



Islamic Commercial Banks and Sharia Business Units; How Efficient Are They?

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Abstract

The purpose of this study is to determine the efficiency level of Islamic commercial banks and Sharia Business Units for the period of 2012-2017 and to examine the existence of size effect in bank efficiency. Using Data Envelopment Analysis (DEA) method, this research employs total assets, deposits, and operating costs as the inputs, while the output is total financing and operating income. The samples are 11 Islamic commercial Banks and 20 Sharia Business Units. Results of this study show that Islamic commercial banks are more efficient than Sharia Business Units during the period of analysis and large Islamic commercial banks are more efficient than small sharia business units which provide evidence of size effect existence in bank efficiency. Thus, the policymaker needs to consider bank size in policy formulation regarding bank efficiency.

Introduction

The recent development of Islamic banks' throughout the world is quite rapid, including in Indonesia, a country with the largest Muslim populations. However, Islamic banks' development is not limited to Muslim countries but also in countries where Muslims are the minority. In 2007 there were more than 300 Islamic financial institutions in more than 51 countries. Besides, there are more than 250 mutual funds following Islamic principles (Solé, 2007). Islamic financial institutions in Indonesia emerged in the 1980s, starting with the formation of Baitut Tamwil, Teknosa Expertise Services Cooperative Division in Bandung (1984) and Koperasi Ridho Gusti in Jakarta (1988). The first Sharia Commercial Bank that was established in Indonesia was Bank Muamalat Indonesia which was established in 1992.

Since 1998 Indonesia has developed a dual banking system where Commercial Banks may conduct their business activities in the form of conventional and sharia (hereinafter referred to as Conventional Commercial Banks and Islamic Commercial Banks). These types of banks have fundamental differences in terms of returns and profit-taking. Conventional Banks share profits based on interest, while Islamic Banks share profits according to sharia principles, which are based on profit sharing. According to the Islamic Banking Statistics in December 2005, there were 3 Sharia Commercial Banks, 19 Sharia Business Units, and 92 Sharia People Financing banks.

At present, the development of Islamic banks in Indonesia shows a positive sign as it has a relatively low problematic financing and experienced faster recovery during the monetary crisis than conventional banks. However, their performance was lagged behind the commercial banks, both in terms of the number of banks and the number of assets. Based on the 2014 Sharia Banking Outlook, the assets growth of Sharia Commercial Banks and Sharia Business Units in October 2013 was 31,8%, decrease from the 2012 growth (34,1%). During that time, the efficiency of Sharia Commercial Banks and Sharia Business Units is still lagged behind the conventional banks.

From 2005 onwards, there has been a lot of research on bank efficiency in Indonesia, mainly focusing on comparing the efficiency of Islamic commercial banks and conventional commercial banks. In general, the samples do not include Sharia Business Units. Sharia Business Unit is a division of conventional commercial banks that offer Islamic banking products and services. These units have their infrastructure, including staff and branches that are separate from the parent bank (Ascarya and Yumanita, 2005). Akbar (2010) studies the efficiency level of BMT and found relatively efficient results on 5 branch offices of BMT out of a total of 31 branch offices.

Meanwhile, research on bank efficiency conducted overseas generally compare the efficiency level between conventional banks and Islamic banks. Research by Saeed et al. (2013) assessed the efficiency of Islamic and Conventional Banks in Pakistan using the DEA approach. The findings show that conventional banks are better in terms of efficiency and liquidity ratios. But it contradicts the findings of Ahmad and Luo (2010) conducted in Germany, Turkey, and the United Kingdom during the period 2005-2008 using the DEA approach where Islamic banks are more efficient than conventional banks. Based on the inconsistency of the findings, this research will analyze the efficiency level of Islamic Commercial Banks in Indonesia for the 2012-2017 period by taking into account the Sharia Business Unit to obtain a comprehensive picture of Islamic bank performance in Indonesia. Hence, this study aims to determine the efficiency level of Islamic Commercial Banks and Sharia Business Units in Indonesia for the period 2012-2017 and the size effect on bank efficiency. The findings are expected to add to the literature related to sharia banks' efficiency and are expected to provide recommendations for the future development of Islamic banks.

Hypothesis Development Efficiency Difference between Islamic Commercial Banks and Sharia Business Units

According to Rivai (2007) Islamic Commercial Banks (BUS) are banks that carry out business activities based on sharia principles, while Sharia Business Units (UUS) are business units in conventional commercial bank headquarters that function as the parent office of sharia branch offices or sharia units. Both BUS and UUS can work as foreign exchange or non-foreign exchange banks. The difference between BUS and UUS lies in the form of their business entity, in which Islamic commercial banks have the same level as conventional banks. According to Rivai (2007) Sharia Commercial Banks carry out business activities based on sharia principles. The sharia business units is a division under the conventional commercial bank which serves as the headquarters of the sharia branch offices. Both Islamic commercial banks and sharia business units can work as foreign exchange or non-foreign exchange banks. The sharia business unit as part of conventional commercial bank business entity is positioned one level below the directors of the conventional banks. The difference between this business entity and the Islamic commercial banks and sharia business units implies different authority in determining the

direction of bank policy. In the BUS, the determination of the policy is conducted by the Islamic commercial banks, while the policy of the sharia business units is determined by the conventional banks as their parents' banks. This system differences may have an impact on the efficiency of Islamic commercial banks and sharia business units.

H1: There are differences in efficiency score between Sharia Commercial Banks and Sharia Business Units for the period of 2012-2017.

Size Effect on Bank Efficiency

According to Daniati and Suhairi (2006), companies that have large total assets have reached the stage of maturity, where at this stage the company's cash flow is positive and is considered to have good prospects in a relatively more stable period and more able to generate profits than the company with small total assets. The size of the company influences the opportunity of the company when it enters the capital market because the larger the company the greater the opportunity to enter the capital market. This shows that large-size companies have better funding ability and a greater rate of return than smaller companies. Larger banks tend to be more efficient than smaller bank since they experienced economics of scale.

H2: The efficiency of large Islamic commercial banks is higher than small sharia business units

Research Methods

This study refers to the variables used in the research of Hidayah and Purnomo (2014). There are 5 variables used in this study, 3 variables serve as the input variables and the remaining become the output variables. Following are the operational definitions of the variables used in this study:

1. Input Variables
 - a. Deposits: are a collection of funds from customers, whether individuals or companies or companies. The collection of funds is carried out through products owned by banks, either in the form of savings or time deposits and demand deposits, in units of billion rupiah.
 - b. Assets are total assets owned by Islamic banks and also have economic value, in billion rupiah.
 - c. Operational costs: are costs incurred to run bank operations. This fee does not include profit-sharing costs found in Islamic banks, in billions rupiah.
2. Output Variables
 - a. Total financing: is a form of channeling of funds owned by Islamic banks through muamalah contracts, in billions rupiahs.
 - b. Operational income: consists of all income which is a direct result of the business activities of the bank that has actually been received, in billions rupiahs.

This research is a quantitative research with secondary data from the Annual Islamic Financial Statement published by the each bank official web for the period of 2012-2017. The population of this study is all Sharia Commercial Bank and Sharia Business Unit (UUS) established on or before 2012 and have a complete financial statements during the period 2012-2017. The following is the list of the samples:

Table 1. List of Islamic Commercial Banks and Sharia Business Units

NO	ISLAMIC COMMERCIAL BANKS	NO	SHARIA BUSINESS UNITS
1	PT. Bank Muamalat Indonesia	1	PT Bank Danamon Indonesia, Tbk
2	PT. Bank Victoria Syariah	2	PT Bank Permata, Tbk
3	PT. Bank BRI Syariah	3	PT Bank CIMB Niaga, Tbk
4	PT. Bank Jabar Banten Syariah	4	PT Bank OCBC NISP, Tbk
5	PT. Bank BNI Syariah	5	PT Bank Sinarmas
6	PT. Bank Syariah Mandiri	6	PT Bank Tabungan Negara (Persero), Tbk
7	PT. Bank Mega Syariah	7	PT BPD DKI
8	PT. Bank Panin Dubai Syariah	8	PT BPD Daerah Istimewa Yogyakarta
9	PT. Bank Syariah Bukopin	9	PT BPD Jawa Tengah
10	PT. Bank BCA Syariah	10	PT BPD Jawa Timur, Tbk
11	PT. Maybank Syariah Indonesia	11	PT BPD Sumatera Utara
		12	PT BPD Jambi
		13	PT BPD Sumatera Barat
		14	PT BPD Riau dan Kep. Riau
		15	PT BPD Sumatera Selatan dan Bangka Belitung
		16	PT BPD Kalimantan Selatan
		17	PT BPD Kalimantan Barat
		18	PT BPD Kalimantan Timur
		19	PT BPD Sulawesi Selatan dan Sulawesi Barat
		20	PT BPD Nusa Tenggara Barat

The data is analyzed using Data Envelopment Analysis (DEA) which is a standardized method as an analytical tool for measuring performance in a unit activity. According to Cooper, Seiford et al. (2007) the DEA method is "such as mathematical programming which can handle large number of variables and constrains. Thus, using the DEA method can overcome the problem of the limitations of the ratio method and regression that cannot use many input and output variables, where later the data processing process uses WDEA software.

Data Envelopment Analysis

Cooper et al. (2006), explained that DEA can be used to measure relative efficiency of a decision-making unit (UPK) / Decision Making Unit (DMU), be it a government, company, or non-profit oriented institution, in the production process or the activity that involves the use of a particular input. DEA can also be used to measure efficiency in various fields, such as health, education, transportation, factories, and banking.

According to Cooper et al. (2006), there are two models that are often used in the DEA approach, namely:

- a. Charnes-Chooper-Rhodes (CCR) (1978)

In this model, we assume Constant Return to Scale (CSR). Some linear programs are transformed into linear ordinary programs in primal or dual formulas as follows:

Maximize $h_s = \sum_{i=1}^m U_i Y_{ts}$

Constraints:

$$\sum_{i=1}^m u_i y_{ir} - \sum_{j=1}^n v_j x_{jr} \leq 0; r = 1, \dots, N$$

$$\sum_{j=1}^n v_j x_{js} = 1 \text{ where } u_i \text{ dan } v_j \geq 0$$

where, h_s = technical efficiency of banks

U_i = output weight i produced by bank s

Y_{ts} = number of output i produced by bank s

v_j = input weight j given by bank s

x_{jr} = number of input j used by bank s and I is calculated from 1 to m , while j is calculated from 1 to n

X_{jr} is the number of the j -type input of the r -DMU and y_{ir} is the number of type- i output of the r DMU. The efficiency value is always less than or equal to 1. The DMU with an efficiency value of less than 1 means that the DMU experiences inefficiency, while the DMU with a value of efficiency equal to 1 means that the DMU is efficient.

b. Banker-Charnes-Cooper (BCC) (1985)

This model assumes the existence of Variable Return to Scale (VRS), where each increase in input and output does not have the same proportion. The proportion of changes can be increased or decreased. The VRS formula can be written with a math program as follows:

Maximize $h_s = \sum_{i=1}^m U_i Y_{ts} - u_s$

Constraints:

$$\sum_{i=1}^m u_i y_{ir} - \sum_{j=1}^n v_j x_{jr} - u_s \leq 0; r = 1, \dots, N$$

$$\sum_{j=1}^n v_j x_{js} = 1 \text{ where } u_i \text{ dan } v_j \geq 0$$

where, h_s = technical efficiency of banks

U_i = output weight i produced by bank s

Y_{ts} = number of output i produced by bank s

v_j = input weight j given by bank s

x_{jr} = number of input j used by bank s and I is calculated from 1 to m ,
while j is calculated from 1 to n

X_{jr} is the number of the j -type input of the r -DMU and y_{ir} is the number of type- i output of the r -DMU. Efficiency values are always less than or equal to 1. DMUs with less than 1 efficient value mean that the DMU manages inefficiencies, while DMUs that have an efficient value equal to 1 mean that the DMU is efficient.

In this study, the model used for data processing was the Banker Charnes Cooper (BCC) model by assuming a Variable Return Scale (VRS), where the increase in input and output is not the same proportion.

To test the first hypothesis, this study performed t-test for independent samples to determine whether there are differences in the efficiency level of Islamic commercial banks and sharia business units.

Panel Data Regression

This study employed panel data regression to test the second hypothesis. According to Basuki and Prawoto (2016), panel data regression have three models, namely: common effect model, fixed -effect model, and random effect model. Common effect is the simplest model because it does not pay attention to time and individual dimensions, so the behavior of Islamic bank data is assumed to be the same all the time. In the common effect model, Ordinary Least Square (OLS) can be used. Meanwhile, fixed effect is a model that estimates data by using dummy to capture the difference in intercepts. Fixed-effect has an understanding based on the difference in intercepts, but the intercept is the same as time-invariant. This model also assumes that the regression coefficient (slope) is fixed for various time periods. This model is often called Least Square Dummy Variable (LSDV). This Random Effect model takes into account errors where disturbance variables may be interconnected between times (time-series) and between individuals (cross-section). This model can also be called the Error Component Model (ECM) or Generalized Least Square (GLS) technique (Basuki and Prawoto, 2016).

Selection of Panel Data Method

There are several tests that must be done in determining the regression model, namely: (1) Chow Test, which is testing to determine between the common effect models or the fixed effects that are most suitable for estimating panel data. Decision making for the chow test is if the P-value is $> 0,05$, the model follows the common effect, but if the P-value is $< 0,05$, then the model follows the fixed effect. (2) Hausman Test, which is a test to determine the choice between fixed effect or random effect. If the P-value is $> 0,05$, the model follows a random effect, but if the P-value is $< 0,05$ then the model follows the fixed effect. (3) Lagrange Multiplier Test, which is a test to choose between random effects or common effects. If the P-value is $> 0,05$, the model follows the common effect, but if the P-value is $< 0,05$, then the model follows the random effect (Basuki & Prawoto, 2016). This test is carried out using STATA software.

Result and Discussions

This study used total assets, deposits, and operating costs as inputs and total financing and operating profit as outputs. The data analysis was performed using Data Envelopment Analysis (DEA) with Variable Return Scale (VRS) and solved using Warwick for Data Envelopment Analysis (WDEA) software.

No	BANK	Efficiency Score						Trend
		2012 (%)	2013 (%)	2014 (%)	2015 (%)	2016 (%)	2017 (%)	
6	PT. Bank Syariah Mandiri	100	100	100	100	100	100	S
7	PT. Bank Mega Syariah	100	100	100	100	100	100	S
8	PT. Bank Panin Dubai Syariah	100	100	100	100	100	100	S
9	PT. Bank Syariah Bukopin	100	100	100	100	100	100	S
10	PT. Bank BCA Syariah	100	100	100	94,85	93,38	100	F
11	PT. Maybank Syariah Indonesia	100	100	100	100	100	100	S
Average		95,73	96,11	96,14	95,62	98,4	98,91	S

Notes: F = Fluctuate N = Increasing S = Stable T = Decreasing

Table 3 showed that from 11 Islamic Commercial Banks, 8 Banks (Bank Muamalat Indonesia, Bank Victoria Syariah, Bank BNI Syariah, Bank Syariah Mandiri, Bank Mega Syariah, Bank Panin Dubai Syariah, Bank Syariah Bukopin, and Maybank Syariah Indonesia) had the ability to maintain their performance by remaining efficient during the period 2012-2017. From the total of 11 Islamic Commercial Banks, BRI Syariah was the most inefficient bank with a very low level of efficiency from 2012 to 2015. Although the level of efficiency had decreased, there had been a drastic increase in 2016, but it had not reached 100%. This might be caused by the inadequate allocation of inputs in the operations of the banking sector (Sutawijaya and Lestari, 2009).

Table 4 provide information on the type of variables that contribute to the inefficiencies of Islamic Commercial Bank. Based on Table 4 for 6 years of observation, most banks were inefficient in their input variables, namely, assets, savings, and operating costs. There were some Islamic Commercial Banks that had large, but inefficient total assets. BRI Syariah had total assets that were increasing, but the efficiency level decreased in the period 2012-2015.

Table 4. Number of Inefficient Islamic Commercial Banks

Variable	2012		2013		2014		2015	
	Absolute	%	Absolute	%	Absolute	%	Absolute	%
Assets	3	27,27	2	25	3	25	2	25
Deposits	3	27,27	2	25	3	25	2	25
Operating Costs	3	27,27	2	25	3	25	2	25
Total Financing	1	9,09	1	12,5	1	8,33	2	25
Operating Income	1	9,09	1	12,5	2	16,66	0	0
Total	11	100	8	100	12		8	

Variable	2016		2017		Total	
	Absolute	%	Absolute	%	Absolute	%
Asset	2	25	1	25	13	25,49
Deposits	2	25	1	25	13	25,49
Operating Costs	2	25	1	25	13	25,49
Total Financing	1	12,5	1	25	7	13,73
Operating Income	1	12,5	0	0	5	9,8
Total	8	100	4	100	51	100

The Efficiency of Sharia Business Units

Calculation of efficiency using WDEA software to produce output from sharia business units for the 2012–2017 period is as follows:

Table 5. Efficiency Score of Sharia Business Units for The Period 2012-2017

No	BANKS	Efficiency Score						Trend
		2012 (%)	2013 (%)	2014 (%)	2015 (%)	2016 (%)	2017 (%)	
1	BPD Daerah Istimewa Yogyakarta	90,21	82,18	90,77	82	100	100	F
2	PT Bank CIMB Niaga Tbk	100	92,4	93,44	100	99,8	91,42	F
3	PT Bank Danamon Indonesia Tbk	84,88	81,25	93,73	100	100	100	F
4	BPD DKI	100	100	100	100	100	100	S
5	Bank Sinarmas	100	93,2	100	100	100	100	S
6	BPD Jambi	100	100	100	100	100	100	S
7	BPD Jawa Tengah	67,43	72,31	81,72	72,26	44,81	77,87	F
8	BPD Jawa Timur Tbk	91,33	87,95	54,3	48,77	48,87	49,07	T
9	BPD Kalimantan Selatan	76,48	72,95	80,23	89,38	88,47	86,57	F
10	BPD Kalimantan Barat	100	100	100	100	100	100	S
11	BPD Kalimantan Timur	54,67	99,11	85,63	67,72	70,4	55,76	F
12	BPD Sumatera Barat	100	100	100	100	100	100	S
13	BPD Nusa Tenggara Barat	100	91,71	73,1	74,44	98,07	100	F
14	PT Bank OCBC NISP Tbk	69,37	83,75	78,09	100	65,07	83,72	F
15	PT Bank Permata Tbk	100	100	100	100	100	100	S
16	BPD Riau dan Kepulauan Riau	77,83	81,22	85,15	100	90,83	100	F
17	BPD Sumatera Selatan dan Bangka Belitung	79,37	76,6	68,40	60,06	55,87	71,84	F
18	BPD Sumatera Utara	88,10	100	100	94,63	95,81	97,53	F
19	PT Bank Tabungan Negara (Persero) Tbk	100	100	100	100	100	100	S
20	BPD Sulawesi Selatan dan Sulawesi Barat	96,72	94,06	93,88	100	100	100	F
Average		88,82	90,43	88,92	89,46	87,9	90,69	F

Notes: F = Fluctuative N = Increasing S = Stable T = Decrease

Table 5 shows that of the 20 Sharia Business Units, 6 Sharia Business Units, namely, DKI BPD, Jambi BPD, West Kalimantan, West Sumatra, Permata Bank, and State Savings Bank, can maintain their performance, which resulted in their efficiency during the 2012-2017 period. To find out which type of variable is inefficient in the Sharia Business Unit, Table 6 shows the number and percentage of Sharia Business Units based on inefficient variables.

Table 6. Number of Inefficient Sharia Business Units

Variable	2012		2013		2014		2015	
	Absolute	%	Absolute	%	Absolute	%	Absolute	%
Assets	11	31,43	13	30,23	11	26,83	8	32
Deposits	11	31,43	13	30,23	11	26,83	8	32
Operating costs	11	31,43	13	30,23	11	26,83	8	32
Total Financing	1	2,85	3	6,98	3	7,32	1	4
Operating Income	1	2,85	1	2,33	5	12,19	0	0
Total	35	100	43	100	41	100	25	100

Variable	2016		2017		Total	
	Absolute	%	Absolute	%	Absolute	%
Assets	10	32,26	8	26,67	61	29,75
Deposits	10	32,26	8	26,67	61	29,75
Operating Costs	10	32,36	8	26,67	61	29,75
Total Financing	0	0	5	16,66	13	6,35
Operating Income	1	3,22	1	3,33	9	4,4
Total	31	100	30	100	205	100

The majority of Sharia Business Unit groups are inefficient in the variable assets, deposits, and operating costs. This is caused by the size of the sharia business units which is smaller than the Islamic commercial banks. Also, the policies of sharia business units largely depend on the parents' bank. This is different from Islamic commercial banks which has independence in decision making hence they are quicker in terms of policymaking.

Result and Discussions

The purpose of this study is to determine the level of efficiency in the Islamic Commercial Banks and Sharia Business Units for the 2012-2017 period. The results show that Islamic Commercial Banks are mostly more efficient compared to Sharia Business Units although they have similarities in terms of factors that affect inefficiencies. Based on this study, there are 8 efficient Islamic commercial banks with 30 other banks remain inefficient. There are 6 efficient Sharia business units with 14 UUS remain inefficient. Table 7 provide the results of Hypothesis 1 test regarding the efficiency different between BUS and UUS.

Table 7. Paired Sample Test

Paired Samples Test								
Paired Differences								
95% Confidence Interval of the Difference								
	Mean	Std. Deviation	Std. Error Mean	Lower	Upper	t	df	Sig. (2-tailed)
Pair 1. BUS-UUS	7,44833	1,73418	,70798	5,82842	9,26824	10,521	5	,000

Based on the sig value = 0,000 and the confidence level of 95% then sig <0,05, the H1 hypothesis is accepted. It means, the average efficiency of Islamic commercial banks and Sharia Business Units is not identical. In other words, there is a difference in efficiency score between BUS and Sharia Business Units.

By looking at the Islamic commercial banks efficiency score, BRI Syariah is the bank with the lowest level of efficiency. Although its total assets are increasing but it experience a decline in the level of efficiency for 2012-2015 period. This indicates a size effect, where bank with large total assets do not always more efficient than the smaller banks. Table 8 shows the indication of size effect in bank efficiency.

Tabel 8. Panel Data Regression

Bank Types**	Coefficient	0,16
	z-Statistic	1,42
Total Assets	Coefficient	0,014*
	z-Statistic	-2,46
Operating Income		0,38
Constant		88,86

Notes: *significance level 5%; **1 for Islamic commercial banks and 0 for sharia business units

Table 8 shows that the P-value of bank size (total assets) is $0,014 < \text{Alpha } 0,05$ which means significant and the direction is positive, it turns out that the size of the bank has a positive effect on the DEA score. Then the larger the size of the company the greater the DEA score which indicates that the bank is more efficient. The results of this study are following the findings of Ahmad and Luo (2010), where larger banks are more efficient. This is supported by the findings in previous section where many small sharia business units have low-efficiency scores. Also, Islamic commercial banks are more independent in determining their policies and loans compared to sharia business units which more dependent on parents' bank policies.

Conclusions

This research provide empirical evidence on the differences in efficiency level of Islamic commercial banks and sharia business units. Islamic Commercial Banks are mostly more efficient compared to Sharia Business Units but they have similarities in terms of factors that affect inefficiencies. Further analysis reveals the size effect in efficiency level where large Islamic commercial banks are more efficient than small sharia business units. The findings imply the importance of promoting Islamic commercial banks to boost the development of sharia banking in Indonesia. Moreover, the findings raise the concern of considering bank size in formulating policy to increase Islamic bank performance in terms of efficiency. Islamic commercial banks and sharia business units need to pay more attention to the factors affecting bank inefficiencies to take corrective action. The limitations of this study lies in its focus on Islamic banks in Indonesia and the selection of input and output variables. Further research may compare the Indonesian sharia banks with Islamic banking in the ASEAN region and add a specific input and output variables which more relevant for Islamic banks.

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