

## **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 of this research 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

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### **1. Introduction**

Banking has an important role in economic activity in a country. Because of the ability of bank 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 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 the 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 banking is necessary to hold the principle of efficiency. The basic principle of efficiency is avoiding any form of wasting or inefficiency. There is no justification for letting this happen. Because, Efficiency in the banking sector in 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 represent as one of the central hubs of Islamic banking and finance. Islam has greatly influenced the economic growth of these countries 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 of 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. According to hr Ernst and young world Islamic banking competitiveness report 2013-14, Islamic banking assets reached US\$ 1.7 t in 2013 and succeed an annual growth of 17.6% over last four years in the world. Indonesia and Malaysia is two of the rapid growing markets together with Qatar, Turki, Saudi Arabia, UEA and (QISMUT countries ) and Bahrain. The development of Islamic banks in these both countries are rapid in terms of Islamic banking institution, total asset, third party funds, and total financing (OJK and BNM, 2014). Indonesian Islamic banking as one of national financial system, during twenty years has shown good performance (Zuhroh et al,2015) but unfortunately, in 2011 until 2014, Indonesia has experienced decrease of total financing that is more significant than Malaysia has. Whereas, if it is reviewed 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 DPK—to become financing.

## **2. Literature Review**

Batir et al (2017) reported In recent decades, there has been an increasing amount of literature on efficiency. There are various method for measuring management efficiency of bank (Ohsato and Takashahi,2014).One of them is Data Envelopment Analysis (DEA). DEA is a technique of Linier 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 of these approach methods, then it is formulated for the calculation of Scale Efficiency (SE) is formulated (Pratikto and Sugianto, 2011:110).

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-Jarraha & 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 efficiently using their inputs.

Some of study is compared efficiency Islamic bank with conventional bank like Yilmaz and Gunes (2015) comparing efficiency islamic banking with conventional banking sectors in turkey between 2007 – 2013 by using Data Envelopment Analysis (DEA). Batir et al (2017) analyzing efficiency of the banking sistem in turkey and compare the efficiency of participation bank and conventional bank by using data envelopment analysis (DEA). The result of the study is participation bank efficiency is higher than the conventional banks. Ascarya (2008) compared the efficiency of Islamic banks in Indonesia and Malaysia with intermediary approach and using Data Envelopment Anlysis (DEA) method. The result of the research shows that Islamic banks in Indonesia are more efficient than Islamic banks in Malaysia, but there is a significant difference between both of them. Because there is a development of Islamic bank that is so rapid followed by the widespread of socialization about Islamic bank, it is expected that there is a change in social attitude related to Islamic bank that becomes more acceptable, and also more prudent in managing Islamic bank for Islamic bank managers. Ohsato and Takahashi (2014) evaluated the management efficiency of Japanese regionals bank using DEA model uses two years data independently and the result is the first year more efficient than the 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 Data Envelopment Analysis (DEA) method. The results shows 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 with the intermediation function of Islamic banks 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 or not 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 Data Envelopment Analysis (DEA). Input variables this research are 1. Total deposits 2. Fixed Assets 3. Labor Cost and output variables 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 2010-2014. Sampling is done by purposive sampling. The sample criteria includes Islamic banks that have published its financial statements from December 2010 to December 2014, and it is neither foreign banks nor mixed banks. From the sample criteria obtained 10 banks in Indonesia and 6 banks in Malaysia.

#### *a. Data Analysis Technique*

##### **3.1. Data Envelopment Analysis**

This 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):

$$\max_k h = \frac{\sum_{j=1}^s u_j y_{rj}}{\sum_{l=1}^m v_l x_{rl}}$$

where:

$h$  = Value of Financing Efficiency

$u_j y_{rj}$  = Weighted Output (Total Financing and Operational Profit)

$v_l x_{rl}$  = Weighted Input (Total Deposits, Fixed Assets and Labor Cost)

The efficiency measurement in this research will use application tool of Data envelopment Analysis Program (DEAP) 2.1 Version. 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.

### 3.2. 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 datas of sample group I and sample group II are not same; iv. The datas are in scale of ordinal, interval, and ratio. The calculation of statistical test value of Mann-Whitney U-Test model is:

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

Or

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

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

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

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 smallest sample group

$R_1$ : Total sample rank of the biggest sample group

$R_2$ : Total sample rank of the smallest sample group

In this research, the calculation of statistical model of Mann-Whitney U-Test will be used by using SPSS 20 application program.

## 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 Analyst 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 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 the scale model assumption more.

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 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 3.1 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 an experienced, efficient conditions in a given year. Based on the following data Islamic Banking in Indonesia can be efficiently effected by overall technical efficiency.

**Table 3.1**

#### **DEA Result of CRS Model of Islamic Banking in Indonesia The Year of 2010-2016**

NO	DMU	CRS						
		2010	2011	2012	2013	2014	2015	2016
1	Bank Syariah Mandiri	100%	88.2%	100%	100%	87.2%	100%	97.4%
2	muamalat	100%	100%	100%	100%	94.3%	96.1	97.1%
3	Bnis	100%	96.1%	97.4%	98.5%	99.1%	100%	100%
4	Bris	93.5%	95.4%	98.2%	82.7%	98.3%	100%	100%
5	mega sy	100%	79.8%	100%	100%	97%	98.6%	100%
6	Bjb	100%	100%	100%	100%	56.2%	100%	98.6%
7	Bcas	100%	100%	100%	86.2%	100%	100%	100%
8	victoriasy	100%	100%	100%	86.6%	76.1%	100%	100%
9	paninsky	81.9%	100%	100%	100%	100%	100%	100%
10	Bukopin	100%	100%	96.9%	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 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 Victori 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%.

Also, 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**

NO	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%	95.6%	100%	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, 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 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 are only one Bank which always considered in an efficient based on the CRS assumption, that is PIB, the value is always stable at 100%.

By the CRS assumption result from both Banking conditions (Indonesia and Malaysia), it can saw that 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 CRS assumption, table 3.3 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 3.3**
**DEA Result of VRS Model of Islamic Banking in Indonesia  
The Year of 2010-2016**

NO	DMU	VRS						
		2010	2011	2012	2013	2014	2015	2016
1	Bank Syariah Mandiri	100%	100%	100%	100%	100%	100%	100%
2	muamalat	100%	100%	100%	100%	100%	100%	100%
3	bniis	100%	100%	100%	100%	100%	100%	100%
4	bris	100%	100%	100%	90.3%	100%	100%	100%
5	mega sy	100%	90.5%	100%	100%	97.3%	98.8%	98.8%
6	bjb	100%	100%	100%	100%	59.6%	100%	100%
7	bcas	100%	100%	100%	100%	100%	100%	100%
8	victoria sy	100%	100%	100%	100%	100%	100%	100%
9	panin sy	86.5%	100%	100%	100%	100%	100%	100%
10	bukopin	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 did in Malaysia by generating the following data.

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

NO	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 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 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 Targetting**

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 3.5**

**Target of Bank Inefficiency in Indonesia year of 2010**

		TARGET BANK INEFISIENSI INDONESIA TAHUN 2010			
		ASUMSI PENELITIAN	CRS		VRS
NO.	NAMA BANK		BRI SYARIAH	PANIN SYARIAH	PANIN SYARIAH
1	Total simpanan		5,096,596.00	309,866.91	309,866.91
2	TARGET (%)	0%	0%	0%	0%
3	Aset tetap	92,313.00	26,423.83	26,423.83	
4	TARGET (%)	0%	-42.91%	-63.78%	
5	Labor cost	189,999.00	8,390.19	8,390.19	
6	TARGET (%)	-30.81%	0%	0%	
7	Total financing	5,414,009.00	141,525.48	141,525.48	
8	TARGET (%)	6.93%	22.08%	49.39%	
9	Operasional profit	9,052.00	-10,971.93	-10,971.93	
10	TARGET (%)	3.63	-141.81%	-133.47%	
11	Total aset	6,856,386.00		458,713.30	
12	TARGET (%)	6.93%	22.08%	15.55%	
13	laba profit	-23,978.00	-7,172.60	-7,172.60	
14	TARGET (%)	-726.11%	-158.53%	-144.60%	

Source of data processed DEA analysis method

The table describes the targets to be achieved or controlled to achieve an 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 3.6**

**Target of Bank Inefficiency in Indonesia year of 2011**

TARGET BANK INFISIENSI INDONESIA TAHUN 2011						
		ASUMSI PENELITIAN	CRS			VRS
NO.	NAMA BANK		BANK SYARIAH MANDIRI	BNI SYARIAH	BRI SYARIAH	MEGA SYARIAH
1	Total simpanan		42,615,694.21	6,756,261.00	9,351,007.00	4,933,556.16
2	TARGET (%)	0%		0%	0%	0%
3	Aset tetap		511,063.09	47,720.00	125,327.00	61,937.47
4	TARGET (%)	0%		0%	0%	0%
5	Labor cost		946,822.01	183,764.00	302,475.00	305,364.25
6	TARGET (%)	0%		0%	-6.74%	-53.90%
7	Total financing		29,069,271.83	4,877,637.00	8,970,274.00	3,468,048.29
8	TARGET (%)	27.88%		24.35%	4.46%	36.35%
9	Operasional profit		760,822.71	91,936.00	5,071.00	75,693.99
10	TARGET (%)	13.42%		4.11%	2697,32%	25.31%
11	Total asset		48,671,950.00	8,466,887.00	11,200,823.00	5,564,662.06
12	TARGET (%)	13.42%		4.11%	23.63%	25.31%
13	laba profit		551,070.00	66,354.00	-12,324.00	53,886.66
14	TARGET (%)	22.28%		14.99%	-1066.47%	15.22%
						15.12%

Source of data processed DEA Analysis method

Total saving, fixed assets, and labor costs are respectively declared to be an efficient according to the CRS assumptions for their respective values. However, 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. NI Syariah

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

**Table 3.7**  
**Target of Bank Inefficiency in Indonesia year of 2012**

TARGET BANK INEFISIENSI INDONESIA TAHUN 2012					
		ASUMSI PENELITIAN	CRS		
NO.	NAMA BANK		BNI SYARIAH	BRI SYARIAH	BUKOPIN
1	Total simpanan		8,980,035.00	11,014,246.00	2,850,738.99
2	TARGET (%)		0%	0%	0%
3	Aset tetap		97,474.00	123,065.00	58,392.97
4	TARGET (%)		0%	0%	-13.325
5	Labor cost		317,073.00	323,383.00	48,996.79
6	TARGET (%)		-31.74%	-20.22%	0%
7	Total financing		6,612,403.00	11,000,637.00	3,392,297.21
8	TARGET (%)		14.70%	16.91%	10.60%
9	Operasional profit		141,227.00	131,035.00	26,161.87
10	TARGET (%)		2.26%	1.82%	24.22%
11	Total aset		10,645,313.00	14,088,914.00	3,616,107.51
12	TARGET (%)		2.26%	1.82%	3.22%
13	laba profit		101,892.00	101,888.00	17,297.94
14	TARGET (%)		590.57%	11.75%	74.93%

Source of data processed DEA Analysis method

By table 3.7, BNI Syariah can be efficient because 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 must add total assets 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 3.8****Target of Bank Inefficiency in Indonesia year of 2013**

TARGET BANK INEFISIENSI INDONESIA TAHUN 2013							
		ASUMSI PENELITIAN	CRS			VRS	
NO.	NAMA BANK		BNI SYARIAH	BRI SYARIAH	BCA SYARIAH	VICTORIA SYARIAH	BRI SYARIAH
1	Total simpanan		11,488,209.00	13,794,869.00	1,703,357.77	1,083,799.00	13,794,869.00
2	TARGET (%)		0%	0%	0%	0%	-0.47%
3	Aset tetap		102,349.00	163,163.00	18,558.30	14,126.64	163,163.00
4	TARGET (%)		'0%	'0%	'0%	'0%	0%
5	Labor cost		461,512.00	400,267.00	40,682.98	30,703.00	400,267.00
6	TARGET (%)		-27.37%	-6.02%	'-30.28%	-51.78%	0%
7	Total financing		10,368,559.00	13,778,051.00	1,332,057.80	1,441,660.00	13,778,051.00
8	TARGET (%)		1.54%	20.90%	16.01%	15.44%	10.71%
9	Operasional profit		191,716.00	179,740.00	16,561.40	4,412.00	179,740.00
10	TARGET (%)		1.54%	20.90%	20.38%	151.10%	20.61%
11	Total aset		14,708,504.00	15,103,717.00	2,041,418.84	1,323,398.20	15,103,717.00
12	TARGET (%)		1.54%	20.90%	15.94%	15.44%	10.71%
13	laba profit		117,462.00	60,807.00	12,701.02	6,362.55	60,807.00
14	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 3.9 will provide the data from Mega Syariah.

**Table 3.9**  
**Target of Bank Inefficiency in Indonesia year of 2014**

TARGET BANK INEFISIENSI INDONESIA TAHUN 2014											
		CRS							VRS		
NO	NAMA BANK	ASUMSI PENELITIAN	BANK SY MANDIRI	MUAMALAT	BNI SYARIAH	BRI SYARIAH	MEGA SYARIAH	BBJ	VICTORIA SY	MEGA SYARIAH	BBJ
1	Total simpanan TARGET (%)	59,810,009.73	51,206,272.60	15,790,810.00	16,711,516.00	5,881,056.57	8,545,926.00	11,856,886.00	5,881,056.57	8,545,926.00	
2	Aset tetap TARGET (%)	0%	0%	0%	0%	0%	0%	-81.78%	0%	0%	
3	Aset tetap TARGET (%)	725,404.52	2,297,070.00	1,108,900.00	151,925.00	288,660.57	162,185.00	12,707.73	288,660.57	162,185.00	
4	Labor cost TARGET (%)	1,359,776.2	-54.91%	-86.03%	-35.29%	-83.01%	-19.63%	0%	-55.88%	0%	
5	Total financing TARGET (%)	42,991,475.25	860,391.88	644,458.00	447,030.00	339,721.20	124,265.00	31,565.00	339,721.20	124,265.00	
6	Operasional profit TARGET (%)	-10.44%	-1.59%	-1.59%	-59.69%	-79.63%	0%	-26.20%	-68.70%	-1.81%	
7	Total asset TARGET (%)	98,935.84	97,619.80	222,323.00	9,887.00	23,164.74	35,537.00	-25,248.00	23,164.74	35,537.00	
8	Jenis profit TARGET (%)	19.18%	12.10%	0.95%	1.76%	3.11%	81.94%	31.4%	2.75%	71.60%	
9	Total profit TARGET (%)	292.04%	116.13%	0.95%	3146.84%	322.11%	124.92%	-264.36%	331.03%	174.48%	
10	Total asset TARGET (%)	66,955,600.63	62,413,310.00	19,492,112.00	17,579,299.00	7,042,486.46	6,090,945.00	1,439,983.32	7,042,486.46	6,090,945.00	
11	Jenis profit TARGET (%)	14.66%	6%	0.95%	16.25%	3.11%	77.91%	83.46%	2.75%	69.46%	
12	Total profit TARGET (%)	74,979.90	57,173.34	139,650.00	20,605.00	17,396.22	29,751.00	-19,337.90	17,396.22	29,751.00	
13	BBJ	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.

Asumtion	Indonesia	Malaysia
CRS	<ol style="list-style-type: none"> <li>1. In 2014, almost all banks are inefficient</li> <li>2. Every year there are always inefficient banks</li> </ol>	Bank Muamalat Malaysia is inefficient since 2010-2016
VRS	<ol style="list-style-type: none"> <li>1. The number of efficient banks is much more, even in 2012 all banks are efficient</li> <li>2. Banks experiencing inefficiency almost every year are Mega Syariah</li> </ol>	<ol style="list-style-type: none"> <li>1. The number of efficient banks is much more</li> <li>2. In 2011, 2013, 2014, 2015, 2016, all syariah banks in Malaysia are efficient</li> </ol>

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 Syariah Bank in Indonesia is inefficient. The Factor from that inefficiency is 2014 the United States experienced an economic slowdown, so The FED raised high interest rates. Thus there is a tendency for USD flows to tend to be stored in the US. Savings of USD in the as caused the strengthening of USD and weakening IDR. The weakening of the IDR has implications on 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 bank in Indonesia and 6 Islamic bank in Malaysia. The results of this research show that Islamic banks in Indonesia are relatively higher than Islamic banks in Malaysia based on VRS assumption. The source of inefficiency in Islamic banks in Indonesia is more due to the inefficiency on a scale. The finding of this research will be the reference for the policy maker to make a new regulation or for the manager banks should consider to improving the operation of Islamic banks to increase the efficiency. For the future researchers could consider to compared the Islamic Banks efficiency all over the world. From the calculation of targeting, if the bank wants to achieve efficiency, then the bank must make the amount of output or input as shown in table 3.5 -3.9

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