Market Power and Efficiency of Islamic Banking and Conventional Banking in Indonesia

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Abstract: ASEAN Economic Community (AEC) of banking industry requires both Islamic and conventional banking to improve their efficiency because the competition in banking market industry will be more intense. Therefore, this study aims to identify the type of hyphotesis of industrial organization which exists in Islamic and conventional banks in order to investigate their readiness for AEC. The research sampling consists of 10 Islamic banks and 10 conventional banks from January 2009 to December 2016. To measure x-efficiency and scale efficiency, this research uses Data Envelopment Analysis (DEA). Meanwhile, the concentration is measured by Lerner index. The hypothesis is tested by using panel regression. The result shows SCP (Structure-Conduct-Performance) hypothesis is closely applied to Islamic and conventional banks because market concentration significantly influences profitability. RMP (Relative Market Power) hypothesis is also closely applied to Islamic and conventional banking, this indicates Indonesian banking has market power in determining prices and this condition makes the profit higher. RES (Relative Efficiency Structure) and SES (Scale Efficiency Structure) hypothesis do not exist in both conventional and Islamic banks because x-efficiency and scale efficiency do not affect profitability, concentration, and market share simultaneously. Market power and efficiency researches are commonly conducted in conventional banking, however there are only a few research in Islamic banking area. The novelty of this study is the comparison between conventional and Islamic banking in the term of market structure and efficiency.

Keywords: Market Structure, Efficiency, Profitability, Market Structure, Efficiency Structure.

Introduction

Comparing Islamic banking and conventional banking is already common type of economics research. As a financial institution that intermediates the funds flow from surplus units to deficit units, both of Islamic banking and conventional banking are required to be efficient and they should have a good performance in order to fulfill the social welfare.

The growth of Islamic banking has rapidly increased even though financial crisis ever hit the Western companies and institutions in 2007 (Lim, 2009). Islamic banks also have large total assets. More than $580 billion assets was held by the top 100 Islamic banks in 2008, which indicates there was a sharp increase at 66% from the prior year (Asian Banking Watch). However, in 2015, the survey from The Bankers declared that the industry of Islamic banking has a negative growth in total assets. This occurred because of the US dollar exchange rate and some governance policies that impacted mostly for Iran banks. Lim (2009) mentioned that the

biggest Islamic banks are concentrated in five markets. In 2015, Ernest and Young mentioned that the average of return on equity (ROE) for top 20 Islamic banks is at 11.9%, this is lesser than average of conventional banks ROE which at 14.5%. Meanwhile, the average of assets of top 20 Islamic banks is US$22 billion. This number is also below the average of assets of conventional banks which at US$87 billion. Even though the profitability and the assets of Islamic banking are still lesser than conventional banking, however the difference is not really big. It can be stated that Islamic banking can compete with conventional banking despite the different system that they implemented.

Indonesia is one the countries that has a large muslim population. Islamic banks actually play an important role in Indonesian development. Islamic banks are quite reliable in the process of achieving prosperity and justice and prosperity of society. This is because Islamic banks apply the principle of equitable profit sharing without imposing interest on transactions. Islamic banks have shown that sharia banks play an important role in development, when the country was hit by the monetary crisis in 1998. At that time, Islamic banks were not so shaken and stable. If only the government took and made this as an illustration in improving the quality of state development, surely the government would give more attention to Islamic banks in achieving its objectives. Some economic experts argue in Banking in Asia Pacific (2015) that one way to improve the competitiveness of banks in the face of the ASEAN Economic Community (AEC) is to improve efficiency. If the level of efficiency of the banking industry of a country is low, then the country's banks will not be able to compete with the banking industry from other countries that have used more advanced technology and offer lower interest rates (Banking in Asia Pacific, 2015).

Efficiency is the key of a desired market structure of banking industry. Indonesian banks, both Islamic banking and conventional banking, are expected to be efficient in order to create social welfare. Top world banks have a great impact on society because they authorized the great number of assets market share, therefore they also have a higher risk in distributing funds to deficit units and controlling their operational cost. The good efficient system both in technical and scale economics will usually make a higher profitability for the bank because it is assumed that profitability is not affected by market structure but it occurs because the bank can perform efficiently (Demzets, 1973). Profitability usually becomes the performance measurement. It has been used in most of previous researches which observed banking performance, because profitability can provide the information about operation and financial condition of a company.

The comparison of efficiency and performance of Islamic and conventional banking have been widely researched by previous researchers. The research result from Alhabri (2016) showed that Islamic banking is more efficient than conventional banking in the term of cost efficiency. However, based on return on equity (ROE), the research stated that conventional banking is more profitable than Islamic banking. Meanwhile, Wanke, et al. (2016) found the Islamic banking market would have a benefit from high competition among the institutions in 24 countries. There are two hypotheses linkage among market structure, efficient, and profitability. The hypotheses are market power hypotheses, efficiency structure hypotheses, and no relationship hypothesis (Ye, et al. 2010). Market power hypotheses are composed by structure-conduct-performance hypothesis (SCP) and relative market power hypothesis (RMP). Meanwhile, efficiency structure hypotheses (ES) are conducted by relative efficiency structure (RES) and scale efficiency structure (SES). SCP theory stated that the level of market concentration will affect conduct and performance in an industry (Van Hoose, 2010). Meanwhile, RMP theory assumes that the profitability is affected by the ability of product differentiation and they have a power in determining price (Shepherd, 1982). ES theory argues that the profitability is not affected by market power, however it occurs because the company can perform efficiently (Demsetz, 1973). Finally, Hicks (1935) observed that firms with higher market share enjoyed greater market strength, but they do not always take part of the advantage of competitive pricing by setting higher prices and earn higher profits.

The five hypotheses are already common in industrial organization researches in order to find out the type of hypothesis that applies in an industry. The research from Yu and Neus (2005) that observed the banking industry in Germany concluded that it accepts both SCP hypothesis and ES hypothesis, however it rejects RMP hypothesis which means Germany banking industry can get a higher profitability by increasing the size or making consolidation. In contrast, Bektas (2006) found out that SCP and ES hypotheses are rejected in North Cyprus banking industry which means the profitability does not come from collusion and efficiency. Meanwhile, Mirzaei (2012) observed the Middle Eastern Islamic banks and conventional banks, the result shows that Islamic banking accepted RMP hypothesis and conventional banking supported SCP hypothesis which means the both market power in concentration and market share have a strong impact towards profitability. The researches that contain the five hypotheses mostly only observed the conventional banking. Meanwhile, there are only a few researches about market power that include Islamic banking.

This research has a major objective to find out the type of market power hypotheses or efficiency structure hypotheses that are applied in both Islamic banking and conventional banking in Indonesia. The second objective is to find out the other determinant of profitability. Even though the second objective has been done by so many previous researches, but it is still important to find out the variables that affect profitability with the newest data to improve their performances.

Literature Review

In organizational industry, the relationship between market structure and profitability always be the main focus of research study. Based on the narrative study from Lee (2007), SCP hypothesis focuses on the causal relationship among market structure, conduct, and performance. Market structure (S) affects conduct (C), and conduct will influence performance (P). In banking industry, the level of concentration level as the proxy of market structure will affect banking conduct, the bank which has a greater concentration will make a cooperation to in determining a low lending rate and a high borrowing rate, this condition cause a high profitability but it will decrease the social welfare (Van Hoose, 2010). Ye, et al. (2010) classified the relative market power as the second hypothesis after structure-conduct-performance hypothesis. SCP hypothesis explains the concentration level as the proxy of market structure, meanwhile RMP hypothesis is more emphasizing the market share of individual organization as the proxy of market structure. Shepherd (1982) stated that even though the market condition is not concentrated, an organization can acquire a market power from the ability of product differentiation. The market power hypothesis is classified to SCP hypothesis and RMP hypothesis, meanwhile the efficiency structure shows the other determinant that can affect profitability which is the factor of efficiency of the organization. Demzets (1973) argued that there is a spurious relationship between market concentration and profitability, therefore he claimed that efficiency is the factor that influences profitability. Berger (1995) observed the relationship between efficiency and profitability by including x-efficiency and scale efficiency. He also proposed the two type of efficiency hypotheses, which are relative efficiency (RES) hypothesis and scale efficiency (SES) hypothesis. RES hypothesis is known as x-efficiency hypothesis (ESX) that stated the factor influencing profitability is the ability of superior management or the sophisticated technology which can suppresses operational cost. Meanwhile, SES hypothesis emphasizes the economics scale as the factor influencing profitability. The company which operates in more optimal scale can decrease operational cost, this condition will make a higher profitability. These two variables has been commonly used as the measurement of efficiency because they measure both technical and scale efficiency.

The researches about SCP, RMP, and ES have been done by so many researchers to observe the condition which is related to market structure, efficiency, and profitability in an industry. The famous SCP research comes from Smirlock (1985) which stated that there is no

relationship between market concentration and profitability in U.S. banking industry, however market share has a positive and significant relationship towards profitability. Then, the research also concluded that the positive relationship between market share and profitability as the hypothesis efficiency. The research from Smirlock (1985) is argued by Berger (1995) which included both x-efficiency and scale efficiency as the determinants of profitability. In addition, the research also includes the model to test the relationship between market structure and efficiency in order to avoid spurious relationship between efficiency and profitability. The result stated that there is a positive and significant relationship between x-efficiency and profitability, which means it supports efficiency hypothesis in the RES hypothesis version. This research also supports RMP hypothesis which the efficiency hypothesis of Smirlock. The product differentiation still affects profitability just like the research result form Smirlock (1985).

Yu and Neus (2005) stated German banking industry supports both SCP hypothesis and efficiency hypothesis, however it rejects RMP hypothesis. This condition indicates that German banks can raise the profitability by increasing the size or doing consolidation. The research used both ROA and ROE as the independent variables, while includes scale efficiency as the proxy of efficiency. Wong et al (2007) also included cost efficiency and scale efficiency as the dependent variable. However, they also used interest rate spread (IRS) as one of independent variables apart of ROA. The result shows that Hong-Kong banking industry does not support both SCP and ES hypothesis because concentration and market share have no significant relationship towards IRS and ROA, however the result shows a little indication of x-efficiency hypothesis because cost efficiency has a positive and significant relationship towards IRS.

Jian and Jing (2008) researched the influence of market concentration and efficiency in Chinese banking industry. The result shows that market share and market concentration has a negative and significant relationship on ROA, efficiency has a positive and significant on ROA, however the influence of efficiency on market share and market concentration is so low therefore they concluded both SCP hypothesis and efficiency hypothesis are not valid in Chinese banking industry. The four hypotheses are researched by Gajurel and Pradhan (2010) in Nepalese banking industry. They used Berger and Hannan model, the research concluded that Nepalese banking industry support SCP hypothesis meanwhile there is a weak indication of x-efficiency hypothesis. Meanwhile, Ye, et al. (2012) shows that Chinese banking industry does not support SCP hypothesis and ES hypothesis, however the research support RMP hypothesis which means the banks can raise the profitability by making product differentiation.

Methods

This research is an empirical study of Indonesian commercial banks and Islamic banks in the period of 2009-2016. The data is the combination of time series data and cross sectional data from January 2009 to December 2016. The data are taken from datastream, Bankscope, and annual reports from each banks. The sampling contains 10 Indonesian conventional banks and 10 Islamic banks. The sampling method is purposive sampling. The criteria of sampling selection is top conventional and Islamic active banks that ever placed into the top 10 banks based on total assets in the period 2010-2016. Market concentration is measured by Lerner index. Meanwhile x-efficiency and scale efficiency are measured by using data envelopment analysis (DEA). Lerner index and DEA output will be included in the model and processed further by using panel regression.

To find out whether SCP, RMP, RES, and SES hypothesis theories are applied in Islamic and conventional banking industry, we modified the research model of Ye, et al. (2010) which refers to Smirlock (1985) and Berger (1995) by changing and adding some control variables. The influence of the market structure and efficiency on profitability can be formulated as equation 1.

$$ROA_{it} = a_o + a_1 LI_{it} + a_2 MS_{it} + a_3 XEFF_{it} + a_4 SEFF_{it} + a_5 CAR_{it} + a_6 LDR_{it} + a_7 NPL_{it} + a_8 Size_{it} + a_9 GDPg_t + a_{10} INF_t \quad (Eq.1)$$

$$ROE_{it} = a_o + a_1 LI_{it} + a_2 MS_{it} + a_3 XEFF_{it} + a_4 SEFF_{it} + a_5 CAR_{it} + a_6 LDR_{it}$$
$$+ a_7 NPL_{it} + a_8 Size_{it} + a_9 GDPg_t + a_{10} INF_t \qquad (\boldsymbol{Eq.\,2})$$

where ROA and ROE is the profitability of bank *i* in period *t*, LI_{it} is the market power of bank *i* in period *t* which is represented by Lerner index, MS_{it} is the market share of bank *i* in period *t*, $XEFF_{it}$ is x-efficiency of bank *i* in period *t*, $SEFF_{it}$ is scale efficiency of bank *i* in period *t*, and variable controls are capital adequacy ratio (CAR), loan to deposits ratio (LDR), non-performing loans (NPLs), size, the growth of GDP (GDPg), and inflation (INF).

However, the validity of the output of equation 1 still can't be ascertained because the concentration and market structure is predicted to be related to efficiency. The efficiency may influence concentration and market share at the same time, therefore the endogeneity problem will arise (Ye, et al., 2010). Thus, the conditions required additional testing through the following model (Berger, 1995):

$$LI_{it} = b_1 + b_2 XEFF_{it} + b_3 SEFF_{it} \qquad \textbf{(Eq. 3)}$$
$$MS_{it} = c_1 + c_2 XEFF_{it} + c_3 SEFF_{it} \qquad \textbf{(Eq. 4)}$$

Structure-Conduct-Performance SCP) hypothesis will be accepted if LI has significant and positive impact on profitability (Eq. 1 and Eq. 2) and at the same time the variable x-efficiency and scale efficiency have no significant relationship to LI (Eq. 3). Relative Market Power (RMP) hypothesis will be accepted if the market share has a significant positive and effect on the profitability (Eq. 1 and Eq. 2) and at the same time x-efficiency and scale efficiency should have no significant relationship with the market share (Eq. 4). Relative Efficiency Structure (RES) hypothesis will be accepted if the variable x-efficiency has significant and positive effect on performance (Eq. 1 and Eq. 2), LI (Eq. 3), and market share (Eq. 3). Then Scale Efficiency Structure (SES) hypothesis will be accepted if the scale efficiency has a significant and positive effect on performance (Eq. 1 and Eq. 2), LI (Eq. 3), and market share (Eq. 4).

This study uses the return on assets (ROA) and return on equity (ROE) as the measurement of profitability following Berger (1995), Bektas (2006), and Gajurel and Pradhan (2010). According to the review of Hagel (2010) concerning measurement of profitability, the appropriate of profitability measurement is ROA and ROE because this study concerns to assess the ability of management in increasing profitability and assessing from shareholder satisfaction from return on equity (ROE).

Lerner index is used to measure market concentration. Lerner index can represent market imperfections from the difference between price and marginal cost (Coccorese and Pellecchia, 2010). This index measures the strength of the individual company, whether the company is approaching perfect competition (close to the value 0) or monopolistic market structure (close to the value 1) (Maudos and Guevara, 2014). The calculation of Lerner index as stated as below:

$$Lerner\ Index = \frac{p_i - MC_i}{p_i}$$

The price (P) is the total income, which includes interest income and operational income, divided by total assets. Marginal cost (MC) is an additional cost to produce one unit of additional output. To reflect the tren of technology, the variable year dummies will be added on the formula. Referring to Mirzae and Moore (2014), then from the translog cost function is as follows:

$$\ln TC_{it} = \propto_0 + \propto_1 x \ln TA_{it} + \frac{1}{2} x \propto_2 x (\ln TA_{it})^2 + \sum_{j=1}^{3} \ln w_{j,it}$$
$$+ \frac{1}{2} \sum_{j=1}^{3} \sum_{k=1}^{3} \beta_{jk} x \ln w_{j,it} x \ln w_{k,it} + \sum_{j=1}^{3} \gamma_j x \ln TA x \ln w_{j,it}$$
$$+ \delta x\, Year\ Dummies$$

where TC is the total cost and TA is total assets. The three input of prices are represented by w_1 which is the price of labor (personnel expense divided by total assets), w_2 is the price of physical capital (operating costs reduced personnel expenses divided by fixed assets), and w_3 is the price of deposits (interest expense divided by total deposits). Then, the coefficients from the translog result can be used to calculate the MC with the following formula:

$$MC = \frac{TC}{TA} \cdot \frac{\partial lnTC}{d\, ln\, \mathrm{TA}}$$

The derivative of the logarithm of the total cost to the logarithm of the output can be calculated using a cost function in the following equation Mirzei and Moore (2014):

$$\frac{\partial lnTC}{d\, ln\, TA} = \alpha_1 + \alpha_2 x \ln TA_{it} + \sum_{j=1}^{3} \gamma_j x w_{j,it}$$

For the efficiency variables, this study uses input orientation following Charnes, Cooper, and Rhodes (1987). Due to the tight competition closer, banks must compete for marketing credit and other banking services. The increasing market competition will make allocation of credit and getting interest income or fee-based income will be more limited. Therefore, the bank should focus more in minimizing input to improve performance, This study also uses the approach of using the function of bank as an intermediary institution because this study want to know more about banking management capabilities as financial intermediation of surplus units to the deficit units.

The input and output variables in this study is based on research from Muljawan et al. (2014) concerning the efficiency of the banking sector in Indonesia and Sufian (2010). Therefore, this study uses personnel expenses, overhead cost, fixed assets, and total deposits as the inputs. Meanwhile the outputs are interest income, fee based income, and fundings. We assume that the tight competition in market banking will make the bank more limited in distributing credits and also earning an income. Therefore, the crucial inputs which need to be minimized based on Asia Banking Watch report (2015) are the allocation of overhead costs, personnel expenses, and expansion cost to develop its market share using fixed assets costs.

X-efficiency includes the ability of management and the advanced technology which can make a lower cost and get a higher profit (Chortareas, et al., 2011). We use variable returns to scale (VRS) to measure x-efficiency because we assumed the banking industry is still not working in the optimal scale (Gajurel and Pradhan, 2010; Chortareas et al, 2011). Scale efficiency states that the company which operates in optimal scale is more efficient and this condition will make profitability higher (Chortareas, et al., 2011). Scale efficiency is calculated by dividing the value of CRS with VRS (Coelli, et al., 2005; Gajurel Pradhan 2010; Chortareas, et al., 2011).

This study uses some bank specific variables and macroeconomic factors as the control variables. Capital adequacy ratio (CAR) is extremely important as the savior of potential risk (Heffernan, 2004). The next control variable is non-performing loan (NPL) which is defined as the bad debts that can not be collected. Then, the next control variable is loan to deposit ratio

(LDR) which is calculated by dividing total loans and totals deposits. The macro variable which is commonly used as a determinant of profitability is the growth of gross domestic product which is calculated without making deductions for depreciation of produced assets or for depletion and degradation of natural resources. The second macro variable which is commonly used as the profitability determinant is inflation. World Bank (2016) defines the rate of inflation is measured by consumer price index (CPI) which describes the percentage change in the average cost consumers get the products and services that could be worth fixed or changed in a period.

Results

This study uses non-parametric method to measure efficiency, which is data envelopment analysis (DEA). The first efficiency that we examined is x-efficiency by using variable return to scale (VRS) method. Based on table 1, it can be seen that x-efficiency is fluctuating.. Islamic banks have an average of x-efficiency at 83.03%, which means Islamic banks are less efficient compared to conventional banks. To achieve efficiency, the Islamic banks should reduce the input at 16.97% (Sufian and Habibullah, 2010). The high score x-efficiency of conventional banks occurred because the sampling is the large conventional banks in Indonesia. According to Karim (2001), the large banks are more efficient than smaller banks. This statement is supported by Majid et al. (2003) who stated that bank size has an effect on the bank efficiency.

Conventional banks have higher x-efficiency scores. This occurs possibly because the ratio of cost to income ratio of Islamic banks is still higher than cost to income ratio of conventional banks. Based on data from financial report, there are some Islamic banks which have higher cost compared to their income. The income resulted from the operational can't cover the operational cost, this reflects an inefficiency in transforming cost to be an income. However, based on the growth, Islamic banking have the lower degradation in efficiency compared to conventional banking. According to Karim et al. (2010), who examined the x-efficiency in the Singaporean banking, this occurs because commercial banks in Singapore are more open to foreign banks, the influence of banking rules about the receptiveness to foreign banks also affects the level of efficiency of commercial banks just like the findings of the study Karim (2001) previously.

Table 1. The Score and Growth of X-efficiency

Year	Conventional Banks	Growth	Islamic Banks	Growth
2010	98.60%		78.44%	
2011	98.34%	-0.27%	79.72%	1.63%
2012	94.41%	-1.96%	84.78%	6.35%
2013	95.74%	-0.70%	84.70%	-0.10%
2014	99.51%	3.94%	82.53%	-2.56%
2015	98.70%	-0.82%	83.76%	1.50%
2016	97.24%	-1.48%	87.31%	4.24%
Average	**97.79%**		**83.03%**	

The Score and Growth of Scale-efficiency

Year	Conventional Banks	Growth	Islamic Banks	Growth
2010	96.55%		74.85%	
2011	97.14%	0.6%	82.28%	9.9%
2012	98.45%	1.4%	85.24%	3.6%
2013	98.65%	0.2%	84.17%	-1.3%
2014	96.92%	-1.8%	80.41%	-4.5%
2015	99.12%	2.3%	81.55%	1.4%
2016	98.69%	-0.4%	83.06%	1.9%
Average	**97.93%**		**81.65%**	

Source of data processing: Bankscope, Datastream, dan masing-masing publication annual reports

Based on the scale efficiency, the average score of scale efficiency of Islamic banking is 81.65%, which indicates there is an inefficiency of 18.35%. This condition occurs because Islamic banks are operateing in the wrong scale—based on table 3, the banks mostly operates in decreasing return to scale (Tahir et al. 2009). By observing per country, most of scale efficiency decreased during the observation period, this is because the expansion of large banks in Islamic banking results inefficiency (Asian Banking Watch, 2015). The expansion of large banks can be inefficient because it operates on a scale that is too small (increasing returns to scale) or too big (decreasing returns to scale) (Tahir et al. 2009).

Table 3. Return to Scale of Indonesian Islamic and Conventional Banks

Year	2010	2011	2012	2013	2014	2015	2016
Islamic Banks	DRS (7 banks); CRS (1 bank); IRS (2 banks);	DRS (6 banks); CRS (1 bank); IRS (3 banks)	DRS (5 banks) ; CRS (4 banks); IRS (1 banks)	DRS (6 banks); IRS (4 banks)	DRS (5 banks) ; CRS (1 bank); IRS (4 banks)	DRS (7 banks); CRS (1 bank); IRS (2 banks)	DRS (8 bans); CRS (1 bank); IRS (1 bank)
Conventional Banks	DRS (2 banks); CRS (4 banks); IRS (4 banks)	DRS (1 bank) ; CRS (4 banks); IRS (4 banks)	DRS (4 banks); CRS (3 banks); IRS (3 banks)	DRS (5 banks); CRS (1 bank); IRS (4 banks)	DRS (5 banks); CRS (3 banks); IRS (2 banks)	DRS (2 banks); CRS (8 banks);	DRS (6 banks); CRS (3 banks); IRS (1 bank)

Table 3 shows that Islamic banks are not efficient because they are operated in decreasing to scale, which means the increase of input is greater than the increase of output (Coelli, 2003), there are only a few banks which operate in constant return to scale. This happens because the sampling of this study is the large banks, which means the banks have no problem in getting inputs (deposit) but they are hard to get the output (optimal credit distribution) (Tahir et al., 2009). Even though the trend of conventional banks decreased twice during observation period, but conventional banks have the higher scale efficiency compared to Islamic banks which means the conventional banks can increase further to enhance efficiency in economies of scale and not in operation the scale is wrong (Tahir et al. 2009). Table 3 also shows that Islamic banks have smaller constant return to scale compared to Islamic banks. This occurs because conventional banks are older than Islamic banks, which means conventional banks are more experienced in handling banking efficiency.

Based on the value of x-efficiency and scale efficiency which has been investigated, the score of efficiency scale is smaller than x-efficiency which indicates the inefficiency of Indonesian banks is caused by scale inefficiency rather than the x-efficiency (Tahir et al. 2009). We can see that efficiency in both Islamic and conventional banks mostly happened because the superior ability of management and technology has been running better than scale efficiency (Tahir et al. 2009) because the score of x-efficiency is quite high. X-efficiency dominates Indonesian banks efficiency rather than scale efficiency as compared in table 2 and table 3. Based on table 4, it can be seen that concentration of Islamic banks and conventional banks which is represented by Lerner index has positive and significant effect on ROA and ROE. It means the first criteria of SCP hypothesis is accepted. However, in Islamic banks, there is a spurious relationship between concentration and profitability because x-efficiency have significant and positive effect on concentration. Islamic banks are almost close to SCP hypothesis because the output shows market concentration influences profitability. Meanwhile, SCP hypothesis completely applied in Indonesian conventional banks because the output shows market concentration influences profitability, while x-efficiency and scale efficiency do not influence market concentration.

The existence of SCP hypothesis indicates there is a pricing collusion behavior in determining favorable prices (Bektas, 2006). Such condition is not expected to occur because implementing low deposit rates and high lending rate is very abusing consumers (Heggestad, 1984). This finding is in contrast with research of Katib (2004) who studied the existence of hypothetical SCP in Malaysia, the result shows there is insignificancy relationship between concentration on profitability ever occurred in Malaysian Bank because there is a tight interest rate policy. However, this study supports the results of Riewsathirathorn (2011) who found that market concentration have significant positive effect on profitability because of their weak investor protection laws and the majority shareholder to take over minority shareholders.

The table also shows that Islamic banks almost close to RMP hypothesis because market share has a significant positive effect on profitability and at the same time x-efficiency affects market share. Meanwhile, RMP hypothesis completely applied in conventional banks because market share has a significant positive effect on profitability and at the same time x-efficiency and scale efficiency do not affect market share. This means there is no spurious relationship between market share and profitability because the profitability purely derived from market share (Ye et al, 2010). This indicates the profit is gained from the individual market share of each bank for their product differentiation so that they can determine the price. The banks have been able to dominate the market on an individual basis for differentiation and they have the power in determining prices to achieve greater profits (Ye et al. 2010). An interesting finding in this case is the profit of Indonesian banks is not only from the strength of the market for product differentiation, but also come from a concentration of large banks because SCP hypothesis also applies in Indonesia on the previous findings.

Table 4. Regression Result of Equation 1

	Dependent Variable (ROA)		Dependent Variable (ROE)	
	Conventional	Sharia	Conventional	Sharia
Cons	-5.528**	0.972	5.752	3.809
LI	1.990**	1.179**	5.367**	12.601**
MS	0.116**	0.186	-0.083	4.627**
XEFF	-1.043	-0.737	1.740	-10.768
SEFF	-0.535	-0.291	-6.109**	-3.171
CAR	0.074**	0.002	0.099**	-0.319**
LDR (FDR)	0.023**	0.004	-0.027	0.052
NPL (NPF)	-0.159**	-0.098**	-0.020	-1.196**
GDP	0.783**	1.178	0.514**	2.912**
INF	-5.528**	-0.065	0.114	-5.048
Prob > chi / Prob > F	0.000	0.000	0.000	0.000
R^2	0.708	0.357	0.378	0.413

* significant at 10%, ** significant at 5%

	Dependent Variable (LI)		Dependent Variable (MS)	
	Conventional	Sharia	Conventional	Sharia
Cons	0.138	-0.141	4.823	0.354
XEFF	-0.419	0.218**	-6.312	0.620**
SEFF	0.554	0.162	7.777	-0.651**
R^2	0.047	0.141	0.006	0.194

* significant at 10%, ** significant at 5%

Meanwhile RES hyphotesis and SES hyphotesis do not exist in both Islamic and conventional banks because x-efficiency and scale efficiency do not influence profitability, concentration, and market share. This indicates the banks are inefficient at minimizing costs, possibly due to no management or technological measures being pursued or that management and technology have not been successful in improving profitability, in which case input allocations are highly questionable (Bektas, 2006). Capital adequacy ratio (CAR) has a significant and positive effect on profitability in conventional banks, this indicates there is a management efficiency of the capital structure (Vong and Chan, 2006). Meanwhile CAR has negative and significant on ROE, this means Islamic banks should improve the useful of capital which can gain profit. Meanwhile the loan to deposit ratio (LDR) only affects conventional banks. This is possible because the larger loan distributed to consumers will take greater profit effect than returns, therefore conventional banks should be more careful in managing credits portfolio (Bordelau and Graham, 2010). Non-performing loan (NPL) has a significant negative effect on overall profitability at banks in Islamic and conventional banks. It is very reasonable because low bad loans will reduce the risk of credit losses and may increase operating income that will increase the profitability (Lata, 2014).

Then, GDP growth mostly has significant positive effect on profitability in Islamic and conventional banking. This indicates the GDP growth affects the distribution of deposits and the increases the consumer demand for credit which leads to the higher profitability (Kanwal, 2010). The favorable conditions in the economy will have a positive impact on the level of financial transactions, and the bank with good management will obtain profitability from the loans and securities (Sufian and Habibullah, 2010). The inflation rate in the conventional banks has negative positive effect on ROA, this shows that inflation has not been anticipated in advance so that the bank can set the interest rates of credit that can be adjusted for inflation (Bashir, 2003).

Discussion

The result shows SCP hypothesis is closely applied to both Islamic and conventional banking which means the profitability in Indonesian banking are affected by collusive price. Market concentration significantly influences profitability, but the SCP hypothesis is still rejected due to endogeneity problem of the relationship between market concentration and profitability (efficiency affects concentration). However, since market concentration affects profitability, it is advisable that regulations and policies on interest rates should be tightened again to protect consumers from this collusion behavior.

RMP hypothesis is closely applied to Islamic and conventional banking because market share has a positive and significant effect on profitability. However, the endogeneity problem still appears in the result because x-efficiency and scale efficiency affect market share. Therefore, RMP hypothesis is also rejected. However, since market share still affects profitability, this indicates that Indonesian banking has market power in determining prices and this condition makes the profit higher. RES hypothesis does not exist in both conventional and Islamic banks, which means that x-efficiency still doesn't affect profitability, concentration, and market share simultaneously. Then, SES hyphotesis also does not exist in both Islamic and conventional banks which means scale efficiency also still can't affect profitability, concentration, and market share because the banks operate in the wrong scale. Indonesian banks are lacking of x-efficiency and scale efficiency in order to improve profitability, concentration, and market share. AEC of banking industry in 2020 will require more efficiency in order to compete in banking industry, therefore the efficiency should be increase through management skills, technology, or keep looking out for the optimal scale.

Loan to deposit ratio (LDR) or Funding deposit ratio (FDR) mostly does not have significant effect on profitability, the value is negative even though it is not significant. This implies a decline in profitability when bank distributes loan because the credits carries potential risks then the return. Therefore, banks should be more careful in distributing credits, the risk of distributing credit must be smaller and the return should be higher than the risk. The GDP growth mostly significantly influences profitability of Indonesian banks which implies that economic growth will increase the excess surplus society or credit for financing. Therefore, it is better for governments and policy makers to manage economic growth in various sectors because the growth will bring a better development and it will increase profitability of the banking industry.

Conclusion

This study aims to find out the type of hypothesis that hold in Islamic and conventional banks in order to know the readiness of Indonesian banks in facing ASEAN Economic Community of banking industry in 2020. Indonesian conventional banking is predicted to have a collusive pricing behavior because there is an indication of SCP Hypothesis, meanwhile Indonesian Islamic banking does not fully have collusion pricing behavior. Both Indonesian conventional and Islamic banking depend on market power to increase their profitability. The income does not come from efficiency but from market power. RES hypothesis does not exist in both conventional and Islamic banks, which means that x-efficiency still can't affect profitability, concentration, and market share simultaneously. Then, SES hyphotesis also does not exist in both conventional and Indonesian banks which means scale efficiency also still can't affect profitability, concentration, and market share because the banks operate in the wrong scale. Indonesian banks are lacking of x-efficiency and scale efficiency in order to improve profitability.

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