COMPARING THE EFFICIENCY OF ISLAMIC BANK IN INDONESIA AND MALAYSIA

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Abstract

This study measures and compared the efficiency of Islamic banks in Malaysia and Indonesia. This study used a quantitative non-parametric approach by using Data Envelopment Analysis (DEA) VRS assumption, CRS assumption and a statistic tool of Mann-Whitney-U-Test. The samples are 6 Islamic banks in Malaysia and 10 Islamic banks in Indonesia that comply with the specified sample criteria during 2010-2016. The results show that Islamic banks in Indonesia are relatively higher than Islamic banks in Malaysia. The source of inefficiency in Islamic banks in Indonesia is more due to the inefficiency on a scale. While the hypothesis test shows that there are no significant differences of efficiency between Islamic banks in Indonesia and Malaysia.

Keywords: Islamic Bank, Performance, Efficiency, Data Envelopment Analysis (DEA)

JEL classification: G21

1. Introduction

Banking has an important role in economic activity in a country. Because of the ability of banking system to play its role is very decisive in economy efficiently and effectively. The occurrence of chaos in the banking world will also affect the economy. Therefore, every bank must be healthy and bring in sufficient profit so that the bank can work out and grow strong and be able to meet the needs of the community. Islamic bank, is a financial institution which positions itself as an active role in supporting and performing investment

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activities in community around it. On one hand, Islamic bank is active to do investment in community, while on the other hand, Islamic bank is a financial institution which motivates and invites people to actively invest through its various products. In Islamic banking, the intermediary function is a main function.

The issue of efficiency must get serious attention. According to Blejer (2006) and Batir et al. (2017), financial efficiency is an important issue since it enhances financial stability. Every bank is necessary to hold the principle of efficiency. The basic principle of efficiency is avoiding any form of wasting of resources or inefficiency. There is no justification for letting this happen. Because, efficiency in the banking sector is ensuring sustainability in the future especially in competition era (Zuhroh et al., 2015).

The comparation of efficiency in banking industry is necessary to improve the banking performance. The result of the comparation will be so useful and can be used as a reference for the parties concerned. According to Khan and Bhatti (2008) report, the Southeast Asia region represent as one of the central hubs of Islamic banking and finance. Islam has greatly influenced the economic growth of countries in this region in the last three decades. Islamic Financial institution such as Islamic banks are well – established and operating efficiently (Kamarudin et al., 2017). The establishment of the Islamic Development Bank in 1975 stimulates the establishment of Islamic bank in many countries, including Indonesia and Malaysia.

Indonesia and Malaysia are the countries that embrace dual banking system by recognizing the enactment of conventional banking system and Islamic banking system (Chong and Liu, 2009). According to Ernst and young world Islamic banking competitiveness report 2013-14, Islamic banking assets reached US$ 1.7 trillion in 2013 and succeed an annual growth of 17.6% over last four years in the world. Indonesia and Malaysia are two rapid growing markets together with Qatar, Turki, Saudi Arabia, UEA and (QISMUT countries) and Bahrain. The development and growth of Islamic banks in the world is significant recently, this is including Indonesia and Malaysia (Baele, Farooq, and Ongena, 2014). According to the Global Islamic Finance Report (2015), Malaysia and Indonesia are countries that leading in Islamic finance especially in its region. Indonesian Islamic banking as one of national financial system, for twenty years has shown good performance (Zuhroh et al., 2015). However, unfortunately, in 2011 until 2014 Indonesia has experienced decrease in total financing which is more significant than Malaysia. If we evaluate from the asset growth, Indonesia did not experience much decrease

just like its total financing. This fact shows that there is an indication that Islamic banks in Indonesia have got problems in managing its funding source which is third party fund–and convert it to financing.

2. Literature Review

According to Batir et al. (2017), there has been an increase in literature of study on efficiency recently. There is various method for measuring efficiency of bank (Ohsato and Takashahi, 2014). One popular method is Data Envelopment Analysis (DEA). DEA is a technique of Linear Programming Application which measures relative efficiency in every unit of production compared to other units of production that have same purposes. The superiority of DEA method is to be able to identify sources and amount of inefficiency in every output and input for each bank (Cooper, 2011), so that these output and input can be improved to reach an optimal efficient rate (Cooper, 2011). Besides that, this method is easy to calculate, because it does not need a specification from functional form (Hadah, 2003:2). There are two models which are often used in DEA approach, and that is Constant Return to Scale (CRS) model and Variable Return to Scale (VRS) model. From both approach, we can calculate for the Scale Efficiency (SE) (Pratikto and Sugianto, 2011).

Several efforts to present the performance assessment of Islamic banks have been done within the efficiency framework. The study of Islamic bank within efficiency framework could be classified into two main groups; (1) the efficiency of Islamic bank, and (2) the comparison of efficiency between Islamic bank and conventional. The first group studies, include among others were Bader et al., 2007; Brown & Skully, 2004; Hassan, 2006; Yudistira, 2003; Sufian, 2006; Ascarya & Yumanita, 2006 and Rusydiana & Firmansyah 2017. While the second group, the studies include among others were Al-Jarrah & Molyneuxa, 2003; Bader et al., 2007; Hussein, 2004; Mohamad et al., 2008; Akhter et al., 2011; Abduh et al., 2013; Wahid, 2016. Majority of these studies were using frontier approach, since it is superior compare to traditional analysis.

There is little study which analysis cost efficiency bank. Zuhroh et al. (2015), analysis the cost efficiency of Islamic bank in Indonesia using stochastic frontier analysis and the result showed that Islamic banks are superior in the achievement of technical efficiency, but the average cost efficiency is much lower than conventional bank. Mester (1996), investigated efficiency of bank operating in the third federal reserve district and accounted

for the quality and riskiness of bank output by using Stochastic cost frontier method and the result is Third District banks are not efficient in using their inputs.

Some studies compared efficiency of Islamic bank with conventional bank like Yilmaz and Gunes (2015), comparing efficiency of Islamic banking with conventional banking sectors in turkey between 2007 – 2013 using DEA. Batir et. al (2017), analyzed efficiency of the banking system in turkey and compare the efficiency of participation bank and conventional bank by using DEA. The result found that participation bank has higher efficiency compared to conventional banks. Ascarya (2008), compared the efficiency of Islamic banks in Indonesia and Malaysia with intermediary approach and using DEA method. The result shows that Islamic banks in Indonesia are more efficient than Islamic banks in Malaysia. Ohsato and Takahashi (2014), evaluated the efficiency of Japanese regional bank using DEA model uses two years independent data, the result show that the Japanese regional bank is more efficient in its first year compared to second year. Kamarudin and Yahya (2013), compared the cost, revenue and profit efficiency of Islamic and conventional banks in Malaysia over the period 2006 to 2009 using the DEA method. The results show that the levels of cost and profit efficiency for Malaysian Islamic banks lower compared to the Malaysian conventional banks.

Based on the research background mentioned, the researcher is considered to re-research the efficiency of Islamic bank in Indonesia and Malaysia. The difference between this research and previous research is that there is an output variable, which is an operational profit which was not researched by Ascarya research. This operational profit is important to be included in output variable of the research, because it is one of the important measures to assess the efficiency of Islamic bank management.

This research aims to find out: 1) The efficiency rate of Islamic banks in Malaysia and Islamic banks in Indonesia based on intermediary approach; 2) whether there is a difference of efficiency between Islamic banks in Malaysia and Islamic banks in Indonesia based on intermediary approach with VRS assumption.

3. Research Methodology

The approach used in this research is quantitative research, and the instrument of quantitative analysis used is DEA. Input variables in this research are: 1. Total deposits 2. Fixed Assets 3. Labor Cost and output

variables in this research are total financing and operational profit. The population in this research is Islamic banks which have been registered in Bank Indonesia and Bank Negara Malaysia in period 2010-2016. Sampling is done by purposive sampling. The sample criteria includes Islamic banks that have published its financial statements from December 2010 to December 2016, and it is neither foreign banks nor mixed banks. From the sample criteria, we obtained 10 banks in Indonesia and 6 banks in Malaysia.

3.1 Data Analysis Technique

3.1.1. Data Envelopment Analysis

Let x_{ij} denote the observed magnitude of i type input for entity j $(x_{ij} > 0, i = 1,2,...,m,\ j = 1,2,...,n)$ and y_{rj} the observed magnitude of r-type output for entity j $(y_{rj} > 0, r = 1,2,...,s,\ j = 1,2,...,n)$. Then the calculation of efficiency value is based on the data from input and output variables as determined before by the formula as follows (Moussawi and Obeid, 2011:13-14):

$$\max h_k = \frac{\sum_{r=1}^{s} u_r y_{rj}}{\sum_{i=1}^{m} v_i x_{ij}}$$

where:

h_k = Value of Financing Efficiency

$u_r y_{rj}$ =Weighted Output (Total Financingand Operational Profit)

$v_i x_{ij}$ =Weighted Input (Total Deposits, Fixed Assetand Labor Cost)

The efficiency measurement in this research will use application tool of Data envelopment Analysis Program (DEAP) 2.1 Version. Decision Making Unit (DMU) which has efficiency value 1 (one) is an efficient DMU, while DMU which has efficiency value less than 1 (one) is an inefficient DMU. This efficiency value is relative efficiency value between the DMUs, and the most efficient DMU becomes a reference of benchmark to the other DMU.

3.1.2. Hypothesis testing

The model used to test the hypothesis is Mann-Whitney U-Test or a statistical model of Mann-Whitney U-Test. The total data of sample group I and sample group II are not same; iv. The data are in scale of ordinal, interval, and ratio. The calculation of statistical test value of Mann-Whitney U-Test model is:

$$U_{1count} = n_1 n_2 \frac{n_1(n_1+1)}{2} R_1$$

Or

$$U_{2count} = n_1 n_2 \frac{n_2(n_2+1)}{2}$$

Provided that the value of U_{count} taken is the smallest U_{count} value, and to check the accuracy of the calculation using the formula as follows:

$$U_{smallest} = n_1 n_2 - U_{smallest}$$

Where:

$U_1 = U_1$ Test statistic

$U_2 = U_2$ Test statistic

n_1 = Total sample of the biggest sample group

n_2 = Total sample of the biggest sample group

R_1 = Total sample rank of the biggest sample group

R_2 = Total sample rank of the smallest sample group

4. Findings and Discussion

4.1 Descriptions and Discussion of Research

This study uses sample data from Islamic Banking in Indonesia and Malaysia in the period between 2010 to 2016 using *Banxia Frontier Analysis 4* software.

4.1.1 The Result Description and Comparative Analysis of Efficiency Values

The efficiency of measurement in this study used two assumptions, the first is CRS (Constant Returns to Scale) or also called the Overall Technical

Efficiency and the second is VRS (Variable Returns to Scale) or also called Pure Technical Efficiency. VRS assumption is a part of CRS assumption that's divided into two parts, namely VRS and Scale Efficiency, so when DMU has achieved efficiency assuming of CRS, it can be was ascertained if the DMU reaches VRS efficient point and Scale Efficiency. DEA analysis with the assumption of CRS (Constant Return to Scale) means that every DMU (Islamic Banking) is assumed to operate optimally. In VRS (Variable Return to Scale) analysis, each of DMU isn't assumed to operate optimally, meaning that any addition of one input will not be necessary produce one output, but may be less or more. DMU that reaches the point of efficiency with the assumption model of CRS (Overall efficiency) and VRS (pure technical efficiency) and then the variable can be assured to be efficient with the scale model. On the contrary, if a DMU has been efficiently VRS but CRS inefficient it can be ascertained if DMU is also inefficient with the scale model assumption. However, this research is not discussed in the scale model assumption.

Data processing in this research using Data Envelopment Analysis method with the help of *Banxia Frontier Analysis 4* software. The efficiency result from DEA will show a return to scale condition of a company that is increasing the return to scale (IRS), constant return to scale (CRS) and decreasing return to scale (DRS). Return to scale conditions can be explained as follows:

1. If $\lambda=1$, so the degree of change in output as a result of the change in input is called the degree of constant gain (Constant Returns to Scale). If there is an increase in output proportional to the increase in input.
2. If $\lambda>1$, so the degree of change of output as a result of input change is called the increasing returns to scale. That conditions occur when the increase in output bigger than the increase in input. IRS can occur if due to the increasing scale of operation occurs in the division of tasks and functions are good.
3. If $\lambda<1$, so the degree of change in output as a result of input changes is called the decreasing returns to scale. This condition occurs when the output increases less than the increase in input. DRS can occur due to the increased scale of organization operations, but there is difficulty in coordinating various good activities and effectively.

4.1.1.1 Description and Comparative Analysis of CRS Model Efficiency Values

Table 4.1 below shows the data from 10 DMUs (Islamic Banking) in Indonesia from 2010 to 2016. 10 of DMUs data, every DMU is declared to have experienced, efficient conditions in each year. Based on the following data Islamic Banking in Indonesia can be efficiently effected by overall technical efficiency.

Table 4.1 DEA Result of CRS Model of Islamic Banking in Indonesia The Year of 2010-2016

	DMU	VRS						
		2010	2011	2012	2013	2014	2015	2016
1	Bank Syariah Mandiri	100%	100%	100%	100%	100%	100%	100%
2	Bank Muamalat	100%	100%	100%	100%	100%	100%	100%
3	BNISyariah	100%	100%	100%	100%	100%	100%	100%
4	BRI Syariah	100%	100%	100%	90.3%	100%	100%	100%
5	Mega Syariah	100%	90.5%	100%	100%	97.3%	98.8%	98.8%
6	BJB Syariah	100%	100%	100%	100%	59.6%	100%	100%
7	BCA Syariah	100%	100%	100%	100%	100%	100%	100%
8	Victoria Syariah	100%	100%	100%	100%	100%	100%	100%
9	Panin Syariah	86.5%	100%	100%	100%	100%	100%	100%
10	Bukopin Syariah	100%	100%	100%	100%	100%	100%	100%

Source of data processed DEA Analysis

DEA test results in 2010 show that 8 of 10 Islamic Banking are efficient on a CRS basis. This data was evidenced by the value displayed by the assumption of CRS of 100%. However, two Islamic Banking in Indonesia is declared inefficient based on DEA data on CRS assumption experienced by Bank Rakyat Indonesia Syariah with the percentage of efficiency values less than 100%, i.e., 93.5% and Panin Syariah inefficient as indicated by presentations of CRS assumption of 81.9%.

In 2011 on the assumption of CRS, the efficient level of Islamic Banking declined. From the previous year with the number of 8 Islamic Banks are declared an efficient, in 2011 only 6 Islamic Banks are declared efficient according to the assumption of CRS. The rest, such as Bank Syariah Mandiri declared inefficient according to the assumption of CRS because the percentage value is less than 100%, i.e., 88.2%. Bank Negara Indonesia Syariah and Bank Rakyat Indonesia Syariah are also inefficient according to

the CRS assumption because the value is around 90%. The last one is Mega Syariah which only shows a percentage about 79.8%.

CRS assumption in 2012, inefficient Islamic Banking was replaced by BNI Syariah and BRI Syariah which also followed by Bukopin with a percentage of CRS around 96.9%. In 2013, Bukopin had reached an efficient point, but BCA Syariah and Victoria Syariah are not efficient based on CRS assumptions. Each of them shows the percentage rate which is less than 100%, that's only 86.2% and 86.6%. In 2014, there is an efficient downturn in DMU. There are only 3 DMUs who declared to be efficient in the assumption of CRS, namely BCA Syariah, Panin Syariah, and Bukopin.

An efficient level increase of CRS assumptions occurs in 2015 when there are only 2 DMUs inefficient based on CRS assumptions. Muamalat shows the percentage of inefficient numbers, only 96.1% and Mega Syariah, showed 98.6%. The final period of this study concludes with a percentage of 30% DMU that's inconsistent with the CRS assumption. The 3 DMUs are Bank Syariah Mandiri, Muamalat, and BJB showing percentage rate below 100%. This study is also used to compare the assumption results of CRS and VRS tests of Banking conditions in Malaysia. There are 5 Banks tested by using the CRS method. Some Banks in Malaysia are considered efficient by CRA, but there is also one Bank that has not reached the efficient point from 2010 to 2016. To know more clearly CRS data can be seen in table 3.2 below.

Table 4.2 DEA Result of CRS Model of Islamic Banking in Malaysia The Year of 2010-2016

	DMU	CRS						
		2010	2011	2012	2013	2014	2015	2016
1	Affin	88.9%	93.6%	100%	100%	100%	100%	100%
2	Bank Islam Malaysia	71.9%	100%	100%	100%	81.9%	100%	100%
3	Muamalat Malaysia	70.5%	76.6%	76.3%	85.2%	81.2%	79.4%	70.2%
4	CIMB Malaysia	100%	100%	100%	100%	100%	95.6%	100%
5	RHB	84.4%	90.1%	100%	100%	100%	100%	100%
6	PIB	100%	100%	100%	100%	100%	100%	100%

Source of data processed DEA Analysis

By DEA data processing method, the CRS assumption test results from banking in Malaysia. In 2010, only 1 of 5 Banks was judged to be efficient based on the CRS assumption, namely CIMB Malaysia. The other Banks, such

as Affin, Bank Islam Malaysia, Muamalat Malaysia, and RHB are considered inefficient. Affin only reached 88.9% of the value, RHB only 84.4%, Bank Islam Malaysia 71.9% and Muamalat Malaysia with the lowest percentage value is around 70.5% and judged far from the efficient point according to CRS about 100%.

In 2011, there was an increase from the only one bank to two banks that were considered efficient based on the assumption of CRS. Bank Islam Malaysia managed to improve all aspects of Banking so that it is considered efficient based on CRS assumption test. While the three other Banks are still considered less efficient in 2011. Increasing in the efficient level of banking in Malaysia continues to increase because in 2012 there are 4 Banks are considered efficient by CRS, and at least there is only one Bank that still failed to reach the efficient point, namely Muamalat Malaysia. 2013 is also the same as in 2012. Muamalat Malaysia has not been assessed efficiently based on CRS because it only reaches an efficient level of 85.2%. While the other four Banks are still as stable as in the previous year.

By 2014 the state of Banks in Malaysia has declined to an efficient level. 3 Banks are considered inefficient based on the assumption of CRS. The first is Muamalat Malaysia with an efficient level of 81.2%, then Bank Islam Malaysia with a percentage of 81.9% and the last one is CIMB Malaysia with 95.6%. In the next two years, 2015 and 2016, based on data obtained by CRS assumption, the conditions of Banks in Malaysia have reached an efficient level, but Muamalat Malaysia is judged to be efficient under CRS. From that frame, there is only one Bank which always considered in an efficient based on the CRS assumption, that is PIB, the value is always stable at 100%.

Based on CRS assumption result from both Banking conditions (Indonesia and Malaysia), each Bank, at least achieved an efficiency once time from 2010 to 2016. However, the condition of Malaysia Banking seems to be no more efficient than Indonesia because during that time there is at least one Bank that never reached an efficiency, namely Muamalat Malaysia whose those efficiency level presentation is under 100%.

4.1.1.2 Description and Comparative Analysis of VRS Model Efficiency Values

After discussing DEA analysis result based on the CRS assumption, table 4.3 shows the assumption of VRS about Indonesia Banking. There are 10 DMUs which conducted VRS tests from Indonesia Banking. Here is the VRS assumption data.

Table 4.3 DEA Result of VRS Model of Islamic Banking in Indonesia The Year of 2010-2016

	DMU	VRS						
		2010	2011	2012	2013	2014	2015	2016
1	Bank Syariah Mandiri	100%	100%	100%	100%	100%	100%	100%
2	Bank Muamalat	100%	100%	100%	100%	100%	100%	100%
3	BNISyariah	100%	100%	100%	100%	100%	100%	100%
4	BRI Syariah	100%	100%	100%	90.3%	100%	100%	100%
5	Mega Syariah	100%	90.5%	100%	100%	97.3%	98.8%	98.8%
6	BJB Syariah	100%	100%	100%	100%	59.6%	100%	100%
7	BCA Syariah	100%	100%	100%	100%	100%	100%	100%
8	Victoria Syariah	100%	100%	100%	100%	100%	100%	100%
9	Panin Syariah	86.5%	100%	100%	100%	100%	100%	100%
10	Bukopin Syariah	100%	100%	100%	100%	100%	100%	100%

Source of data processed DEA Analysis

Based on the data from 10 DMUs assumed by VRS, almost all Banks have achieved an efficiency in each year. Such as Bank Syariah Mandiri, Muamalat, BNI Syariah, BCA Syariah, Victori Syariah, and Bukopin are stable and managed to maintain their efficiency level from 2010 to 2016. But there are also many Banks that do not succeed in achieving efficient performance in a certain year. BRI Syariah at first in three years (2010-2012) succeeded in achieving efficiency, but in 2013 BRIS only achieved 90.3% percentage rate which was declared inefficient based on VRS assumption. BJB is also same as BRIS, did not manage to achievement efficiently in 2014 with a percentage less than 100%, i.e., 59.6%. Panin Syariah also failed to reach an efficient point based on VRS assumption in 2010, but in the following year always reached efficiently. From the several Banks, Mega Syariah is experiencing more inefficiency based on VRS assumption, four years inefficient and only three years succeed to reach efficiently precisely in 2010, 2012, and 2013. The VRS assumption was done in Malaysia by generating the following data.

Table 4.4 DEA Result of VRS Model of Islamic Banking in Malaysia The Year of 2010-2016

	DMU	VRS						
		2010	2011	2012	2013	2014	2015	2016
1	Affin	100%	100%	100%	100%	100%	100%	100%

2	Bank Islam Malaysia	99.1%	100%	100%	100%	100%	100%	100%
3	Muamalat Malaysia	73%	100%	76.4%	100%	100%	100%	100%
4	CIMB Malaysia	100%	100%	100%	100%	100%	100%	100%
5	RHB	100%	100%	100%	100%	100%	100%	100%
6	PIB	100%	100%	100%	100%	100%	100%	100%

Source of data processed DEA Analysis

According to the VRS assumption in Malaysia, Banking in Malaysia in the period 2010 to 2016 always reaches its efficient point. Except in 2010, Bank Islam Malaysia is considered inefficient with the presentation of VRS assumption of 99,1%. Muamalat Malaysia is also the same as Bank Islam Malaysia, in 2010 its only reached the percentage of efficient figures of 73% and considered inefficient. It happened again in 2012 which resulted in a 76,4% presentation where the percentage rated is less than 100% and declared inefficient based on VRS assumptions. By the assumption of CRS and VRS, it was seen if the composition of inefficient banking much more when examined using the assumption of CRS rather than VRS. It shows many factors that influence the efficiency of banking by overall technical efficiency are due to scale efficiency factor.

4.1.1.3 Targeting

Target setting is the parental value of a variable that must have been achieving by a company or DMU that has not succeeded in achieving an efficiency value for the company to be more efficient. Here are many samples of targeting based on the assumption of CRS and VRS banking in Indonesia in the frame of 2010 to 2016 and targeting of individual companies/banks that have not achieved an efficiency.

1. Panin Syariah

Setting targets to achieve an efficient level of a company/banking is determined by several factors, and it did in various ways such as subtracting or adding a percentage of an asset. The following table 4.5 describes DEA data based on the assumption of CRS and VRS.

Table 4.5 The Target of Bank Inefficiency in Indonesia year of 2010

The target of bank inefficiency in Indonesia, 2010 (in thousand rupiahs)

		CRS		VRS
		Name of bank		Name of bank
No	Explanation	BRI Syariah	Panin Syariah	Panin Syariah
1	Total deposit	5,096	309	309
	Target (%)	0	0	0
2	Fix asset	92	26	26
	Target (%)	0	-42.91	-63.78
3	Labor cost	189	8	8
	Target (%)	-30.81	0	0
4	Total Financing	5,414	141	141
	Target (%)	6.93	22.08	49.39
5	Operation profit	9	-10,971	-10,971
	Target (%)	3.63	-141.81	-133.47
6	Total asset	6,856	458	458
	Target (%)	6.93	22.08	15.55
7	Profit	-23	-7	-7
	Target (%)	-726.11	-158.53	-144.60

Source of data processed DEA analysis method

Table 4.5 describes the targets to be achieved or controlled to achieve efficient data. For example, on the assumption of CRS Panin Syariah. Total deposits of Panin Syariah indicate a nominal of 309,866.91 with 0% target, which means that the total deposits are appropriate and to be efficient against Panin Syariah. But in fixed assets, Panin detected the value is about 26,423.82 will be efficient if it subtracts the target of 42.91% to achieve an efficiency. Panin Syariah Labor cost has reached the point of efficiency at the number of 8,390.19. And the last, Panin Syariah must add 22.08% to achieve total financing value of 141,525.48. If the addition and subtraction are by the target, then the efficiency of a company can be achieved.

2. Bank Syariah Mandiri

In 2011, assumed of CRS according to DEA method analysis in Bank Syariah Mandiri and produce the following data.

Table 4.6 The Target of Bank Inefficiency in Indonesia year of 2011

The target of bank inefficiency in Indonesia, 2011 (in thousand rupiahs)						
		CRS				VRS
		Name of bank				Name of bank
No	Explanation	Bank Syariah Mandiri	BNI Syariah	BRI Syariah	Mega Syariah	Mega Syariah
1	Total deposit	42,615	6,756	9,351	4,933	4,933
	Target (%)	0	0	0	0	0
2	Fix asset	511	47	125	61	61
	Target (%)	0	0	0	0	0
3	Labor cost	946	183	302	305	305
	Target (%)	0	0	-6.74	-53.90	-65.88
4	Total Financing	29,069	4,877	8,970	3,468	3,468
	Target (%)	27.88	24.35	4.46	36.35	10.44
5	Operation profit	760	91	5	75	75
	Target (%)	13.42	4.11	2697.32	25.31	10.44
6	Total asset	48,671	8,466	11,200	5,564	5,564
	Target (%)	13.42	4.11	23.63	25.31	10.44
7	Profit	551	66	-12	53	53
	Target (%)	22.28	14.99	-1066.47	15.22	15.21

Source of data processed DEA Analysis method.

Total saving, fixed assets, and labor costs are respectively declared to be efficient according to the CRS assumptions for their respective values. However, the total financing of Bank Syariah Mandiri was said to be efficient when it reaches 29,069,271.83. Meanwhile, to achieve an efficient level of profit operations, the company must increase the target by 13.2%. Total assets also can be efficient at 48,671,950.00 and BSM profit can be efficient when it reaches 551,070.00 or in other words, must add the target till 22,28% to achieve profit value so the data can be efficient.

3. BNI Syariah

CRS assumption in 2013 to achieve efficiency of the company also researched and got the data as follows.

Table 4.7 The Target of Bank Inefficiency in Indonesia year of 2012

The target of bank inefficiency in Indonesia, 2012 (in thousand rupiahs)

No	Explanation	CRS Name of bank BNI Syariah	BRI Syariah	Bukopin
1	Total deposit	8,980	11,014	2,850
	Target (%)	0	0	0
2	Fix asset	97	123	58
	Target (%)	0	0	-13.325
3	Labor cost	317	323	48
	Target (%)	-31.74	-20.22	0
4	Total Financing	6,612	11,000	3,392
	Target (%)	14.70	16.91	10.60
5	Operation profit	141	131	26
	Target (%)	2.26	1.82	24.22
6	Total asset	10,645	14,088	3,616
	Target (%)	2.26	1.82	3.22
7	Profit	101	101	17
	Target (%)	59.57	11.75	74.93

Source of data processed DEA Analysis method

By table 4.7, BNI Syariah can be efficient because of total deposits at the number of 8,980,035.00 and fixed assets valued at 97,474.00. However, labor cost was considered by efficient when it is subtracting the target about 31.74% to achieve the value of labor cost about 317,072.0. Total financing also can be efficient if the value reaches about 6,612,403.00 and profit operational is also 141,227.00. For total assets, the company muss adding total assets of about 2.26% and profit target 590.57% so that the data becomes efficient.

4. BRI Syariah

After reviewing some example about targeting on CRS assumption, table 3.8 provides the data of BRI Syariah to be reviewed based on VRS assumptions.

Table 4.8 The Target of Bank Inefficiency in Indonesia year of 2013

The target of bank inefficiency in Indonesia, 2013 (in thousand rupiahs)						
		CRS				VRS
		Name of bank				Name of bank
No	Explanation	BNI Syariah	BRI Syariah	BCA Syariah	Victoria Syariah	BRI Syariah
1	Total deposit	11,488	13,794	1,703	1,083	13,794
	Target (%)	0	0	0	0	-0.47
2	Fix asset	102	163	18	14	163
	Target (%)	0	0	0	0	0
3	Labor cost	461	400	40	30	400
	Target (%)	-27.37	-6.02	-30.28	-51.78	0
4	Total Financing	10,368	13,778	1,332	1,441	13,778
	Target (%)	1.54	20.90	16.01	15.44	10.71
5	Operation profit	191	179	16	4	179
	Target (%)	1.54	20.90	20.38	151.10	20.61
6	Total asset	14,708	15,103	2,041	1,323	15,103
	Target (%)	1.54	20.90	15.94	15.44	10.71
7	Profit	117	60	12	6	60
	Target (%)	28.83	170.61	15.94	23.64	138.97

Source of data processed DEA Analysis method.

Based on the assumption of VRS in 2013, BRI Syariah considered efficient when total savings reach about 13,794,869.00. Or in other ways should reduce the target about 0.47% to achieve an efficient value. BRI Syariah's fixed assets and labor cost have reached an efficient point. Total financing considered efficient point if the number reaches to 13,778,051.00 and profit operation about 179,740.00. On total assets, data is assessed efficiently by adding 10.71% to reach the value of 15,103,717.00 and profit must be worth 60,807.00. If it is appropriate, then the data have been reaching an efficient.

5. Mega Syariah

As another sample that explains the targeting by the VRS assumption, table 4.9 will provide the data from Mega Syariah.

Table 4.9 The Target of Bank Inefficiency in Indonesia year of 2014

The target of bank inefficiency in Indonesia, 2014 (in thousand rupiahs)										
		CRS Name of bank							VRS Name of bank	
No	Explanation	Bank Syariah Mandiri	Bank Muamalat	BNI Syariah	BRI Syariah	Mega Syariah	Bank Jabar Syariah	Victoria Syariah	Mega Syariah	BJB
1	Total deposit	59,810	51,206	15,790	16,711	5,881	8,545	11,856	5,881	8,545
	Target (%)	0	0	0	0	0	0	-81.78	0	0
2	Fix asset	725	2,297	1,108	151	288	162	12	288	162
	Target (%)	0	-54.91	-86.3	-35.29	-83.01	-19.63	0	-55.88	0
3	Labor cost	1,359	860	644	447	339	124	31	339	124
	Target (%)	-10.44	-1.59	-1.59	-59.69	-79.63	0	-26.20	-68.70	-1.81
4	Total Financing	42,991	41,613	14,354	15,322	5,300	4,315	1,533	5,300	4,315
	Target (%)	25	81	0	0	85	0	8	85	0
5	Operation profit	98	97	222	9	23	35	-25	23	35
	Target (%)	292.04	116.13	0.95	3146.84	322.11	124.92	-264.36	331.03	174.48
6	Total asset	66,955	62,413	19,492	17,579	7,042	6,090	1,439	7,042	6,090
	Target (%)	14.66	6	0.95	16.25	3.11	77.91	83.46	2.75	69.46
7	Profit	74	57	139	20	17	29	-19	17	29
	Target (%)	259.18	94.19	14.58	1033.42	304.12	79.89	-256.12	304.74	136.27

Source of data processed DEA Analysis method.

Based on the table, indicating that the data has been efficient and does not need to be added or deducted total savings of Mega Syariah with value about 5,881,056.57. For fixed assets, Banks need to reduce fixed assets about 55.88% so that efficient data can be obtained. Similarly, in labor cost, the target should be reduced by 68.70% to achieve an efficiency. In total financing, the data can be efficient at 5,300,282.85 or in another case must be added by 2.75% in total assets to achieve an efficient value.

Table 4.10 Summary of the Results

Assumption	Indonesia	Malaysia
CRS	1. In 2014, almost all banks are inefficient 2. Every year there are always inefficient banks	Bank Muamalat Malaysia is inefficient since 2010-2016

VRS	I. The number of efficient banks increases, in 2012 all banks are efficient II. Banks experienced inefficiency every year is Mega Syariah	1. The number of efficient banks is increase 2. In 2011, 2013, 2014, 2015, 2016, all Islamic banks in Malaysia are efficient

The difference of results from 2 assumptions becomes an indication that this research is not robust. Therefore, it is necessary to do a spell research by adding assumptions. In addition, it is necessary to examine the input characteristics, more suitable to use the assumption of VRS or CRS.

According to the assumption of CRS, by 2014 almost all Islamic bank in Indonesia is inefficient. The factor from that inefficiency is in 2014 the United States experienced an economic slowdown, that leads increase in interest rate by The FED. Thus, there is a tendency for USD flows to tend to be stored in the US. Savings of USD can cause the strengthening of USD and weaken IDR. The weakening of the IDR has implications for the non-oil and gas exports and imports of Indonesia. The influence of an exchange rate on efficiency is expressed by Yudistira (2003) and Bank Muamalat Malaysia inefficient in every year because the total output or total finance and operational profit generated smaller than the total input in the form of total deposits, fixed assets, and labor cost.

5. Conclusion

Based on the results of DEA calculations, using both CRS and VRS assumptions shows varying efficiency scores. Some banks have achieved efficiency, but some of the other banks have not achieved efficiency yet. Inefficiency can be caused by the exchange rate swings against efficiency. Determining the efficiency of a banking system is also influenced by the performance and business of a Banking. For example, several factors that support banking to achieve their efficiency include the total savings, fixed assets, labor costs, total financing, profit operations, total assets, and the last one is profit.

In this research, we compared and measured the efficiency of Islamic Banking in Indonesia and Malaysia over period 2010-2016. This research compared 11 Islamic banks in Indonesia and 6 Islamic banks in Malaysia. The results of this research show that Islamic banks in Indonesia are relatively higher than Islamic banks in Malaysia based on the VRS assumption. The

source of inefficiency in Islamic banks in Indonesia is more due to the inefficiency on a scale. This research can become a reference for the policy maker to make a new regulation or for the Islamic banks' manager especially on improving the operation of Islamic banks to increase the efficiency. For the future researchers could consider to compare the Islamic bank's efficiency all over the world. From the calculation of targeting, if the bank wants to achieve efficiency, the Islamic bank must make the amount of output or input as shown in table 4.5 - 4.9.

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