is certainly not in accordance with the actual conditions in which the banking performance will be more visible from its competing behavior. Then, came the New Empirical Industrial Organization model. The Panzar Roose model, also known as H-Statistics, is an approach commonly used by researchers, especially in the banking industry.

This model was developed by Panzar and Rose in 1987 to measure the degree of competition in an industry, especially banking and competition derivatives in long-term equilibrium, monopoly, and monopolistic competition industries. There are two factors in the acceptance of banking which are the input price and control variable. Assuming that the n - input itself and output production function. The empirical model of H-statistics can be written as follows:

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

where TR is the total revenue, w_i as an input factor consisting of wage labor, cost of funds and fixed capital costs. While the CF represents the controlled variable including total capital to total assets and total debt to total assets.

$$H - \text{Statistik} = \sum_{i=1}^n \beta_i \quad (2)$$

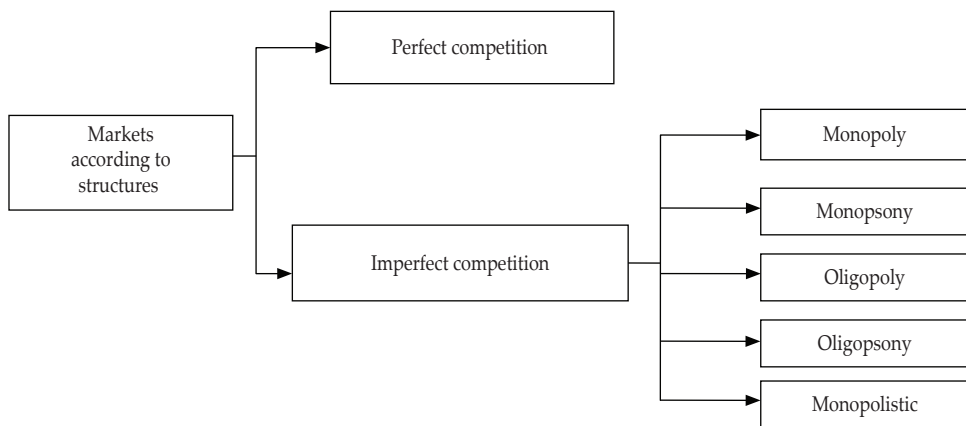
The H-statistical value reflects the competitive market structure and is the sum of the elasticity coefficients in the control variables. The representation of the H-statistic values is equal to 0 or negative, then it includes monopolistic competition or collusion oligopoly. It ranges between 0 and 1 for the case of monopolistic competition and if it is 1, then the form of competition is perfect.

The H-statistic model test has different results, it relates to the panel model used whether through Common-Constant, Fixed Effect method or Random Effect method (Naylah, 2010).

Some of the advantages of using H-statistic model are: (1) able to see the broader market structure, (2) can be estimated using linear regression model, (3) only need some variable for testing. Therefore, the Panzar and Roose (PR H-Statistics) model is very comprehensive if used to analyze competition, especially in the banking industry (Panzar and Roose, 1987).

The size of the competition is reflected in the form of market structure. In policy making, banks will consider the form of market structure so that the policy is taken on target. In addition, banks will gain profit or loss based on where they operate. Figure 2 presents the forms of market structure in the economy.

Figure 2. Forms of Markets in Economics



Source: Pindyck and Rubinfeld (2010), processed.

Based on figure 2 above, it can be explained that the perfect competition on the market is an industry where there are many sellers and buyers, and no seller and buyer can influence the price on the market (price taker). Monopoly is a market that has only one seller and many buyers (price maker). Instead, the monopsony market is a market with many sellers but only one buyer. The monopoly and monopsony are closely related. As a sole producer, the position of monopoly is unique. If the monopolist raises the price then he should not worry about competition. This is because the monopolist controls all the output to be sold (Pindyck and Rubinfeld, 2010).

The oligopoly market structure is a market structure where few firms compete with one another and the entry of other firms is inhibited, in contrast to the oligopsony which is the market structure with more sellers and more barriers to entry into the market. Basically, the monopolistic market lies between two types of markets namely perfectly competitive market and monopoly market with each company having unique products.

2.3. Empirical Review

Table 1.
Summary of Previous H-Statistical Research in The Banking Industry

No	Aspects	Description
1	Author	Muhamad Zulkhibri Abdul Majid and Fadzlan Sufian
	Title	Market Structure and Competition in Emerging Market: Evidence from Malaysian Islamic Banking Industry
	Period	2001 – 2005
	Results	H-Statistics ranged between 0.375 - 0.616 while in the equilibrium test the value ranged between 0824 - 0883 and rejected the Wald test, meaning that the market structure and competition of Islamic banking, in Malaysia, is in the market of monopolistic competition.
2	Author	Farhad khodadad Kashi and Jamal Zarein Beynabadi
	Title	The Degree of Competition in Iranian Banking Industry Panzar – Rosse Approach
	Period	2005 – 2010
	Results	H-Statistic of 0.7101, rejecting the Wald test for the monopoly market and perfect competition with a 1% significance, meaning that the Iranian banks compete in the monopolistic competition market.
3	Author	Rima Turk Ariss
	Title	Competitive Condition in Islamic and Conventional Banking: A Global Perspective
	Period	2000- 2006
	Results	H statistics showed that the banking in the Middle East operates on monopolistic market competition and the Lerner index value showed that Islamic banking is more competitive than the conventional.
4	Author	Maal Naylah
	Title	The Influence of Market Structure on the Indonesian Banking Performance
	Period	2004 – 2008
	Results	Testing of market structure (CR4): oligopolistic form of low moderate concentration (Type IV)
5	Author	Andi Fahmi Lubis
	Title	Indonesian Banking Market Power
	Period	1990 – 2004
	Results	Bresnahan-Lau model test showed that the level of competition on the credit market of Indonesian banking industry is still quite high based on the markup coefficient of 0.0223

Table 1.
Summary of Previous H-Statistical Research in The Banking Industry (Continued)

No	Aspects	Description
6	Author	Anwar Salameh Gasaymeh, Zulkefly A, Mariani Abdul, Mansor Jusoh
	Title	Competition and Market Structure of Banking Sector: A Panel Study of Jordan and GCC Countries
	Period	2003 – 2010
	Results	The only dynamic Oman model test operates on monopolistic competition, whereas the Jordan and other GCC countries are in monopolistic competition.
7	Author	Moh Athoillah
	Title	Market Structure of the Indonesian Banking Industry: Roose - Panzar Test
	Period	2002 – 2007
	Results	The condition of the banking market is in the long-term balance and monopolistic market structure with a value of 0.931
8	Author	Ratna Sri Widyastuti and Boedi Armanto
	Title	Competition of the Indonesian Banking Industry
	Period	2001 – 2006
	Results	The competition test showed that during the consolidation period, all commercial banks had monopolistic structure and post API, all banks were on collusive oligopoly market.
9	Author	Jean- Michel Sahut, Mehdi Mili, and Maroua Ben Krir
	Title	Factors of Competitiveness of Islamic Banks in the New Financial Order
	Period	2000 – 2007
	Results	Tests of PR-H statistics showed that the Islamic banks (0.0259055) are larger and significantly competitive than conventional banks (0.006566) and are in the monopolistic market. The Lerner Index test showed that the degree of market power of Islamic banks is (0.8063) greater than that of conventional banks (0.2621)

III. METHODOLOGY

3.1. Types and Sources of Data

The data used is panel data which is a combination of individual data (cross-section) and time series data with a sample 8 islamic commercial banks operating in Indonesia and classified based on financing in October 2014 with a time frame between June 2010 - September 2014.

Table 2.
Eight Islamic Commercial (C8) Banks

Ranking	Islamic Banks
1	Bank Muamalat
2	Bank Syariah Mandiri
3	BRI Syariah
4	Panin Syariah
5	BNI Syariah
6	Bukopin Syariah
7	BJB Syariah
8	BCA Syariah

Source: Financial Statements of Banking Publications, Bank Indonesia and the Financial Services Authority, processed.

3.2. Variable Restrictions

The variables consist of three independent variables, including labor inputs, cost of funds, fixed capital cost, and two controlled variables i.e. primary ratio, the asset to loan ratio, while the dependent variable uses the income ratio and return on asset (ROA).

Table 3.
PR-H Statistic Variables

Names of Data	Types of Variables	Time Frame	Units of Measurement	Sources of Data
Total Revenue (TR)	Bound	Monthly	Ratio	BI and FSA
Return on Asset (ROA)	Bound	Monthly	Ratio	BI and FSA
Wages of labor (W_L)	Free	Monthly	Ratio	BI and FSA
Cost of funds (W_F)	Free	Monthly	Ratio	BI and FSA
Fixed capital costs (W_K)	Free	Monthly	Ratio	BI and FSA
Primary ratio (Y_1)	Free	Monthly	Ratio	BI and FSA
Asset to loan ratio (Y_2)	Free	Monthly	Ratio	BI and FSA

Description of variable constraints:

1. Total revenue (TR) is total bank income derived from non-interest operational income for islamic banking which is proxy to total asset
2. Return on Assets (ROA) is the ability of a bank to make the profit through the use of its assets. The ROA is in proxy from the profit before tax to total assets
3. Wages of Labor (W_L) is the operational cost of the bank in terms of labor wages. The wage of labor is the burden the bank must pay to its workers. It uses the ratio of wages to total assets
4. The cost of funds (W_F) is the burden borne by banks for bonuses on third parties (customers)
5. The Fixed capital cost (W_K) is an administrative and promotional burden to be borne by a bank that is proxied using owned assets.
6. The Primary ratio (Y_1) is a ratio of capital health which measures the extent to which the decrease in total incoming assets can be covered by capital
7. The asset to loan ratio (Y_2) is the ratio to measure the amount of financing disbursed by the total assets owned by islamic banks.

3.3. Models and Methods of Analysis

Data analysis is the process of simplifying the data into a form that is easier to read and interpret. The econometric model for panel data was used in the present research. The form of the equation was as follows:

$$Y_{it} = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_n X_{nit} + \varepsilon_{it} \quad (3)$$

The stages of panel data test consist of Pooled Least Square modeling, Fixed Effect, and Random Effect.

3.4. PR H-Statistic Method

The PR H-statistic method is one form of market power measurement in the banking industry with the un-structural approach. The un-structural approach is more of determining the company's behavioral aspects in influencing the market conditions (Widyastuti and Armanto, 2013). This method was first developed by Panzar and Roose in 1987 and used to measure the degree of market power in the banking industry. The measure of market power through the PR H-statistics is derived from the sum of the input of price elasticity coefficients i.e. labor costs (W_L), cost of funds (W_F) and fixed capital costs (W_K), which respond to the total revenue. The representation of the sum of input variables can be used to determine the market structure in which the firm operates.

Some of the advantages of the PR H-statistic method are: (1) able to see the broader market structure, (2) can be estimated using econometric model with regression, (3) the variable used is quite simple, (4) using the individual data (cross-section) as a form of competition among banks.

The PR-H Statistics method is applied to companies with one type of product. Thus, banks are treated as producers with output in the form of loans. The assumptions of this method are long-run equilibrium and the maximization of profit earning (Panzar and Roose, 1987).

Before estimating the PR H-statistic, a long-run equilibrium test is intended, for, in case of balance, the research can proceed to market power, whereas if not, the research is stopped. However, Shaffer (1982) in Widyastuti and Armanto (2013), said that if the study shows a disequilibrium condition, it indicates that the banking industry is developing dynamically during research observation, thus, the research can proceed.

The equation of long-run equilibrium test of the PR-H statistic method is as follows:

$$\begin{aligned} \ln ROA_{it} = & \beta_0 + \beta_1 \ln(W_{L,it}) + \beta_2 \ln(W_{F,it}) + \beta_3 \ln(W_{K,it}) + \beta_4 \ln(Y_{1,it}) \\ & + \beta_5 \ln(Y_{2,it}) + \varepsilon_{it} \end{aligned} \quad (4)$$

The long-run equilibrium is interpreted as follows:

If PR - H statistic_{ROA} < 0 there is no equilibrium

If PR - H statistic_{ROA} = 0 there is equilibrium

PR - H statistic_{ROA} is the sum of the elasticities of β_1 , β_2 , and β_3 . Whereas, the equation to see the degree of market power is only by replacing the variable Return on Asset (ROA) with total bank income to total assets (TR).

So, the equation becomes:

$$\begin{aligned} \ln(TR_{it}) = & \beta_0 + \beta_1 \ln(W_{L,it}) + \beta_2 \ln(W_{F,it}) + \beta_3 \ln(W_{K,it}) + \beta_4 \ln(Y_{1,it}) \\ & + \beta_5 \ln(Y_{2,it}) + \varepsilon_{it} \end{aligned} \quad (5)$$

Description:

$\ln TR_{it}$ = Non-interest income/total assets

$\ln ROA_{it}$ = Profit before tax/total assets

$\ln W_{F,it}$ = Bonus expense (wadiah)/total assets

$\ln W_{L,it}$ = Labor load/ total assets

$\ln W_{k,it}$ = Operational load/total assets

$\ln Y_{1,it}$ = Total capital/total assets

$\ln Y_{2,it}$ = Total debt/total assets

The interpretation of the *market power* is as follows.

PR-H statistic_{TR} = 0 monopolistic competition

PR-H statistic_{TR} = 1 perfect competition

PR-H statistic_{TR} $0 < H_{TR} < 1$ = Monopolistic Competition

All of the variables in the PR H-statistic method use the addition of natural logarithm (ln) to show elasticity, since the market power values range between 0 and 1 so that the degree of the market indicator is immediately detected.

IV. RESULTS AND ANALYSIS

4.1. Panzar and Roose (PR H- Statistics) analysis

The panel data estimation is done on Eviews 7 with the timeframe of July 2010-September 2014, which is grouped every 3 months. Thus, there are 17 test result data of test phase, consisting of the best method selection (PLS, FEM, or REM), equilibrium test, and PR H-Statistic test. The results and discussion of each test are described as follows.

4.2. The Best Model of Islamic Bank Equilibrium Test

Table 4.
Selection of The Best Model of Islamic Bank Equilibrium Test

Periods	Test	Model Selection			
		Prob	Significance 0.05	Best Model	Conclusion
July – September 2010	Chow	0.0000	0.05	FEM	The best model is REM, because 0.0507 > 0.05
	Housman	0.0507	0.05	REM	
October – December 2010	Chow	0.0000	0.05	FEM	The best model is FEM, because 0.0000 < 0.05
	Housman	0.0000	0.05	FEM	
January – March 2011	Chow	0.0000	0.05	FEM	The best model is REM, because 0.3875 > 0.05
	Housman	0.3875	0.05	REM	
April – June 2011	Chow	0.0000	0.05	FEM	The best model is FEM, because 0.0320 < 0.05
	Housman	0.0320	0.05	FEM	
July – September 2011	Chow	0.0000	0.05	FEM	The best model is FEM, because 0.0479 < 0.05
	Housman	0.0479	0.05	FEM	
October – December 2011	Chow	0.0000	0.05	FEM	The best model is REM, because 0.9381 > 0.05
	Housman	0.9381	0.05	REM	
January – March 2012	Chow	0.0001	0.05	FEM	The best model is REM, because 0.9839 > 0.05
	Housman	0.9839	0.05	REM	

Table 4.
Selection of The Best Model of Islamic Bank Equilibrium Test (Continued)

Periods	Test	Model Selection			
		Prob	Significance 0.05	Best Model	Conclusion
April – June 2012	Chow	0.0000	0.05	FEM	The best model is REM because 0.82>0.05
	Housman	0.8299	0.05	REM	
July – September 2012	Chow	0.0000	0.05	FEM	The best model is FEM, because 0.0000 < 0.05
	Housman	0.0000	0.05	FEM	
October – December 2012	Chow	0.0000	0.05	FEM	The best model is REM, because 0.4376 > 0.05
	Housman	0.4376	0.05	REM	
January – March 2013	Chow	0.0000	0.05	FEM	The best model is REM, because 0.0000 < 0.05
	Housman	0.0000	0.05	FEM	
April – June 2013	Chow	0.0028	0.05	FEM	The best model is REM, because 0.8007 < 0.05
	Housman	0.8007	0.05	REM	
July – September 2013	Chow	0.0000	0.05	FEM	The best model is REM, because 0.5859 > 0.05
	Housman	0.5859	0.05	REM	
October – December 2013	Chow	0.0000	0.05	FEM	The best model is REM, because 0.2848 > 0.05
	Housman	0.2848	0.05	REM	
January – March 2014	Chow	0.0000	0.05	FEM	The best model is REM, because 0.6506 > 0.05
	Housman	0.6506	0.05	REM	
April – June 2014	Chow	0.0000	0.05	FEM	The best model is REM, because 0.7878 > 0.05
	Housman	0.7878	0.05	REM	
July – September 2014	Chow	0.0000	0.05	FEM	The best model is REM, because 0.8698 > 0.05
	Housman	0.8698	0.05	REM	

Source: Appendix 2.

The selection of the best model for islamic bank equilibrium test, as in Table 12, is Fixed effect model and Random Effect Model (REM). The FEM modeling took place in the period of October-December 2010, April-June 2011, July-September 2011, July-September 2012, and January-March 2013, while the other twelve periods used the REM test. However, this test often raises the problem of correlation between interference variables (autocorrelation), and to overcome it, the REM test method of Generalized Least Square (GLS) is used.

4.3. Best Model of PR H-Statistics Test in Islamic Banking

Table 5.
Selection of The Best Models of PR H-Statistics Test in Islamic Banking

Periods	Test	Pemilihan Model			
		Prob	Significance 0,05	Best model	Conclusion
July – September 2010	Chow	0.0000	0.05	FEM	The best model is REM, because 0.3360 > 0.05
	Housman	0.3360	0.05	REM	
October – December 2010	Chow	0.0000	0.05	FEM	The best model is REM, because 0.7003 > 0.05
	Housman	0.7003	0.05	REM	
January – March 2011	Chow	0.0000	0.05	FEM	The best model is FEM, because 0.0201 < 0.05
	Housman	0.0201	0.05	FEM	
April – June 2011	Chow	0.0000	0.05	FEM	The best model is FEM, because 0.0044 < 0.05
	Housman	0.0044	0.05	FEM	
July – September 2011	Chow	0.0000	0.05	FEM	The best model is FEM, because 0.0048 < 0.05
	Housman	0.0048	0.05	FEM	
October – December 2011	Chow	0.0005	0.05	FEM	The best model is REM, because 0.5280 > 0.05
	Housman	0.5280	0.05	REM	
January – March 2012	Housman	0.0001	0.05	FEM	The best model is REM, because 0.1144 > 0.05
	Chow	0.0001	0.05	FEM	
April – June 2012	Housman	0.1144	0.05	REM	The best model is FEM, because 0.0000 < 0.05
	Chow	0.0001	0.05	FEM	
July – September 2012	Chow	0.0000	0.05	FEM	The best model is FEM, because 0.0000 < 0.05
	Housman	0.0000	0.05	FEM	
October – December 2012	Chow	0.0002	0.05	FEM	The best model is REM, because 0.6590 > 0.05
	Housman	0.6590	0.05	REM	
January – March 2013	Chow	0.0000	0.05	FEM	The best model is REM, because 0.0000 < 0.05
	Housman	0.0000	0.05	FEM	
April – June 2013	Chow	0.0000	0.05	FEM	The best model is FEM, because 0.0015 < 0.05
	Housman	0.0015	0.05	FEM	
July – September 2013	Chow	0.0000	0.05	FEM	The best model is REM, because 0.0000 < 0.05
	Housman	0.0000	0.05	FEM	
October – December 2013	Chow	0.4769	0.05	PLS	The best model is PLS, because 0.4769 > 0.05
	Housman	0.4769	0.05	PLS	
January – March 2014	Chow	0.0000	0.05	FEM	The best model is FEM, because 0.0000 < 0.05
	Housman	0.0000	0.05	FEM	

Table 5.
Selection of Best Models of PR H-Statistics Test in Islamic Banking (Continued)

Periods	Test	Pemilihan Model			
		Prob	Significance 0,05	Best model	Conclusion
April – June 2014	Chow	0.0000	0.05	FEM	The best model is FEM, because 0.0000 < 0.05
	Housman	0.0000	0.05	FEM	
July – September 2014	Chow	0.0000	0.05	FEM	The best model is FEM, because 0.0000 < 0.05
	Housman	0.0000	0.05	FEM	

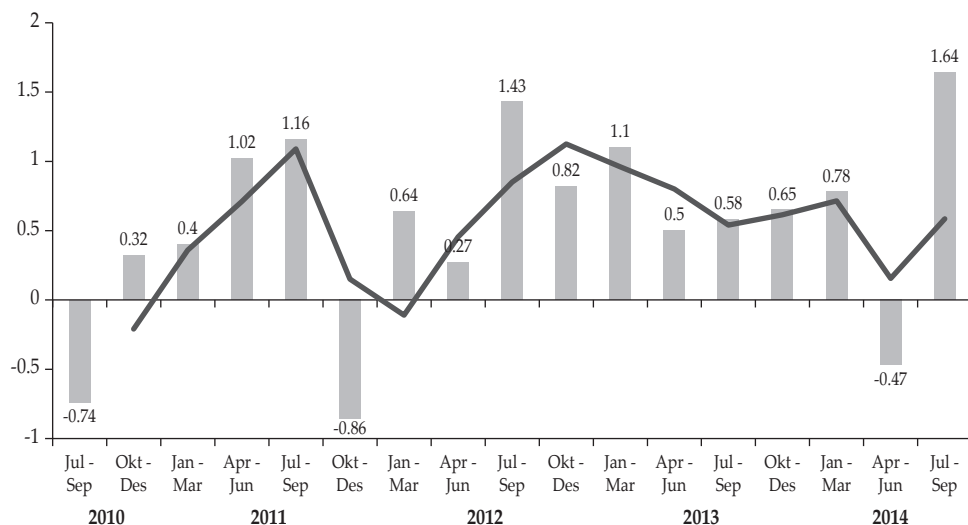
Source:

In general, in Table 14, the best model used in the estimation of the PR-H statistics islamic banking is the Fixed Effect Model (FEM) of 11 periods, while the Random effect is 5 periods i.e. July-September 2010, October-December 2010, October-December 2011, January-March 2012, and October-December 2012. Meanwhile, the Pooled Least Square model (PLS) is used in the period of October-December 2013. The PLS modeling, in that period, shows that the eight-islamic banking is assumed to have the same intercept and slope.

4.4. Long Run Equilibrium Test Results of Islamic Banking

This test is used to view the long-run equilibrium and is the sum of the input variable coefficients of the estimation using the Eviews 6.0 i.e. labor cost (InW_L), cost of funds (InW_F), and capital cost (InW_K) which are the main requirements of continuing to H - Statistics.

Figure 3. The Result of Long-Run Equilibrium Test of Islamic Banking, from July–September 2010 to July–September 2014



Islamic banking appears to have a tendency to approach the equilibrium level indicated by the value close to 0. However, the movement is quite extreme in the period of July-September with (1.16 points), July-September 2012 (1.43 points), and July-September 2014 (1.64 points).

Islamic banking is in disequilibrium condition and tends to approach 0. This is similar to the research conducted by Widyastuti and Armanto (2013) and Sahut, *et al.* (2012).

This condition indicates that islamic banking is in a developing condition which means that islamic banking is not yet dominating the economy. This is in line with the Financial Services Authority survey in 2013 on financial literacy, which showed that the community's understanding of banking was only 21.80%, which was lower compared to the Philippines (27%), Malaysia (66%), Thailand (73%) and Singapore with the highest level of understanding of the banking sector i.e. 98%.

The low level of banking literacy, in Indonesia, indicates that many people do not use banking as a financial intermediary institution. This has an impact on the low DPK owned by islamic banks and the hampering growth of the real sector.

The continuous development of islamic banking, in Indonesia, is caused by the visibility of its new market share of about 5% of the total banking assets in Indonesia. So, it takes hard work to add customers. One of the efforts made by the Financial Services Authority and Bank Indonesia is the promotion of Islamic finance, policy-making, and legislation. However, their efforts are certainly not enough to increase the market share of islamic banking. Therefore, there is a need for the role of the banking itself and the community. The efforts that need to be done by islamic banking is the increase in the number of branches and ATMs in the regions. In 2017, FSA recorded the number of operational headquarters (KPO) of islamic banks as follows: 152 offices, 136 sub-branches and 53 cash offices (still lacking).

Another effort that can be carried out is through the role of ulama in providing education on Islamic finance through Islamic study materials in mosques. With the collaboration of the government, banks, and community, it is expected that the future of islamic banking will be more advanced, growing and stable.

4.5. PR H-Statistics Test Results of Islamic Banking

Figure 4. PR H-Statistics Results Islamic Banking from July-September 2010 to July-September 2014

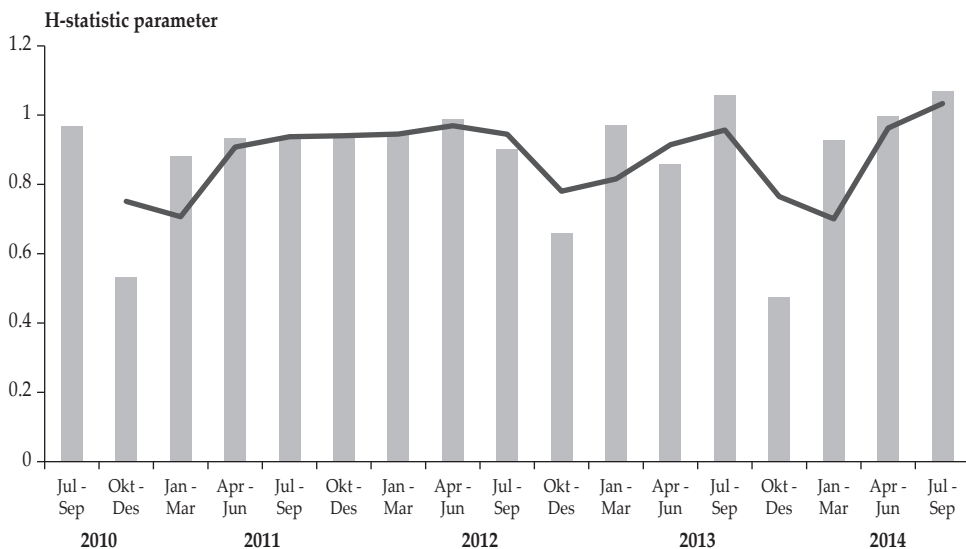


Figure 4 shows that the pattern of the strength of islamic banking always falls within a range of more than 0 to more than 1, indicating that it is in the perfect market and monopolistic competitions.

Perfect competition conditions occur twice i.e. in the period of July-September 2013 (1.05) and July-September 2014 (1.06). Meanwhile, the other periods operate in the monopolistic market. This means that the diversity of products and advertising in islamic banking during this period is quite dominant in order to increase the number of customers. The strong competition amongst islamic banks is caused by the dominance of conventional banking that opened the branch of sharia after the endurance of Bank Muamalat Indonesia during the economic crisis of 1998 (Faiz, 2010).

Another factor is the regulation of the Ministry of Religious Affairs of the Republic of Indonesia related to the pilgrimage funds that must be deposited into Islamic banking, which reflect the government's trust in Islamic banks in the management of pilgrim funds. In addition, islamic state securities products (retail Sukuk) issued by the government was recently quite enthused by the community. However, the products of Islamic banks themselves, in practice, are still dominated by the sale and purchase agreement (Murabaha) (Natadipurba, 2015).

Generally present in a monopolistic market and perfect competition means that although the product differentiation is quite good, there is still a perfect competition condition. This shows that islamic banking has not been consistent in making innovative financial products. Therefore, in the future, islamic banking needs to make superior financial products that will become his trademark. Thus, each islamic bank has its own market share and can compete from the non-price side.

V. CONCLUSIONS

5.1. Conclusions

Based on the description and discussion, it can be concluded that:

1. The equilibrium test results show the value close to 0, meaning that the condition of islamic banking, in the long run, does not show equilibrium. This means that islamic banking is in a developing condition. Therefore, the collaboration between the government, especially FSA and BI, banking and community is needed to increase the growth of islamic banking in the future.
2. The H-statistic test results show that islamic banking operates on the monopolistic market and perfect competition. This means that islamic banking has not been consistent in developing its products. So, it requires the development of excellent products with specific characteristics and market share.

5.2. Suggestions

The suggestions submitted by the author for further research improvements are as follows:

1. In order for the results to be more comprehensive, there is a need for additional variables and period of study.
2. The high level of competition in islamic banking demands the government, in this case, the Financial Services Authority and related parties, to improve the level of interbank competition.

REFERENCES

- Ariss, Rima Turk. (2010). Competitive Condition in Islamic and Conventional Banking : A Global Perspective. *Journal Review of Financial Economics*.
- Athoillah, Moh. (2010). Struktur Pasar Industri Perbankan Indonesia: Rosse – Panzar Test. *Journal of Indonesian Applied Economics*.
- Bain, J.S. (1956). *Barriers to New Competition: Their Character and Consequences in Manufacturing Industries*. Harvard University Press.
- Bikker, B., Spierdijk, L dan Finnie, P., (2006). *Misspesification of the Panzar Rosse Model: Assesing Competition in the Banking Industry*. Working Paper no 114/2006. de Nederlandsche Bank.
- Church, Jeffrey. R., and Ware, Roger. (2000). *Industrial Organization: A Strategic Approach*. McGraw-Hill Companies, Inc. USA.
- Faiz, Ihda. (2010). Ketahanan Kredit Perbankan Syariah Terhadap Krisis Keuangan Global. *Jurnal Ekonomi Islam La_Riba*. Vol. IV no.2.
- Gasaymeh, A, Karim Abdul Z, dkk. (2014). Competition and Market Structure of Banking Sector: A Panel Study of Jordan and Gulf Council Cooperation Countries (GCC). *Jurnal Ekonomi Malaysia*. 48: 23- 24.
- Goddard, J., & Wilson, J. (2008). *Measuring Competition in Banking: A Disequilibrium Approach*. EIEF Working Paper Series 080.
- Kashi dan Jamal. (2013). The Degree of Competition in Iranian Banking Industry Panzar – Rosse Approach. *African Journal of Management*. Vol.7(43).pp.4380 – 4385.

- Otoritas Jasa Keuangan. Laporan Keuangan Publikasi Bank. from <http://www.ojk.go.id>.
- Lubis, Fahmi Andi. (2012). Market Power Perbankan Indonesia. *Buletin Ekonomi Moneter dan Perbankan Bank Indonesia*.
- Molyneux, P. dan Forbes, W. (1995). Market Structure and Performance in European Banking. *Applied Economics*. 27: 155 – 159.
- Natadipurba, Chandra. (2015). *Ekonomi Islam 101*. Bandung : Mobidelta Indonesia.
- Nathan, A., & Neave, E.H. (1989). Competition and Contestability in Canada's Financial System: Empirical Results. *Canadian Journal of Economics*. 22(3): 576-594.
- Naylah, Maal. (2010). Pengaruh Struktur Pasar Terhadap Kinerja Perbankan Indonesia. (Tesis). Universitas Diponegoro. Semarang.
- Panzar, J. and Rose, J. (1987). Testing for Monopoly Equilibrium. *Journal of Industrial Economics*.
- Pindyck and Rubinfeld. (2010). *Mikroekonomi. Edisi Keenam*. Jilid 2. Jakarta: Indeks.
- Pindyck and Rubinfeld. (2012). *Mikroekonomi. Edisi Kedelapan*. Jilid 1. Jakarta: Erlangga.
- Perrakis, S. (1991). Assessing Competition in Canada's Financial System: A Note. *Canadian Journal of Economics*. 24(3): 727-732.
- Sahut Michel, Mili Mehdi, Krir Ben. (2012). Factors of Competitiveness of Islamic Banks in the New Financial Order. *8th International Conference on Islamic Economics and Finance*.
- Shaffer, S. (1982). A Non – Structural Test for Competition in Financial Markets. Bank Structure and Competition, Conference Proceedings. 225 – 224.
- Teguh, Muhammad.(2013). *Ekonomi Industri*. Jakarta : RajaGrafindo Persada.
- Widyastuti, Sri. R dan Armanto, Boedi. (2013). Kompetisi Industri Perbankan Indonesia. *Buletin Ekonomi Moneter dan Perbankan Bank Indonesia*.
- Zulkhibri.et.al. (2007). Market Structure and Competition in Emerging Market: Evidence from Malaysian Islamic Banking Industry.MPRA Paper No.12126