

Print ISSN: 1738-3110 / Online ISSN 2093-7717
<http://dx.doi.org/10.15722/jds.14.6.201606.39>

Competition of Islamic Bank in Indonesia

Syafaqatul Humairoh*, Hardius Usman**

Received: May 27, 2016. Revised: June 3, 2016. Accepted: June 15, 2016.

Abstract

Purpose – This paper aims to study the competition that occurs in the Islamic Banking industry and to analyze the variables that affect the total revenue of Islamic Banking in Indonesia.

Research Design, Data and Methodology – This study observed 10 Islamic banks for the period 2010–2013. The annual data are taken from Direktori Perbankan Indonesia, published by Bank Indonesia, and annual report of the observed banks. In analyzing data, Panzar Rosse Approach was applied to analyze the type of Islamic Bank Market and Panel Regression Model for the estimated co-efficients has been used in the Panzar Rosse Approach.

Results – Estimation model shows that all the banking cost elements such as the price of capital, unit price of labor, and unit prices of funds have significant positive correlation to Revenue as a dependent variable. The estimated value of H-statistic for the period 2010–2013 is 0.69. It can be interpreted that Islamic banking market in Indonesia shows monopolistic competition. Price of capital and funds has statistically significant effect on Bank's Revenue.

Conclusions – The study revealed that the Islamic banking market competition in Indonesia is monopolistic and the major contribution to the H-statistic comes from mainly price of funds.

Keywords: Islamic Banking, Competition, Panzar-Rosse Models, Panel Regression.

JEL Classifications: G21, M31, O53.

1. Introduction

Indonesia is the country with the largest Muslim population in the world, which is recorded that 207.176.162 Indonesian are

Muslim or approximately 13.1 percent of total Muslim population in the world (BPS, 2010). These conditions show that Indonesia is one of the countries that have the biggest market for Islamic financial product. Therefore, Indonesia has a great chance to be a pioneer country and center for development of Islamic finance in the world.

According to Islamic Finance Country Index 2014, Indonesia received the 7th out of 42 countries, as a country that has great potential and conducive for the development of the Islamic finance industry. The increased role of Indonesia Islamic finance industry toward a 'global player' has been proved by the increased ranking of the total Islamic financial assets of Indonesia from 13th place in 2010 to the 8th in 2013 (The Bankers, 2013).

As a newcomer in Indonesian banking industry, Islamic banking has progressed rapidly. Accelerating the growth of Islamic banking (31.8%) is higher than national banking (18.2%) in the third quarter of 2013. Total office of Islamic Bank in Indonesia reached 264 offices until October 2013. The number of customers that managed by Islamic bank is 12.3 million, and it increased 13.9 percent from 2012. The number of employees in Islamic banking industry has estimated about 42 thousand employees, and it has increased approximately 33.2 percent from 2012. Therefore, the Islamic banking industry has been called as 'the fastest growing industry' (Perbankan Syariah, 2014).

The competition in banking industry is an important matter. The competition will increase the supply of credit to the companies which need it. Claessens & Laeven (2004) stated that the competition in the financial sector matters for a number of reasons. As for other industries, the degree of competition in the financial sector can matter for the efficiency in the production of financial services, the quality of financial products, and the degree of innovation in the sector. It has also shown, theoretically as well as empirically, that the degree of competition in the financial sector can matter for the access of firms and household to financial services and external financing, in turn affecting overall economic growth, although not all relationship are clear (Claessen & Leaven, 2004).

Although the development of Islamic banking in Indonesia is quite rapid, only the three Islamic banks which contributed about 65% of markets share Islamic banking of Indonesia at the end of 2013. These are Bank Syariah Mandiri (BSM), Bank Muamalat Indonesia (BMI), and Bank Rakyat Indonesia (BRI)

* Sekolah Tinggi Ilmu Statistik, Jl. Otista 64C. Jakarta 13330. Indonesia.
 E-mail: 11.6918@stis.ac.id

** Sekolah Tinggi Ilmu Statistik, Jl. Otista 64C. Jakarta 13330. Indonesia.
 Tel: +62-2-1850-8812, E-mail: hardius@stis.ac.id

Syariah). In other words, the competition in Islamic banking industry is highly concentrated in those three banks (Directory of Indonesian Banking, 2013).

Considering to the condition of Islamic banking industry in Indonesia is relatively new and concentrated in a few banks, the Islamic Banking Market competition toward monopoly. In other words, the tendency towards monopoly market can make inefficiencies that occur as a result of reduced bank competence. According to Claessen & Leaven (2004), the high competence of banking that will increase the supply of credit to the companies which need it. In turn, it will affect the stability of Islamic Banking.

2. Literature Review

A Market is a collective place that buyers and sellers interact their actual or potential each other, and determine the price of a product or set of products. A market includes more than an industry. An industry is a collection of firms that sell the same or closely related products. In effect, an industry is the supply side of market (Pyndick & Rubinfeld, 2009).

Based on that concept, the competition is a phenomenon that always occurs in a market. Competition generally occurs in a market that is not perfect one. It is characterized by the cases, such as the products or services that are likely to differ, the information is not perfect, and there are various barriers entering the market. Even so, it doesn't mean that competition is not likely to happen in a relatively perfect market. It is just a type and intensity unlike imperfect market competition and generally what happens is competition in products and services (Kasri & Faith, 2010).

Competition in the market has implications to the forms of various markets. There are several forms of market competition, namely, perfect competition, monopolistic competition and monopoly competition. The model of perfect competition has three basic assumptions: (1) price taking (2) product homogeneity and (3) free entry and exit.

In contrast, a monopoly is a market that has only one seller but many buyers. As the sole producer of a product, a monopolist is in unique position (Pyndick & Rubinfeld, 2009). If the monopolist decides to raise the price for the product, the monopolist needs not to worry about competitors, who can charge lower prices, capture a larger share of the market at the monopolist's expense. The monopolist is the market and completely controls the amount of output offered sale (Pyndick & Rubinfeld, 2009).

Furthermore, in monopolistic competition, there are many sellers who have market power, but none of them have the greatest power. According to Pyndick & Rubinfeld (2009), monopolistically competitive market has two key characteristics, that is, (1) firms compete by selling differentiated products that are highly substitutable for one another but not perfect substitutes; and (2) there is free entry and exit: it is relatively easy for new firms to enter the market with their own brands

and for existing firms to leave if their products become unprofitable.

The literature on the measurement of competition can be divided into two major streams; structural and non-structural approaches. The structural approach to the measurement of competition embraces the Structure-Conduct-Performance paradigm (SCP) and the efficiency hypothesis, as well as a number of formal approaches with roots in Industrial Organization Theory. Non-structural model for the measurement of competition, namely Iwata Model (Iwata, 1974), Bresnahan Model, and Panzar-Rosse Model (Panzar & Rosse, 1987), were developed in reaction to the theoretical and empirical deficiencies of the structural models.

Structural measures of competition may, in turn, be divided into two major schools of thought: the formal and non-formal approaches. The study of the relationship between market performance and market structure has its root in the non-formal framework of the SCP paradigm. Since its origins, this framework has evolved largely independently ongoing refinements in formal models of imperfectly competition markets (Martin, 1993). In its origin form, the SCP explains market performance as the result of an exogenously given market structure, which depends upon basic demand and supply side conditions (Reid, 1987; Scherer & Ross, 1990) and which influences the conduct of banks in the industry. The efficiency hypothesis, developed by Demsetz (1973) & Peltzman (1977), challenges the line of reasoning of the traditional S-P paradigm and offers a competing explanation of the reason between market structure and performance.

The three non-structural measures of competition are Iwata Model, Bresnahan Model, and Panzar Rosse Approach. Iwata Model allows the estimation of conjectural variation values for individual banks supplying a homogeneous product in an oligopolistic market (Iwata, 1974). This measure has been applied to the banking industry only once, and it is included into the present overview for completeness.

Bresnahan Model presents a short-run model for empirical determination of the market power of an average bank. Empirical applications of the Bresnahan Model are rather scarce. It has been estimated by Shaffer (1989 & 1993) for respectively, the US loan markets and for the Canadian banking industry.

Panzar Rosse Model developed by Panzar & Rosse (1987) determines the competitive behavior of banks on the basis of the comparative static properties of reduced-form revenue equations based on cross-section data. Panzar & Rosse show that if their method is to yield plausible result, bank need to have operated in a long-term equilibrium (i.e., the number of banks needs to be endogenous to the model), while the performance of banks need to be influenced by the actions of other market participants. Furthermore, the model assumes a price elasticity of demand, greater than unity, and the homogeneous cost structure. To obtain the equilibrium output and the equilibrium number of banks, profits are maximized at the bank as well as the industry level. That means, first the bank i maximizes its profits where marginal revenue equals marginal cost:

$$R'_i(x_i, n, z_i) - C'_i(x_i, w_i, t_i) = 0$$

x_i being the output of bank i , n the number of banks, w_i a vector of m factor input prices of bank i , z_i a vector of exogenous variables that shift the bank's revenue function and t_i a vector of exogenous variables that shift the bank's cost function. Secondly, it means that, in equilibrium, the zero profit constraint holds at the market level:

$$R_i^*(x^*, n^*, z) - C_i^*(x^*, w, t) = 0$$

Variable marked with * represent equilibrium values. Market power is measured by the extent to which a change in factor input prices (∂w_{ki}) is reflected in the equilibrium revenue (∂R_i^*) earned by bank i . Panzar & Rosse define a measure of competition, the '*H statistic*' as the sum of the elasticities of the reduced form revenues with respect to factor prices:

$$H = \sum_{k=1}^m \frac{\partial R_i^*}{\partial w_{ki}} \frac{w_{ki}}{R_i^*}$$

The estimated value of the *H-statistic* ranges between $-\infty < H \leq 1$. H is smaller than zero if the underlying market is monopoly, it ranges between zero and unity for monopolistic competition, and an H of unity indicates perfect competition (Bikker & Haaf, 2002). Shaffer (1983) demonstrated formal linkages between the panzer-Rosse *H-statistic*, the conjectural

variation elasticity and the Learner Index. A summary of the testable hypothesis of the different market structure is presented in <Table 1>.

<Table 1> Interpretation for Panzar-Rosse H-statistic

Parameter region	Competitive Environment Test
$H-stat \leq 1$	Monopoly
$0 < H-stat < 1$	Monopolistic competition
$H-stat = 1$	Perfect competition

Source: Majid & Sufian (2007).

Panzar & Rosse (1987) show that the *H-statistic* can reflect the structure and the conduct of the market to which the firm belongs and can be interpreted as follows. Under long run competitive equilibrium, an increase in input price leads to an equivalent increase in total revenue, and firms that cannot cover the increase in input prices exit the market; therefore the *H-statistic* is equal to one. By contrast, if the firm operates as a monopoly, the *H-statistic* is negative because an upward shift in the marginal cost curve associates with the decrease in revenues. Also, if monopolistic competition characterizes the market structure, then the *H-statistic* lies between zero and one.

Many previous studies have examined the competitive structure of banking industry in various countries using *H-statistic*. A summary of previous Panzar & Rosse studies on banking is represented in <Table 2>. Overall, the previous empirical estimations of Panzar & Rosse model for developed countries show varying result.

<Table 2> Summary of Other Studies on Banking Industry

Author (s)	Period	Countries considered
Shaffer (1982)	1979	New York
Claessens & Laeven (2004)	1994-2001	50 countries
Molyneux & Liu (2010)	1997-2008	European countries
Rozas (2007)	1986-2005	Spanish
Bikker, Shaffer & Spierdijk (2009)	1986-2004	67 countries
Park (2010)	1992-2008	South Korean and Chinese
Ariss (2010)	2000-2006	13 countries
Bikker & Groeneveld (1998)	1989-1996	European countries
Bikker & Haaf (2002)	1988-1998	23 OECD Countries
Bikker, Spierdijk & Finnie (2007)	1987-2004	101 countries
Vesala (1995)	1985-1992	Finland
Muharrami & Khabari (2006)	1993-2002	Kuwait, Saudi Arabia and UEA
Widyastuti & Armanto (2013)	2001-2006	Indonesia
Kasri & Iman (2010)	2003-2008	Indonesia
Majid & Sufian (2007)	2001-2005	Malaysia
Fosu (2013)	2002-2009	Africa
Kashi & Beynabadi (2013)	2005-2013	Iranian
Mkertchyan (2005)	1990-1993	Armenia
Chu, Cui, Ye & Yan (2009)	1998-2011	Hongkong

3. Hypothesis

Kasri & Iman (2010) found that the competition of Islamic banking Indonesia is monopolistic. This study proposed hypothesis:

- <Hypothesis 1> The Islamic banking industry in Indonesia is monopolistic competition
- <Hypothesis 2> Banking cost elements such as the Price of Capital, Unit Price of Labor and Unit Prices of Funds have significantly relation to Revenue.

4. Research Method

This study observed 10 Islamic banks in Indonesia, namely: Bank Muamalat Indonesia (BMI), Bank Syariah Mandiri (BSM), Bank Syariah Mega Indonesia (BSMI), Bank Rakyat Indonesia (BRI) Syariah, Bank Jabar Banten Syariah, Bank Bukopin Syariah, BNI Syariah, BCA Syariah, Bank Panin Syariah dan Bank Victoria Syariah, in 2010–2013. The annual data are taken from Direktori Perbankan Indonesia, which is published by Bank Indonesia, and annual report of the observed banks (Bank Indonesia, 2014).

This study used the model that developed by Panzar & Rosse (1987) with panel regression methodology combining cross section and time-series data. The approach to input and output definition used in this study follows the intermediation approach, which was originally developed by Sealey & Lindley (1977) which stated that the total loans and securities are output, whereas deposits along with labor and capital are input to the production process of banks. Specially, the input variables used in this study are the cost of labor, deposits and capital. Following Shaffer (1982, 1985), Molyneux (1994), and Kasri & Iman (2007), Bikker & Haff (2002), Bikker, Shaffer, & Spiendijk (2009), Bikker & Groeneveld (1998) and the reduced form revenue equation is used:

$$\begin{aligned} Ln_Revenue_{it} = & a_i + \beta_1 Ln_Personnel_{it} + \beta_2 Ln_Physic_{it} \\ & + \beta_3 Ln_Finance_{it} + \beta_4 Ln_Equity_{it} \\ & + \beta_5 Ln_Financing_{it} + \epsilon_{it} \end{aligned}$$

for $t = 1, \dots, T$, where T is the number of periods observed and $I = 1, \dots, I$, where I is the total number of banks. Subscripts I and t refer to bank I and at time t .

The dependent variable is *Revenue* is the ratio of operating expenditure to the total assets. The decision to consider the operating expenditure as proxy to total income is to account for the fact that Islamic banks do not generated interest income.

Under the intermediation approach, banks use three inputs, that is, labor, deposit, and capital. *Personnel* is the ratio of personal expenses to total assets, a proxy for cost of labor, *Physic* is the ratio of the other operating expenditure minus personal expenses to total assets, a proxy for cost of capital, and *finance* is the net profit over total assets, as a proxy of price of funds.

The input prices are followed by a set of bank-specific factors that are relevant to the modern banking system (Majid & Sufian, 2007). The bank-specific factors includes the ratio of total equity to total assets is included to control for differences in capital structure. According to Molyneux (2010) the coefficient can be expected to be negatively related to the total revenue dependent variable since lower capital ratio should lead to higher bank revenue. Total financing to total assets (Financing), a proxy for degree of intermediation, is expected to generate higher revenue (Majid & Sufian, 2007). Total assets are controls for the size of bank and can be considered as a proxy for economies of scale (Shaffer, 2002). A summary of the variable is presented in <Table 3>.

<Table 3> Interpretation and Measurement of Variables

Variable	Proxy	Measurement
Revenue	Total Revenue	Operating expenditure/total asset
Personnel	Cost of Labour	Personal expenses /total asset
Physic	Cost of Operating System	Other operating expenditure-personal expenses/total asset
Finance	Price of Funds	Net profit of total asset /total asset
Equity	Control for differences in capital structure	Equity/total asset
Financing	Degree of Intermediation	Total financing/total asset

The analysis technique used in this study is panel data regression. The step of analysis included: (1) election of the best model among the estimated models with common effects, fixed effects and random effects; (2) examine the variance-covariance structure of the residuals, with the estimation chosen has the fixed effects model; (3) testing of classic assumptions (normality test, heteroscedasticity, multicollinearity and autocorrelation); if the assumptions are not fulfilled, transform the variable; (4) testing the significant of model; (5) interpretation the selected model.

5. Results

According to the model, the value of adjusted R-square is 0.95984 that can be interpreted that the variable cost of labor (Personnel), cost of capital (Physic), price of funds (Finance), Equity and Financing is able to explain the variations in revenue of Islamic banks in Indonesia about 95,98 percent while the rest is affected by the other variables outside the model. This condition indicates that the model is accurate and be used for analysis.

The empirical model that have been estimated is:

$$\begin{aligned} Ln_Revenue = & 0,204626 + \hat{\gamma}_i + 0,038102 Ln_Personnel \\ & + 0,154997 Ln_Physic^* + 0,501294 Ln_Finance^* \\ & + 0,028840 Ln_Equity + 0,028521 Ln_Financing \end{aligned}$$

*significant at 5%

In the estimation results where Revenue is used as dependent variable, all the banking cost elements such as the price of capital (Physic), unit price of labor (Personnel), and unit prices of funds (Finance) have the positive signs. It can be stated that the increased factor costs leading to the higher revenue. However, only two of the variables, which are, price of capital (Physic) and price of funds (Financing) are statistically significant effect on Revenue.

The estimated value of H-statistic for the period 2010-2013 is 0.69. Therefore the value of the H-statistic between 0 and 1, it can be concluded that Islamic banking market in Indonesia is monopolistic competition.

6. Discussion, Conclusions and Managerial Implication

As has been stated above that the 65% market share of Islamic banking in Indonesia is dominated by three Islamic banks (Bank Muamalat Indonesia, Bank Syariah Mandiri, & BRI Syariah). But in fact that study revealed, these three Islamic banks do not monopolize the Islamic banking market in Indonesia. This result is consistent with the previous studies (Kasri & Iman, 2010; Widyastuti & Armanto, 2008)..

The major contribution to the H-statistic mainly comes from price of funds which is the fact that funding is the main factor in the production function of banks (Majid & Sufian, 2007 Syafri, 2007). The result also shows that the ratio of loans to total assets has the positive sign. This implies that a higher fraction of loans on the total assets composition greater interest income and total revenue.

Thus the banking market in Indonesia is still efficient because there are competitive among the Islamic banking in Indonesia. This competition make firms can enter freely, with their own brands and existing if their products become unprofitable (Pyndick & Rubinfeld, 2009).

The Islamic banking in Indonesia is monopolistic competitive so some strategy is needed to survive in a long term. Islamic banks whose has the ability to create, discover and innovate on its products, including improvement in service to customers, as well as product differentiation will be able to survive in monopolistic competition.

The variable cost of labor has not statistically significant, because the Human Resources of the Islamic banking in Indonesia are still weakness. The weakness of Islamic banks of Human Resources is limited understanding of the concept of Islamic banking itself. This is due to the limited formal education on Islamic banking in Indonesia. Typically, employees who work in Islamic banking in Indonesia come from the various fields of study, and received training on Islamic Banking (Usman, 2015). Therefore, it is necessary to improve the quality of employees to be able to provide better service and support for the operation of banks.

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