

Artikel 6

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Efficiency on Islamic Business Unit in Indonesia

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Abstract

Indonesia with the huge amount of Muslims has lot of potential in develop Islamic banking system. Higher motivation in acceleration progress of Islamic banking is followed by specific regulations made by Bank Indonesia. One of the regulation is about simplicity to establish the *sharia* system under conventional banks that we are familiar with Islamic business unit. This endorsement was followed by almost all banks in Indonesia, both commercial banks and regional banks to open Islamic business unit. However, when it comes to efficiency then there is a difference between these two banks even though both of them are Islamic business unit. This study's objectives are to measure the efficiency level of Islamic business unit in Indonesia in RB and CCB and to identify the rank of Islamic Business unit in RB and CCB. Using a quarterly balanced panel data set from period 2005 until 2014; this research used Data Envelopment Analysis to measure the efficiency. Efficiency value that we measured is divided into the overall Technical Efficiency (TE), the Pure Technical Efficiency (PTE) and the Scale Efficiency (SE). To make the rank of efficiency of each Islamic Bank used the Anderson and Peterson Super Efficiency Method. The result on efficiency found that Islamic Business unit still Mefficient. We suggest that inefficient bank should learn from their benchmark and manage their input and output effectively

Keywords: Regional Bank, Commercial Bank, Islamic Business Unit, Efficiency, Rank

1. INTRODUCTION

In Indonesia, Islamic banking began its operations in 1992 with the enactment of the Banking Act No. 7/1992 and in the same year, Bank Muamalat was set up as the first bank in the country to operate according to Islamic principles. The Act was amended by Act No.10/1998, in an attempt to offer conventional banks an opportunity to introduce an Islamic business unit. From then on, the development of Islamic banking in Indonesia has been experiencing a steady and fast progression.

In addition, [1] the banking system in Indonesia is one of the areas of improvement that needs these solutions. There are four types of interventions that are called for in order to deal with the challenges. First, the current quality of norms and morality in the daily lives of Indonesians are weak. These are evident from the portions of banking system requiring the education of Indonesian people of the fact that Indonesia can apply Islam in every life aspect and second, the knowledge quality is low in Indonesia. Hence, [2] *Sharia* banking system will allow Indonesians to apply more added values to their lives and at the same time, it will facilitate the upbringing of better Indonesian citizens. Third, the national resources management is ineffective and it is hoped that the *Sharia* banking system can lead to the establishment of a clean institutional system. Fourth, majority of Indonesian people are living a low quality of life and the *Sharia* banking system will minimize their burden. In sum, the *Sharia* banking system should become a working capital provider to enhance the nation's economic capacity.

Similarly, [3] the government of Indonesia encourages the promotion of a dual banking system where conventional banks and Islamic Banking are allowed to operate side by side as politics will allow. However, some communities in Indonesia are not desirous of depositing their funds in conventional banks preferring financial services that are according to *Sharia* principles. The progress that is being made in Indonesian banking system is not without its challenges and barriers. The most widespread challenges are linked to efficient arbitrage institutions and sufficient and proper framework regulation, unsuitable market perception of the true nature of Islamic banking and the lack of highly skilled human resources which leads to the low level of efficiency in the operation of the industry.

In the midst of the challenges, Indonesian banks are making progress. [4] Bank Indonesia has developed a blueprint of the Indonesian Islamic banking development containing the clarified vision and objective of Islamic banking development. The vision aims to establish a health Islamic banking system while simultaneously ensuring, high competition, efficiency and compliance with prudential practice and the capability of reinforcing real economic sector, through the share-based financing and trade implementation, with actual underlying transaction steeped in the spirit of brotherhood and good deeds to encourage societal well-being. In fact, during the grand strategies of central bank implementation, it was discovered that several flaws to the policy exist in terms of blueprint, landscape, stratification, and mapping which is now covered by the *Sharia* banking in the country. [5] Developing a sound and efficient Islamic Financial Institution does not only call for the religious element but also the elements of economic efficiency, market, financial stability, reinforced by efficient rule.

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Also, effective banking oversight relating to the assessment and monitoring of financial institutions, their performance and positions should be established. Similarly, [6] the *Sharia* banking success hinges on the efficiency of Islamic banking in managing assets. The objective of this paper is to identified the Islamic Bank efficiency and super efficiency that can make rank on the banks.

2. LITERATURE REVIEW

2.1 Islamic Bank Performance and Efficiency

In a narrower focus, in his books, [7] compared the financial statement of Islamic bank with other financial statements. According to the advocates of Islamic banking, it is more efficient owing to the fact that the contract of *Mudharaba* has its basis on the principles of justice and equity. It also assists in attaining a more realistic and equitable allocation of financial resources among the competing projects as its main consideration is profitability of significant projects and not the return of the principal amount as is the consideration in conventional banking. The elements to an Islamic bank's balance sheet comprise of assets, cash and cash equivalents, participations, *murabahah*receivables, *mudharaba*, *musharaka*, investments like Islamic securities, and restricted investment accounts, assets obtained for leasing, investment in commodities, investment in securities, *qard al hasan*, fixed assets, total assets. The liabilities comprise of current account, liabilities owed to a financial institution, investment by restricted investment account holders, total liabilities, owner's equity, share capital, reserves, retained earnings, and total liabilities [8].

2.2 Measurement of Efficiency: A concept

This study employs the concept that proposed [9] which used the Technical Efficiency (TE) which can be further categorized into the Pure Technical Efficiency (PTE) and the Scale Efficiency (SE). The PTE reveals the enhancements in productivity based only on the managerial banks and the organizational skills of banks lending to efficient utilization of inputs while SE is described as the TE ratio calculated under Constant Return to Scale (CRS) to TE which is in turn, compute under the VRS (Variable Return to Scale) assumption [10]. Berger and [11] the standard estimation of efficiency can be categorized into CCR and BCC; both models divide TE into two collective and exhaustive elements namely pure technical efficiency (PTE) and scale efficiency (SE) [12]. The primary difference between the two is their treatment of return to scale; while BBC allows for variable return to scale (VRS), CCR considers that every DMU operates CRS. In Banker et al.'s [13] study, efficiency values were measured from a common perspective based on a traditional perspective where three types of efficiency values were generated under the assumptions of CRS, VRS, OTE, PTE and SE. The BCC model computed efficiency as a pure technical one while the CRS model computed it as total measure of both technical and scale efficiency. On the basis of the above, Banker et al define that scale efficiency can thus be explain as CRS over BCC efficiency.

2.3 Data Envelopment Analysis

On taking up [14] idea of the efficiency of production function [15] combined the technical efficiency and production boundaries estimates to create a new efficiency measurement called the DEA. [16] The first author to bring forward the ideal concerning production function efficiency which led to its development by Charnes, Cooper and Rhodes in 1978 of a combination of the estimation of technical efficiency and production frontier. Charnes, Cooper and Rhodes eventually introduced DEA as a non-parametric method based on linear programming.

3. RESEARCH METHOD

3.1 The Selection of Inputs and Outputs

This study adopts the input and output utilized [17], [18] [19], [20],[21], [22], [23], [24], [25], [26], [27], [28].

Table 1 Input-Output for this reseacrh

Input	Output
Interest expense	Interest revenue
Other operational expense	Other revenue expense
Non operational expense	Non operational Revenue

The model of input oriented have objective to minimize the inputs while producing the given output level while the model of output oriented aims to maximize outputs which using the specified input. Scale efficiency is utilized in both CRS and VRS. The basic method to calculate return to scale intervals [29] is also employed in the assessment of the increasing or decreasing return where suitable.

3.2 Super Efficiency Model

The efficiencies of DMUs are scored by efficiencies of the same level to 1 in the model of CCR and hence in this model, it is not possible to grade or distinction the DMUs efficiency. Therefore, for the strict grade between efficient DMUs [30] brought forward the Sample for Islamic Business Unit we divide in to two type:

Bank	Type of bank
Bank DKI, Bank Riau, Bank Kalsel, Bank Aceh	Islamic Business unit/ Business Unit Regional Bank
HSBC, Niaga, Bank Permata, BTN dan BII	Islamic Business unit/ Business Unit Commercial

Data processing is conducted through a DEA program containing EMS (efficiency measurement system) [31]; [32]; [33]; [34]; [35].

4. RESULT AND DISCUSSION

4.1 Islamic banking indicator: the growth

In addition, the Total Deposits come from Composition of third parties (Depositor Funds) of Islamic Full Pledge and Islamic business unit which consist of Islamic demand deposit (wadiah); Islamic saving deposit (wadiah and mudharabah) and all Islamic time deposits (mudharabah). The last indicator is Financing which comprises of the total composition of Financing of Islamic Full Pledge and Islamic business unit (Aqad of Mudharabah, Musharakah, Murabaha, Salam, Istishna, ijarah, qardh and others financing). These financing compositions are different from Conventional Banks. All of those aqad must run under Islamic law that is permissible under Al-Qur'an and hadiths.

4.2 Efficiency on Islamic bank in Indonesia

According to Schmiedel's study, there are some basic issues in *Sharia* banking practices in many parts of the world where the bank's financial *Sharia* products is arranged as formal as opposed to substantial and they are structured through capitalist models and their operations are practiced as conventional banks. Haque stated that in recent times, in leading financial institutions the developing countries have concentrated on the performance and efficiency of banking system owing to the significant role of commercial banks.

We used both CRS and VRS and input oriented method. Under the CCR method the CRS assumption results in TE, Model of BCC under the assumption of VRS results in PTE and for SE count, from TE under CRS TE Value is divided under VRS. The DEA model is run with the input orientation which reflects common practice in prior research concerning studying banks relative to their counterparts and the concentration upon bank management on decreasing costs. It also acknowledges that banks are collectively limited in scope when they change their outputs. In some cases, they do so at the expense of their counterparts.

The value of TE under CRS assumption in the period from 2005-2014 is 0.881 or 88%. This value shows that IB can produce the same level of output using 12% of input mix. TE has shown fluctuations during 2005-2014 period then TE increase in 2009-2011 it reached 91% but in the last period 2014, it declined. It is clear that during the period, the value of TE is 88.1%, which means that the IB industry has saved 11.9% of inputs to produce the same amount of output. In other words, IB could have produced the same amount of output by only using 88.1% of inputs. The value of Scale Efficiency in the period 2005-2014, showed a value of 0.916 or 92% indicating that the actual scale of production diverged from the most productive scale size as much as 100%.

Table. 5 Value of TE, PTE, SE of all Islamic Business Unit (in percentage)

DMU	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2005 - 2014
TECHNICAL EFFICIENCY											
Mean	0.846	0.846	0.903	0.855	0.911	0.908	0.875	0.892	0.883	0.887	0.881
Max	1	1	1	1	1	1	1	1	1	1	1
Min	0.425	0.481	0.623	0.570	0.639	0.505	0.674	0.590	0.632	0.611	0.575
PURE TECHNICAL EFFICIENCY											
Mean	0.932	0.992	0.949	0.943	0.974	0.960	0.958	0.959	0.959	0.959	0.958
Max	1	1	1	1	1	1	1	1	1	1	1
Min	0.565	0.884	0.813	0.678	0.670	0.832	0.826	0.829	0.828	0.828	0.775
SCALE EFFICIENCY											
Mean	0.903	0.852	0.947	0.904	0.935	0.942	0.910	0.926	0.918	0.922	0.916
Max	1	1	1	1	1	1	1	1	1	1	1
Min	0.709	0.481	0.695	0.756	0.726	0.624	0.711	0.668	0.689	0.678	0.674

This can be proved by the greater value of PTE as compared to SE. So, on average, in the period 2005-2014, all types of efficiency are inefficient on the level limit 100%. For the TE, the highest value reached to in 2009 and the lowest mean value is in the year of 2005 and 2006. Then for PTE means, the highest is in 2006 and the lowest in 2005. For SE, the highest means reached is in 2007 while the lowest is in 2006. But on average, the means are in the frontier of efficiency value. The highest TE in line with the study is proposed by Pasiouras (2006), Tsionas (2001) and Spathis et al.(2001), while the lowest TE is in line with Halkos and Salamous (2004) who found a value of Greek Banking at a 60% value. Value of efficiency in TE, PTE and SE, on average, decreased from 2007 to 2008 and then increased significantly again in 2009-2014. This is consistent with Pratikto (2011) who studied the efficiency of Islamic banking in Indonesia during period of monetary crisis (2006-2007) and after crisis (2009-2010). For PTE result, we found that its high value is consistent with the PTE value for banking industry of Pakistan at 91.7% (Akmal & Saleem, 2008; Qureshi & Shaikh, 2012) as well as indicate that the banks need to better utilize the available resources and suggest a adequate sample selection for this study.

4.3 Super Efficiency Value on Islamic bank

Banks with a relative TE value of 1 are considered to be technically efficiency and they define the best practice or they are placed in the efficient frontier and hence, form the reference set for inefficient banks. The CCR method only enables the inefficient banks ranking and assigning an efficiency value equal to 1 for all efficient banks. Therefore, basic CCR method is not able to carry out strict grade of efficient banks. Andersen & [36] developed a modify version of DEA allowing the efficient banks ranking with the basic notion that comparing banks in this study to a linear combination of all other banks with the inclusion of a specific reference to the sample. Under this method, an efficient bank can upgrade the input vector proportionate to keeping and maintenance the efficiency and thus, efficient banks obtain a value of more than 1. This method offers an efficiency grade of efficient banks that is the same to the inefficient bank ratings. The findings obtained from using the SE model differ from that when CCR and BCC-DEA efficiency models are used, represent that the factors resulting in Super Efficiency are different from those leading to profitability, operational and intermediation efficiency. Super Efficiency is achieved when loans are extended to growth triggering sectors, as is the case of state-owned banks and this suitable with the CCR and BCC methods. It is notable that all efficient DMUs TE value are equal to 1 in the CCR method. Hence, it is not possible to conduct ranking or differentiate efficient DMUs through the CCR method. Nevertheless, the ability to conduct ranking among efficient DMUs is significant (both theoretically and practically). Theoretically, the failure to differentiate efficient DMUs leads to a spiked distribution at efficiency value of 1 which could lead to potential analytical challenges in any post-DEA statistical inference analysis. Practically, any further discrimination throughout the efficient DMUs is also required to determine excellent performers. In order to obtain strict ranking among efficient DMUs, [37] brought forward the superefficiency DEA model. The core notion behind this model is the exclusion of DMU being evaluated from the reference set. The superefficiency value for an efficient DMU can obtain any value higher than or equivalent to 1. This procedure makes the ranking possible (with higher superefficiency value, comes a higher grade). Nevertheless, the inefficient units on the inefficient frontier and with a DEA value of lower than 1 would end up with a relative efficiency value that is not impacted by the fact that they are excluded from the reference set of DMUs. This model's feature excludes DMU out of the reference set. If the DMU is inefficient, then the reference set does not change in this model. On the other hand, the frontier will change if the DMU is efficient and the value of efficiency is larger than 1. This indicates that the AP model does not change an inefficient DMU's value, but an efficient DMU's value in this model is larger than 1.

Table 6 describes the Super Efficiency Value in the period 2005-2014. Value efficiency of more than 100% indicates that the bank is efficient enough. Super Efficiency ranking based on the value for each bank is listed in Table 7; for instance, in 2005 the value for BANK BTN reached 24.588%. The higher the value, the higher is the bank efficiency. While in 2006 the highest super efficiency value is BANK HSBC (28.144%), in 2007 the highest value is BANK DKI (62.677%), in 2008 the highest value reach by Bank BII (6.420%) and in 2009 the highest value reach by BANK Riau (7.570%). Then in the last period 2010 the highest value reach by Bank Aceh (10.000%) and in 2011 the highest value reach by BANK HSBC (167.102%). Then in period 2012 the highest value reach by Bank Aceh (167.102%), in 2013 the highest value reach by Bank BTN (24.588%) and Bank Aceh again reach the highest value in the end of research period 2014 (22.796%).

Table 6. Superefficiency Value of Each Bank in the Period 2005-2011(percentage)

DMU	PERIOD/ super efficiency value									
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
REGIONAL Bank										
Bank DKI	3.380	2.870	13.102	3.260	1.670	1.530	1.000	35.401	2.460	10.000
Bank Riau	1.020	4.860	0.630	0.570	7.570	0.510	0.700	1.810	2.090	4.630
Bank Kalsel	0.632	0.480	0.750	0.990	0.820	1.490	0.710	0.790	1.080	1.080
Bank Aceh	0.760	1.080	1.080	0.980	4.370	10.000	43.866	167.102	4.670	22.796
COMMERCIAL Bank										
Bank HSBC	15.577	28.144	3.250	1.180	1.260	7.310	167.102	1.320	1.220	4.370
Bank CIMB	1.220	2.460	2.090	1.380	1.000	2.160	12.424	1.560	1.260	1.390
Permata	0.630	1.520	0.700	1.780	4.670	1.470	0.880	0.780	1.000	2.160
Bank BTN	24.588	22.796	4.630	2.720	0.880	1.150	3.620	7.310	24.588	1.47
Bank BII	0.430	0.930	1.670	6.420	5.330	3.950	5.730	0.730	1.320	1.530

Consistent with the work of Guo and Jie (2007), we employ super efficiency model to rank the banks in each year throughout the period of study. This rank is shown in Table 7. As seen in Table 7, all the efficient banks and inefficient banks are ranked. In spite of the inefficiency bank value is still same when we use Efficiency Value. The superefficiency just adjusts value of efficiency 100% and then ranks them according to the new value of superefficiency over 100%.

Table 7. Rank Of Islamic Business Unit Bank Based on Super Efficiency Value

DMU	YEAR/ RANK THE EFFICIENCY BANK									
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
REGIONAL Bank										
Bank DKI	3	4	1	2	5	5	6	2	3	2
Bank Riau	5	3	9	9	2	9	9	4	4	3
Bank Kalsel	7	9	8	7	9	6	8	7	8	9
Bank Aceh	6	7	6	8	4	1	2	1	1	1
COMMERCIAL Bank										
Bank HSBC	2	1	3	6	6	2	1	6	7	4
Bank CIMB	4	5	4	5	7	4	3	5	6	8
Permata	8	6	7	4	3	7	7	8	9	5
Bank BTN	1	2	2	3	8	8	5	3	1	7
Bank BII	9	8	5	1	1	3	4	9	5	6

ranking for the most efficiency
start from 1 = the most efficiency until 15 the most inefficiency
period 1-4 means quarter 1 until 4

In Table 7 above described the rank of al bank, then in Table 8 below, described the rank of each kind/ each variety of Islamic business unit.

Table 8. Banking Rank

DMU	YEAR/ RANK THE EFFICIENCY BANK									
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
REGIONAL Bank										
Bank DKI	1	2	1	1	3	2	2	2	2	2
Bank Riau	2	1	4	4	1	4	4	3	3	3
Bank Kalsel	4	4	3	2	4	3	3	4	4	4
Bank Aceh	3	3	2	3	2	1	1	1	1	1
COMMERCIAL Bank										
Bank HSBC	2	1	2	5	3	1	1	3	4	1
Bank CIMB	3	3	3	4	4	3	2	2	3	5
Permata	4	4	5	3	2	4	5	4	5	2
Bank BTN	1	2	1	2	5	5	4	1	1	4
Bank BII	5	5	4	1	1	2	3	5	2	3

5. CONCLUSION

This paper is devoted to analyzing the measurement of Islamic banking efficiency in Indonesia then showing the super efficiency value and the benchmarking for an inefficient bank. The efficiency value is computed through Technical or Overall Efficiency, Pure TE and the Scale Efficiency.

Along the period of research 2005 until 2014, there are various banking efficiencies. In 2005, 2 regional bank inefficient and there only 2 inefficient commercial banks. In 2008, most of Regional banks are inefficient except bank DKI.

If we compare the efficiency value, we found that in average, commercial banks most efficient then regional bank. But some regional bank are most efficient than other commercial banks (Bank Aceh).

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