Bank Growth and Efficiency in Indonesian Islamic Banking

Full paper

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Abstrak: *Paper ini bertujuan untuk menguji hubungan antara pertumbuhan bank dengan efisiensi bank yang bersangkutan dengan mengaplikasikan pengujian hipotesis efficient structure sebagaimana yang diusulkan oleh Homma, Tsutsui, and Uchida (2012).*

Analisis dilakukan dalam dua tahap. Tahap pertama adalah pengukuran efisiensi masing-masing bank Syariah, dan tahap kedua adalah untuk menguji pengaruh efisiensi tersebut terhadap pertumbuhan bank Syariah. Dalam penelitian ini efisiensi diukur dengan mengadopsi pendekatan berbasis akuntansi yaitu cost-to-income ratio (BOPO). Sedangkan untuk proksi pertumbuhan bank Syariah digunakan total aset, total pembiayaan, total dana pihak ketiga, dan total ekuitas bank yang bersangkutan. Pengujian dilakukan dengan meregresi langsung skor efisiensi terhadap proksi pertumbuhan bank Syariah. Untuk melengkapi penelitian ini, pada saat bersamaan juga dilakukan pengujian pengaruh konsentrasi pasar terhadap efisiensi bank Syariah, yang dikenal sebagai hipotesis quiet-life.

Pengamatan terhadap BOPO bank Syariah Indonesia memperlihatkan kecenderungan terjadinya penurunan efisiensi dalam beberapa tahun terakhir. Perbandingan efisiensi di antara bank Syariah menunjukkan bahwa bank yang memiliki aset dan modal yang lebih banyak, serta bank yang telah beroperasi lebih lama cenderung lebih efisien. Penelitian ini juga menunjukkan bahwa satu-satunya bank Syariah asing yaitu Maybank Syariah merupakan bank yang paling efisien, ditunjukkan oleh rata-rata BOPO yang paling rendah selama periode pengamatan. Hasil pengujian memperlihatkan dukungan terhadap hipotesis efficient structure, yang mengindikasikan bahwa pertumbuhan bank Syariah di Indonesia dipengaruhi oleh efisiensi bank tersebut. Hasil pengujian juga menemukan bahwa konsentrasi pasar menurunkan efisiensi bank Syariah, yang konsisten dengan hipotesis quiet-life. Temuan ini mengimplikasikasikan bahwa terdapat intrik dalam dinamika hubungan pertumbuhan-efisiensi bank Syariah di Indonesia.

Hasil penelitian ini memberikan dukungan terhadap upaya para praktisi dan pemerintah Indonesia untuk meningkatkan efisiensi sehingga akan meningkatkan pertumbuhan dan kemampuan bersaing bank Syariah Indonesia dalam menghadapi kesempatan sekaligus tantangan pada Masyarakat Ekonomi ASEAN.

Kata Kunci : *Efisiensi, BOPO, Efficient-structure hypothesis, Quiet-life hypothesis*

1. Introduction

This research is aimed to examine whether the efficiency contributes to bank's growth., and see whether the efficient-structure hypothesis (ES hypothesis) holds true for Indonesian Islamic banks. In doing so, a new test of ES hypothesis proposed by Homma, Tsutsui, and Uchida (2012) will be applied in this research. The test focuses on a core proposition of the hypothesis, that is : *efficient firms win the competition and grow*.

Indonesian Islamic banking has been growing in a remarkable pace over the last two decades. According to Moody's Investors Service report, since the end of 2005, Islamic banking assets in Indonesia have expanded at a 33% compound annual growth rate, outpacing growth in the conventional banking sector. Despite this strong growth, Islamic banks assets comprised only 5% share of the Indonesian banking system.

Globally, although Indonesia have the largest Muslim population in the world, and it's forming a dynamic emerging economy, but in the global Islamic banking industry Indonesia still plays a minor role. Indonesia's Islamic finance industry lag far behind Islamic finance industries in other countries that contain a big Islamic community, only has 2.5% share of global Islamic finance industry. Furhermore, in the World Islamic Banking Competitiveness Report 2016 by Ernst and Young, none of Indonesian Islamic banks is in the list of top 20 Islamic banks in the world.

In recent years, there is a slowdown in asset growth of the Indonesian Islamic banking industry. With total assets in the end of 2014 reached more than Rp270 trillion, it was down compared to three years ago when the growth of Islamic banking assets reached 49%, but in 2014 it only reached 12.4%.

At the same time, there is also a concern about the banks efficiency. The issue of efficiency is a contentious one as Indonesia has one of the highest ratios of operational costs to revenue (BOPO) among the ASEAN's 5 largest economies (Global Business Guide Indonesia, 2012).

Efficiency is an important factor for banks to remain competitive. Islamic banks are no exception, with increased competition from conventional banks, and foreign Islamic banks that seek opportunity to enter domestic banking industry.

The issue of how efficiency in banking can be enhanced is important at the micro and macroeconomic levels since efficiency has important policy implications. At bank management level, financial institutions used to enjoy local oligopolies and therefore make rewarding profits, but such advantages are shrinking due to growth in competition. At the macroeconomic level, bank efficiency is a socially optimal target since it reduces the average cost of financial transactions and therefore enhances the society's welfare (Hussein 2002 : 5).

Efficiency is also highly recognized in Islam which needs to be discussed to analyze efficiency concept from the Sharia point of view. Every Muslim businessman should have a strong desire to increase efficiency (reduce cost) to benefit consumers (Affandi, 2002) by realizing the '*maqasid'* (the goal of Islam)*.* Incorporated in *maqasid* is everything that is considered necessary to preserve and enrich faith, life, intellect, posterity, and wealth.

Given the circumstances evolve in Indonesian Islamic banks industry as explained above, this research is aimed to investigate the relationship between growth and efficiency as a performance measure of Indonesian Islamic banks, by testing the efficient-structure hypothesis as proposed by Homma, Tsutsui, and Uchida (2012). The test is claimed to be more direct, and thus more fundamental, than existing tests of the ES hypothesis. In addition to a regression testing the ES hypothesis, this research will also take into account the determination of firm efficiency by simultaneously estimating an equation with the efficiency measure as the dependent variable. The direct merit of this simultaneous estimation is an increase in the efficiency of estimation, but this also allows us to test the so-called *quiet-life hypothesis*. The quiet-life hypothesis suggests that in a concentrated market firms do not minimize costs, because of insufficient managerial effort, lack of profit-maximizing behavior, wasteful expenditures to obtain and maintain monopoly power, and/or survival of inefficient managers (Berger and Hannan, 1998). Therefore, this research will examine in the efficiency regression whether firms in a more concentrated market are more inefficient.

The rest of the paper is organized as follows: Section 2 provides a brief review of the relevant literature, that is, the theory of firm efficiency and efficient structure (ES) hypothesis. Section 3 presents data and methodology. In section 4, provides the findings of the study. Section 5 concludes the paper.

2. Literature Review

For Islamic banks, measuring the performance is necessary to be able to detect problems and settle concerns about the safety and soundness of investments for depositors, managers, and regulators alike. It is highly important for managers to determine the financial position of their institution compared to their competition or industry benchmarks, as well as evaluating how effective previously taken decisions affected the bank. Islamic bank performance measurements also help Sharia Supervisory Boards and other regulators to understand the performance of banks and to ensure only transparent and clear information is available and used. Finally it helps investors to identify chances and investment opportunity and ensure that the best decision regarding use of funding is being taken (CIBAFI, 2006: 4).

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Measuring bank performance has been a crucial issue in banking research for decades. There are two mainstream approaches in assessing the performance of banks, namely the financial ratios approach or accounting ratio approach, and the frontier approach. The financial ratios approach explores the financial condition of each bank in terms of liquidity, profitability, leverage, and activity ratios and compares the ratios with the average industry ratios as the benchmarks. Meanwhile, the frontier approach measures bank performance by comparing the performance of each bank relative to

a best practice frontier. This study will employ the accounting ratio approach cost-to income ratio (BOPO) as a measure of banks efficiency.

Cost-to-Income ratio is an important indicator for bank managers regarding the financial strength of their banks. It has never been more important than now for banks to achieve operational excellence given the range of headwinds they face, ranging from the challenge of regulatory requirements to the imperative of managing volatility in global financial markets.

The *efficient-structure hypothesis* emerges from criticism of the *structure-conduct-performance hypothesis* (Homma et al, 2012). The efficiency hypothesis postulates that the relationship between market structure and performance of any firm is defined by the efficiency of the firm. Firms with superior management or production technologies have lower costs and therefore higher profits (Al-Muharrami and Matthews, 2009).

This research is going to examine whether the efficiency contributes to bank's growth., and see whether the efficient-structure hypothesis (ES hypothesis) holds true for Indonesian Islamic banks. In doing so, a new test of ES hypothesis proposed by Homma, Tsutsui, and Uchida (2012) will be applied in this research. The test focuses on a core proposition of the hypothesis, that is : *efficient firms win the competition and grow*. In this research the test will be done by directly regress a measure of firm growth on a measure of bank efficiency.

The quiet-life hypothesis is closely related to the structure-conduct-performance (SCP) hypothesis. Similar to the ES hypothesis, the SCP hypothesis also predicts a positive relation between concentration and profits, but through a completely different mechanism. That is why in many studies, the ES and SCP hypothesis are tested as alternatives to each other, but in theory they might be compatible, at least in the short-run.

Although the ES hypothesis and the quiet-life hypothesis also have conflicting implications, like those with the SCP hypothesis, in the short-run their effects might co-exist. So far, the finding that both the ES hypothesis and the quiet-life hypothesis are supported had only appeared in the research by Homma et al (2012) who tested these hypotheses to banks in Japan.

The two hypotheses, efficient structure hypothesis and quiet-life hypothesis will be tested by simultaneous estimation of the growth equation and the efficiency equation. In order to estimate

Indonesian Islamic bank efficiency performance, this study employs a frontier approach beside the accounting based cost-to-income ratio (BOPO) that was mentioned earlier.

3. Methodology

This study uses an unbalanced panel data of Indonesian Islamic banks. The data are obtained from banks' annual financial reports, and world banks' metadata. There are 11 full-fledge Sharia banks operated in the period of 2003-2014, and the whole population is included.

The analysis presented in this research takes a two-step approach. The first step is to estimate the efficiency of banks, and the second is to examine how it affects the subsequent growth of the banks.

3.1 Banks Efficiency Measurement

This research use the cost-to-income ratio (BOPO), as a proxy of operational efficiency. BOPO ratio reflects the lack of suppress the ability of banks in operational costs which can cause losses as the bank is less efficient in managing its business. (Bank Indonesia, 2008). Bank Indonesia confirmed that BOPO ratio above 96% is categorized as inefficient in running its operations. The ratio is used to measure ability of bank management in controlling operating costs of operating income. Operating costs are costs incurred by banks in connection with their activities, while operating income is all forms of income derived from activities of the bank. The smaller BOPO ratio means more efficient in running their operations, which implies better the condition of a bank, increases investor confidence in the banking company and will have an effect on their valuation process.

BOPO is calculated using the formula:

BOPO = (Operating expenses / Operating income) annualized.

3.2 Test of the Efficient Structure Hypothesis

This research directly investigates the effect of firm efficiency on firm growth. The main regression takes the following form :

$$GROWTH_{i,t} = \gamma_i + \gamma_1 EF_{i,t-1} + \gamma_2 X_{i,t} + \varepsilon_{i,t} \qquad (1)$$

where the indices i and t respectively represent the firm and the time. The dependent variable is a proxy for firm growth. In this research, the amount and the growth of assets, financing, third party

funds, and equity are used as the firm growth proxy. The term $EF_{i,t-1}$ is the measure for firm efficiency. This specification assumes that the effect of efficiency is realized with a one-year lag. A vector of independent variables $X_{i,t}$ consists of control variables such as economic conditions and/or firm heterogeneity. The final term $\varepsilon_{i,t}$ is an ordinary error term. We test the ES hypothesis by examining whether the coefficient for $EF_{i,t-1}$ (γ_1) is positive and significant, because the hypothesis predicts that efficient firms grow.

For the ES hypothesis, specifications for equation is described below :

$$\ln G_{i,t} = \gamma_0 + \gamma_1 . EF_{i,t-1} + \gamma_2 . \ln GDP_t + \gamma_3 . BIRate_t + \gamma_4 . CAR_{i,t} + \gamma_5 . INFL_t + \omega_{i,t}^L$$

(2)

The variable $G_{i,t}$ is the amount of banks growth. This study use four banks performance as proxies for banks growth. The key independent variable $EF_{i,t-1}$ is a measure of banks' efficiency. In this study, the ES hypothesis is supported if γ_1 is found positive.

Turning now to other explanatory variables used, based on the dependent variable, it is necessary to control for banks supply and demand. GDP_t , is real GDP, as a measure of demand. For supply variables, rc_t is used, the call rate, which is BI Rate for the most representative interbank market in Sharia bank Indonesia, and $CAR_{i,t}$, the capital-asset ratio. Finally, is $INFL_t$, the inflation rate defined as the rate of change of the GDP deflator. This variable might capture a demand as well as a supply factor.

3.3 Test of the Quiet-Life Hypothesis

To increase the efficiency of the estimation and to test the quiet-life hypothesis, this study run a regression with firm efficiency on the left-hand side :

$$EF_{i,t} = \beta_i + \beta_1 CONC_{t-1} + \beta_2 Z_{i,t} + \bar{\omega}_{i,t}$$

(3)

The dependent variable is the measure of firm efficiency, $Z_{i,t}$ is a vector of control variables, and $\bar{\omega}_{i,t}$ is an ordinary error term. The main independent variable is $CONC_{t-1}$, a measure for market concentration such as the market Hirfindahl or the three-firm concentration ratio.

The quiet-life hypothesis predicts that there is a positive relationship between market concentration and firm *in*efficiency, because of insufficient managerial effort, lack of profit-maximization behavior, wasteful expenditures to obtain and maintain monopoly power, and/or survival of inefficient managers, in a more concentrated market (Berger and Hannan, 1998). In this test, a negative and significant coefficient for β_1 is consistent with this hypothesis.

For equation (3), the QL hypothesis equation, this study use the following specifications :

$$EF_{i,t} = \beta_1 . HHI_{t-1} + \beta_2 . MS + \beta_3 . FA_{i,t} + \beta_4 \cdot DA_{i,t} + \beta_5 \cdot SDROA_i + \overline{\omega}_{i,t}^U \qquad (4)$$

In these equations, the dependent variable is the measure of bank efficiency $EF_{i,t}$. The key independent variable is HHI_{t-1}, the market Hirfindahl representing market concentration, which is calculated using each bank's nominal amount of financing outstanding. This equation is simultaneously estimated with equation (2). The quiet-life hypothesis predicts a negative coefficient for β_1. To distinguish between market structure and market share, variable Market Share (MS) is employed.

Then, some financial variables also included. Two financial ratios are used to capture the difference in efficiency levels due to banks' varying dependence on traditional deposit-to-financing business models: $FA_{i,t}$ is the ratio of total financing to total assets, and $DA_{i,t}$ is the ratio of total deposits to total assets. To control for bank risk, we use $SDROA_i$, the standard deviation of ROA over the sample period.

This study simultaneously estimate the regressions (2) and (4). From an econometric viewpoint, this has the benefit of increasing the efficiency of estimation. However, the simultaneous estimation has also gives us important economic insight. Most of the existing empirical studies presume that the ES hypothesis and the SCP hypothesis are alternatives. In actuality, however, both mechanisms might work simultaneously, at least in the short-run. This approach allows for the two hypotheses to be supported at the same time, which is the case when we find γ_1 to be positive and β_1 to be negative.

The descriptive statistics for the variables used in this research are shown in Table 1.

Table 1 : Descriptive Statistics for Simultaneous Estimation						
Variables	**Definition**	**Source**	**Mean**	**Std Dev**	**Min**	**Max**
	Asset (in billion)	a	12,871	16,700	642	66,942
$\gamma_{i.t}$	Financing (in billion)	a	9,688	12,642	214	50,460
	TPF (in billion)	a	10,691	14,334	350	59,821
	Equity (in billion)	a	1,070	1,102	67	4,937
$Ef_{i.t-1}$	BOPO	a	0.874	0.232	0.347	2.156
GDP_t	Real GDP	b	6,027	2,840	2,296	10,543
$BIRate_t$	Call rate / BI rate	a	0.080	0.020	0.058	0.128
$CAR_{i.t}$	capital ratio	a	0.167	0.066	0.114	0.315
INF_t	Inflation rate	b	9.555	4.448	4.351	18.150
HI_{t-1}	Hirfindahl index	c	0.390	0.094	0.243	0.509
$MS_{i.t}$	Market Share	c	0.175	0.188	0.006	0.569
$FA_{i.t}$	Financing / assets	c	0.742	0.049	0.647	0.828
$DA_{i.t}$	Deposits / assets	c	0.804	0.047	0.728	0.866
$SDROA_i$	Std. deviation of ROA	c	0.007	0.009	0.000	0.041

The "Variables" column groups the first nine rows under **Efficiency Hypothesis regression** and the last five rows under **Quiet-life hypothesis regression**.

Sources : a. Banks annual reports ; b. World bank data ; c data processed.

4. Empirical Results

The analysis presented in this research takes a two-step approach. The first step is to estimate the efficiency of banks, and the second is to examine how it affects the subsequent growth of the banks.

4.1. Sharia Bank Efficiency Measurement

Efficiency measurement in this research used data of the period 2003-2013 from 11 Islamic banks in Indonesia. The number of Islamic banks grows from just two banks in 2003 to eleven banks at the beginning of 2010. Therefore, this research employed an unbalanced panel data. Unbalanced panel data allows one to use as much data as available.

All data for the study was collected from the end-of-year balance sheets and income statements for the individual years 2003 to 2013, which are made available on the website of the banks. Table 2 shows the list of the banks.

Table 2 : List of Indonesian Islamic Banks	
Bank Muamalat Indonesia	(bmi)
Bank Syariah Mandiri	(bsm)
Bank Mega Syariah	(mgs)
BRI Syariah	(bris)
Bukopin Syariah	(bkpns)
Panin Bank Syariah	(pnns)
BNI Syariah	(bnis)
BCA Syariah	(bcas)
Bank Jabar Syariah	(bjbs)
Victoria Syariah	(vics)
Maybank Syariah Indonesia	(mybs)

Source : Bank Indonesia

In this research, the accounting-based cost-to-income ratio (BOPO) is used to estimate banks operational efficiency. The specification in this *efficient-structure hypothesis* regression form assumes that the effect of efficiency is realized with a one-year lag.

Bank Indonesia use the *cost-to-income ratio* (BOPO) as a measurement for banks operational efficiency. The ratio is used to measure ability of bank management in controlling operating costs of operating income. The smaller BOPO ratio means more efficient in running their operations, which implies better the condition of a bank, increases investor confidence in the banking company and will have an effect on their valuation process.

Before turning to the analysis of individual efficiency scores, in this subsection this study consider the development of the mean efficiency score over the period 2003-2013. The year-wise average bank operational efficiency (BOPO) is illustrated in Table 3 and Figure 1.

Table 3 : Year Wise Mean Efficiency - BOPO

Year	Mean
2003	0.914
2004	0.841
2005	0.874
2006	0.827
2007	0.775
2008	1.156
2009	0.898
2010	0.922
2011	0.841
2012	0.808
2013	0.851
Mean	0.882
Std. Dev	0.101
Max	1.156
Min	0.775

Source : BI-Islamic Banking Statistics

BOPO ratio of Indonesia Islamic banks during 2003-2012 shifts fluctuatively. Before 2008, mean operational efficiency had shown increasing trend, reaching the highest level of efficiency in 2007, indicated by the lowest mean BOPO ratio, 77,5%. In 2008, mean operational efficiency of Indonesian Sharia banks hit the lowest level, BOPO ratio was 115,6%, the highest score reached in this research period. Figure 1 shows a more clear perception about the year-wise average bank operational efficiency (BOPO).

Figure 1 : Year Wise Mean Efficiency -BOPO
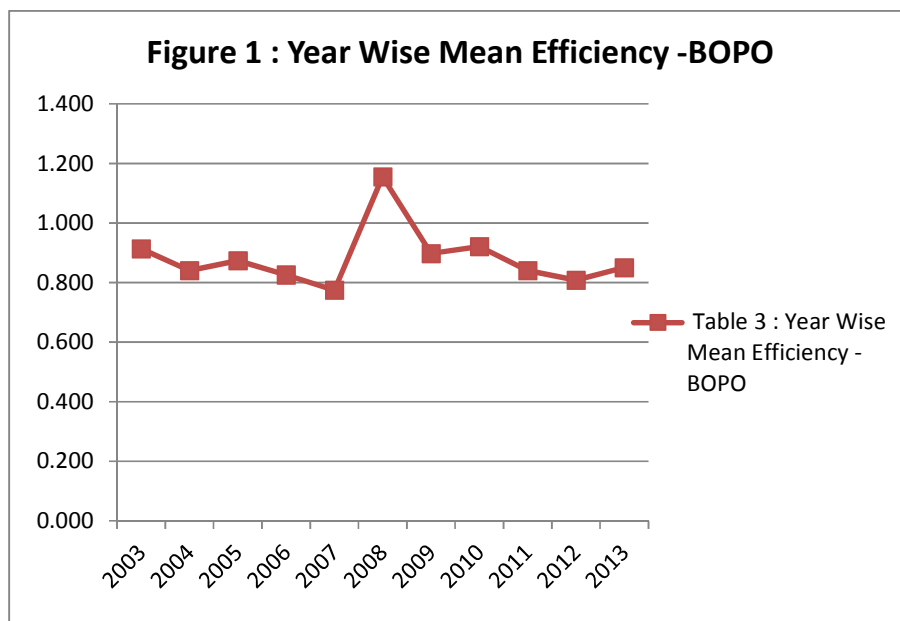
The year-wise bank-level operational efficiency (BOPO) of 11 Islamic banks is presented in Table 4.16 and Figure 4.2.

Table 4 : Year Wise Bank Level Mean Efficiency - BOPO

Year	bmi	bsm	mgs	bris	bkpns	pnns	bnis	bcas	bjbs	vics	mybs
2003	0.898	0.930									
2004	0.867	0.795	0.860								
2005	0.816	0.857	0.950								
2006	0.847	0.838	0.794								
2007	0.834	0.813	0.678								
2008	0.789	0.787	0.890	2.156							
2009	0.955	0.738	0.844	0.975	0.978						
2010	0.874	0.750	0.889	0.988	0.936	1.823	0.881	0.915	0.903	0.838	0.347
2011	0.853	0.764	0.908	0.993	0.939	0.743	0.879	0.917	0.841	0.864	0.552
2012	0.845	0.730	0.773	0.866	0.916	0.476	0.854	0.909	1.104	0.879	0.538
2013	0.851	0.840	0.861	0.904	0.923	0.813	0.839	0.869	0.858	0.920	0.678
Mean	0.857	0.804	0.845	1.147	0.938	0.964	0.863	0.902	0.926	0.875	0.529
Std. Dev	0.043	0.060	0.078	0.497	0.024	0.591	0.020	0.022	0.121	0.034	0.136
Max	0.955	0.930	0.950	2.156	0.978	1.823	0.881	0.917	1.104	0.920	0.678
Min	0.789	0.730	0.678	0.866	0.916	0.476	0.839	0.869	0.841	0.838	0.347

Source : BI-Islamic Banking Statistics

The average BOPO ratio of Indonesian Islamic banks ranges from 119,5%, to 47,9% with a variation of 0,4% to 71,3% in standard deviation. It is also revealed that based on BOPO ratio, Maybank Syariah is the most efficient bank, while BRI Syariah is the most in-efficient bank.

Tabel 5 presents more detailed comparison of Indonesian Islamic banks efficiency scores.

Table 5 : Islamic Banks' Mean BOPO

Bank's Categories	Mean BOPO
Core Capital :	
BUKU 1 Banks	0.908
BUKU 2 Banks	0.834
Assets :	
≤ 10 billion IDR	0.857
> 10 billion IDR	0.899
Banks' Age :	
≤ 5 years	0.926
> 5 years	0.833
Banks' Origin :	
Spin-off from SBU	0.910
Transformed from CB	0.911
Branch of Foreign Bank	0.479
Purely Built Sharia Bank	0.858

Source : Data Processed

Bank's Core Capital

To improve banks efficiency, Bank Indonesia has held benchmark BOPO ratio for commercial banks business groups : BUKU 1 at maximum of 85%, BUKU 2 in the range of 78% - 80%, BUKU 3 70% - 75%, and BUKU 4 60% - 65% (IFSA, 2013). Currently, according to BAON Regulation, there are 8 Islamic banks in BUKU 1 category : Bank Mega Syariah, BRI Syariah, Bukopin Syariah, Panin Syariah, BCA Syariah, **bjb** Syariah, Victoria Syariah, and maybank Syariah. Only 3 Indonesian Islamic banks that are in BUKU 2 category : Bank Muamalat Indonesia (BMI), Bank Syariah Mandiri (BSM), and BNI Syariah. Bank Indonesia also confirmed that BOPO ratio above 96% is categorized as inefficient in running its operations.

Empirical results resume in table 5 show that BUKU 2 Islamic banks are more efficient than Islamic banks in BUKU 1 category..

Bank's Assets

In this study, bank's assets is used as a proxy of bank's size. Recent academic research by Hughes and Mester (2011) has found evidence of scale economies in banking, a large bank could create economies of scale which lower the average cost and has a positive impact on bank profits.

Referring to table 5, average BOPO ratio of larger banks are slightly higher than average BOPO ratio of smaller banks, or equivalently, lower efficiency. This result might be explained by referring to the fact that larger Islamic banks have been doing aggressive investments in recent years, which also increase the non-interest expenses. Kovner et al. (2014) found an inverse relationship between bank's size and non-interest expense ratio for the main components of non-interest expense : employee compensation, premises and fixed-assets expenses, and other noninterest expense, but they also found that larger banks spend proportionately more on consulting and advisory services than smaller firms, relative to revenue or assets, and incur proportionately higher expenses related to amortization and impairment of goodwill and other intangible assets.

Bank's Age

Bank Age is assessed by the number of years the bank has been in operation. Mester (1996) stated that, according to learning by doing hypothesis, the older the bank, the more experience they have, therefore the bank could better manage their operations and might become more efficient. A positive relationship with efficiency might also suggest that more efficient banks are more likely to survive.

As shown in table 7, on average, Islamic banks that have been in operation more than five years were found to be more efficient than the Islamic banks with the age of five years or less. The results confirmed Mester (1996) which found that inefficient banks tend to be younger in her study of 214 third district banks. On the other hand, Isik and Hassan (2003) found insignificant negative relationship between the bank's age and efficiency.

Bank's Origin

Indonesian Islamic banks were formed from different kinds of origin. The only Islamic banks that was built as Islamic banks from the beginning is Bank Muamalat Indonesia (bmi). Seven of the Islamic banks were originally conventional banks that were transformed into Islamic banks by the parent company, Bank Syariah Mandiri (bsm), Mega Syariah Bank (mgs), BRI Syariah (bris), Bukopin Syariah (bkpns), Panin Syariah (pnns), BCA Syariah (bcas), and Victoria Syariah (vics). While BNI Syariah and **bjb** Syariah were used to be Sharia Business Units (SBU) of their parent

conventional banks that were spun off to be full-fledge Islamic banks. Maybank Syariah is considered foreign banks since its home base is located in Malaysia.

As table 7 suggested, based on average BOPO ratio, foreign Islamic bank had the lowest score which mean it's the most operationally efficient Islamic bank. While the Islamic banks that were transformed from conventional banks (CB) had the highest average BOPO ratio, meaning the least operationally efficient.

From the efficiency estimation results, this study conclude that banks with more capital, larger-sized banks, and the older banks are tend to be more efficient than their counterparts which have fewer capital, smaller in assets size, and the newer banks. This study also found that the only foreign Islamic bank in this study is the most efficient bank .While the purely built Islamic bank was founded to be the most cost efficient bank. Islamic banks that were transformed from conventional banks had the lowest operational efficiency score.

4.2.2 Test of the Efficient Structure Hypothesis

Before proceeding to an OLS regression, it was necessary to undertake a series of tests for the acceptance or rejection of some hypotheses which would allow the application of such a technique. For multicollinearity test, in a panel data, it is assumed that there is no multicollinearity problem. The logic is that since multicollinearity is only about independent variable there is no need to control for individual effects using panel methods (Rfan, 2013).

According to Ul-Haq (researchgate.net, 2012), the problem of heteroskedasticity is not a problem when work with panel data, because panel data is it self a solution of heteroskedasticity. If researchers want to overcame or doubt about heteroskedasticity, they can take log of all the data set and verify the results. It can be seen that the results with and without logarithm of data set will very close to each other.

The autocorrelation of errors is also assessed. In the case of a presence of error autocorrelation, the OLS estimator is not skewed but it is not efficient. Correction of this type of problem is done through a GLS estimator. It is the application of the Durbin-Watson test which would allow us detecting whether there exists an error autocorrelation problem. For a value close to 2, the

problem does not exist, however, for a value close to zero or 4, autocorrelation is respectively positive or negative.

The regressions were done through Eviews 7 software.

At first, the appropriate model of panel data analysis should be chosen whether it is Pooled Least Square model, Fixed Effect model or Random Effect model. Table 6 show that Likelihood-Test and Haussman-Test of all regression that applying different eficiency measurement gave the same indication that Fixed Effect model should be used to analyze the data.

Tabel 6   Fixed / Random Effects Testing ES Hypothesis Regression

Growth	Cross-section fixed effects: Likelihood-Test			Cross-section random effects: Hausman-Test		
Proxy	Statistic	d.f.	Prob.	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Asset	838.327	(10,40)	0.000	29.535	5	0.000
Financing	596.034433	(10,40)	0.000	22.083294	5	0.001
TPF	1521.660172	(10,40)	0.000	36.468441	5	0.000
Equity	618.092683	(10,40)	0.000	18.194873	5	0.003

Source : Data Observed

The Likelihood-Test for all regressions show clearly rejection of the null hypothesis (p-value < 0.05), suggested that the Fixed Effects model is a better choice than the Pooled Least Square model. To decide between fixed or random effects, Hausman-tests were employed, where the null hypothesis is that the preferred model is random effects vs. the alternative the fixed effects (Greene, 2008). As suggested in Table 4.36, the null hypothesis were rejected (p-value < 0.05) in favor of the Fixed Effects model.

The estimation results where banks efficiency's tested to each proxy of growth which were used in this study. are shown in Table 7. The ES hypothesis regression with BOPO ratio as the main independent variable, significant and negative γ_1 is expected. The estimatios in done through GLS estimation in order to deal with heteroskedasticity and autocorrelation problem.

This test directly investigates the effect of firm efficiency on firm growth. In the first regression to test the ES hypothesis, total asset is used as a proxy for banks growth.

$$\ln G_{i,t} = \gamma_0 + \gamma_1.EF_{i,t-1} + \gamma_2.\ln GDP_t + \gamma_3.BIrate_t + \gamma_4.CAR_{i,t} + \gamma_5.INFL_t + \omega_{i,t}^L$$

The variable $G_{i,t}$ is the growth proxy of the Islamic banks. The key independent variable $EF_{i,t-1}$ – is a measure of banks' efficiency, which is the cost-to-income ratio (BOPO) of the banks.

The explanatory variables used in this study are the real GDP, BI rate, individual bank's CAR, and inflation rate, which is defined as the rate of change of the GDP deflator.

Table 7 : ES Hypothesis Regression Result

Parameters	Dependent Variable			
	Log (Assets)	Log (Financing)	Log (TPF)	Log (Equity)
Intercept	-11,079 ***	-11,423 ***	-11.605 ***	-13,266 ***
	(-18,7405)	(-18,99484)	(-26.16278)	(-19,16432)
γ_1	-0,523 ***	-0,358 ***	-0.651 ***	-0,366 ***
	(-7,006633)	(-3,864995)	(-11.7078)	(-11,12347)
γ_2	1,549 ***	1,547 ***	1.592 ***	1,461 ***
	(24,80136)	(23,95384)	(31.96436)	(19,07320)
γ_3	1,919 *	2,795 ***	2.853 ***	3,489 **
	(2,32243)	(4,007595)	(7.437112)	(3,194502)
γ_4	-0,438 *	-1,170 ***	-0.804 ***	1,979 ***
	(-2,431096)	(-5,65254)	(-6.321765)	(12,02941)
γ_5	-0,030 ***	-0,034 ***	-0.030 ***	-0,033 ***
	(-5,897052)	(-7,585741)	(-14.80836)	(-4,589386)

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
 t-Statistic in parenthesis

As indicated in table 7, all the parameters in the ES Hypothesis equation are significant. The result showed that BOPO ratio have negatively significant influence on all proxies of banks growth. It means that efficient banks become larger. This finding clearly lends support to the ES hypothesis.

The result suggested that the operational efficiency of the Islamic banks in Indonesia significantly affects the subsequent growth of the banks. Therefore, it is crucial for the Islamic banks to improve the efficiency in order to be more resilient and achieve sustainable growth.

4.2.3 *Test of the Quiet-Life Hypothesis*

Next this study will make further analysis on the impact of market concentration on Sharia banks efficiency. Berger and Hannan (1997) suggested that efficiency will get worse since the company in a high concentrated industry enjoy its market power to gain supernormal profit. This is known as *quiet life condition*, where there is no more incentive for company to minimize cost since they are in a kind of comfort zone where supernormal profit is the main objective of the banks.

For the quiet-life hypothesis equation, following specification is used :

$$EF = \beta_0 + \beta_1.HI_{t-1} + \beta_2.MS_{i,t} + \beta_3.FA_{i,t} + \beta_4 \cdot TPFA_{i,t} + \beta_5 \cdot SDROA_i + \overline{\omega}_{i,t}^U$$

In the equations, the dependent variable is the measure of efficiency $EF_{i,t}$, (BOPO). The key independent variable is HI_{t-1}, the market Hirfindahl representing market concentration. $MS_{i,t}$ represents market share, $FA_{i,t}$ is the ratio of total financing to total assets, and $TPFA_{i,t}$ is the ratio of total third party funds to total assets. To control for bank risk, $SDROA_i$ is used , the standard deviation of ROA over the sample period.

The quiet-life hypothesis predicts positive and significant β_1 for BOPO ratio measurement.

Table 8 presents the Likelihood-Test and Haussman-Test to determine approriate model for the quiet-life hypothesis test.

Tabel 8 : Fixed / Random Effects Testing - Quiet Life Hypothesis

Cross-section fixed effects: Likelihood-Test			Cross-section random effects: Hausman-Test		
Statistic	d.f.	Prob.	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
2.714182	(10,40)	0.0121	27.876697	5	0.000

Source : Data Observed

The Likelihood-test for all regressions show clearly rejection of the null hypothesis (p-value < 0.05), suggested that the Fixed Effects model is a better choice than the Pooled Least Square model. And the Hausman-tests also rejected the null hypothesis (p-value < 0.05) in favor of the Fixed Effects model. Table 9 presents the regression result of the quiet-life hypothesis.

Table 9 : QL Hypothesis Regression Result

Parameters	Dependent Variable
	BOPO
Intercept	1,353 **
	(3,36171)
β_1	0,395 *
	(2,037076)
β_2	-0.053
	(-0,305292)
β_3	0,592 *
	(2,326196)
β_4	-1,336 **
	(-3,079484)
β_5	0.611
	(0,264963)

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
t-Statistic in parenthesis

As shown in table 9, all the parameters in the equation are significant. The result showed that market concentration have positively significant influence on the BOPO ratio. It means that the increase in market concentration, will decrease the banks efficiency. This finding lends support to the quiet-life hypothesis.

5. Conclusions, Implication and Limitation

5.1 Conclusions

The results support both the efficient-structure hypothesis and the quiet-life hypothesis. As stated by Homma et al (2012), these findings are intriguing from an economic point of view. The finding for the ES hypothesis implies that efficient banks grow more. However, if the Islamic banking market becomes more concentrated, the finding for the quiet-life hypothesis then implies that the banks will lose efficiency. As the banks become more inefficient, then the banks grow less.

5.2 Implications

Findings in this study showed that banks with larger size and have more core capital are more efficient. Referring to the ES hypothesis, efficient firm will grow and win the competition. Based on that, it's necessary for Indonesian Islamic banking industry to develop larger and stronger Islamic bank in order to boost the banks competitivenes in facing the upcoming competition from the the establishment and implementation of the ASEAN Economic Community (AEC).

The Indonesian Islamic banks will certainly be influenced by the AEC. There is a big concern that Indonesian Islamic banking industry would not be able to compete with other ASEAN countries by the time the AEC is launched. It comes from the fact that Indonesian Islamic banks have smaller capitals and lower competitiveness compared to a number of banks in neighboring countries in Southeast Asia.

The Financial Services Authority (OJK) expects to see the establishment of a state Sharia bank by 2017 at the latest, as revealed in its Sharia banking road map. In the road map, launched on June 13, 2015 , the OJK has established a timeline that runs from 2015 until 2017 for the creation of the state Islamic lender.

So far, the Indonesian government had come with several options to strengthen domestic Islamic banks capital and improve its efficiency.

The first option is to to convert a state-owned bank from a conventional bank to an Islamic bank. This option was suggested by the National Syariah Council, Bank Indonesia and a number of economists (ANTARA News, 4/2/2013). The choice for the conversion can fall on the state-owned Bank BRI or Bank BTN so that it would later 100 percent become an Islamic bank, no longer a conventional bank. The conversion of a conventional state-owned bank into a state-owned Islamic baks will have significant impact on the domestic Islamic market..

The second option, as mentioned by OJK chairman Muliaman D. Hadad (The Jakarta Post, 6/15/2015), is to spin off existing Islamic lenders from the (state banks) parent companies and to merge them into one. The state lenders will have stakes in the new entity and it is also expected that the government will place a certain amount of funds as capital due to the entity's status of a state bank.

The OJK also encourages Sharia banks in Indonesia, particularly Sharia-compliant units of regional development banks, to consolidate, while it is also preparing to revitalize these regional development banks in an effort to create a huge Islamic bank.

Such a merger among existing Islamic banks would reduce operating costs and make it possible to offer more competitive rates. Other options include the strengthening of capital of both state-controlled and private Islamic banks (Indonesia-Investment News, 3/19/2015).

5.3 Limitations

This study is limited on the relationship between efficiency and growth of Indonesian Islamic banks. It means that the conclusions here is limited to the Islamic banks.

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