



The Efficiency of Commercial Banks in Financing MSME in Indonesia

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Abstract

This study aims to analyze the efficiency of commercial banks in MSME financing before and after the existence of Bank Indonesia Regulation Number 17/12/PBI/2015 in Indonesia. The data used in this study was data originating from 52 commercial banks that were recorded in the Financial Services Authority (OJK). The data analysis technique used in this study is a non-parametric method with a Data Envelopment Analysis (DEA) approach with input variables consisting of financial capital, third-party funds, operational costs, and the output variable used is MSME financing. The results showed that before the existence of Bank Indonesia Regulation Number 17/12/PBI/2015 there were seven commercial banks that were efficient in financing MSMEs, and after that regulation, there were twelve efficient commercial banks in financing MSMEs. The results showed that the significance value of 0.955 was greater when compared with the alpha value of 0.05. This proves that there is no difference in efficiency before and after the existence of Bank Indonesia Regulation Number 17/12/PBI/2015.

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INTRODUCTION

A Bank is a financial intermediary institution. Intermediation in banking is as a collector and distributor of public funds. Commercial banks offer various business services to the public such as collecting funds from the public in the form of demand deposits, time deposits, certificates of deposit, savings, and/or other similar forms. The bank is not only as a fund collector from the community but also as a distributor of funds to the community in the form of credit or financing.

Distribution of funds to the public has been intensified by the government for a long time. Financing or credit to MSMEs becomes a particular concern to the government. In Indonesia, MSMEs are the backbone in sustaining the national economy. This can be seen through the ability of MSMEs to build 56,539,560 business units or 99.9% compared to large businesses which were only 0.01% or 4,968 in the same year (Kemenkeu, 2015). However, the main problems of MSMEs are technological capabilities, human resources, access to marketing, networking, and capital. MSMEs have difficulty in obtaining financial capital from banks due to difficult material guarantees and high bank interest loans (Bank Indonesia, 2016).

Bank Indonesia Regulation Number 17/12/PBI/2015 concerning the provision of credit or financing by commercial banks and technical assistance in the context of developing micro, small and medium enterprises, makes the opportunity for MSMEs to obtain capital more easily and achieve increased distribution of funds from banks to micro, small and medium businesses. Banks are required to channel MSME loans by 20% of the total loans channeled in stages until 2018. The regulation explains bank liabilities channel credit to the minimum MSME sector by 5% at the end of 2015, then by 10% in 2016, 15% in 2017, and 20% in 2018.

The concept of modern efficiency was first introduced by Farrell (1957: 253-290) who could

consider multiple inputs (more than one). Farrell states that the efficiency of a company consists of two components, namely technical efficiency that reflects the ability of a company to maximize output with certain inputs and allocative efficiency which reflects the ability of a company to use inputs optimally with a price level which have been set. Both measures of efficiency are then combined to produce economic efficiency (total).

The definition of efficiency, in general, is the ability of a business unit to achieve business targets by using the minimum available resources. There are several methods usually used to measure the efficiency of an analysis unit or commonly called a Decision-Making Unit (DMU) (Sari and Suprayogi, 2015).

Efficiency indicators can be seen by considering the size of the ratio of operating expenses to operating income (BOPO) and the ratio of Non-Performing Financing (NPF). Banking performance can be said to be efficient if the BOPO and NPF ratio decreases. In addition, efficiency can also be seen by taking into account the growth of the level of bank performance indicators such as total deposits, financing, and total assets. The greater the amount of deposits, financing, and total assets shows the better and more productive banks in their operations is.

Banking efficiency is not only measured by comparing the indicators of banking performance and financial ratios, but there are also several other methods, namely parametric and non-parametric approaches. The parametric approach includes Stochastic Frontier Approach (SFA), Distribution-Free Approach (DFA) and Thick Frontier Approach (TFA), while non-parametric with the Data Envelopment Analysis (DEA) approach (Purwanto and Widyarti, 2012).

The following chart is the development of the MSME credit debit tray after the existence of Bank Indonesia Regulation Number 14/22/PBI/2012 which was revised with Bank Indonesia Regulation Number 17/12/PBI/2015:

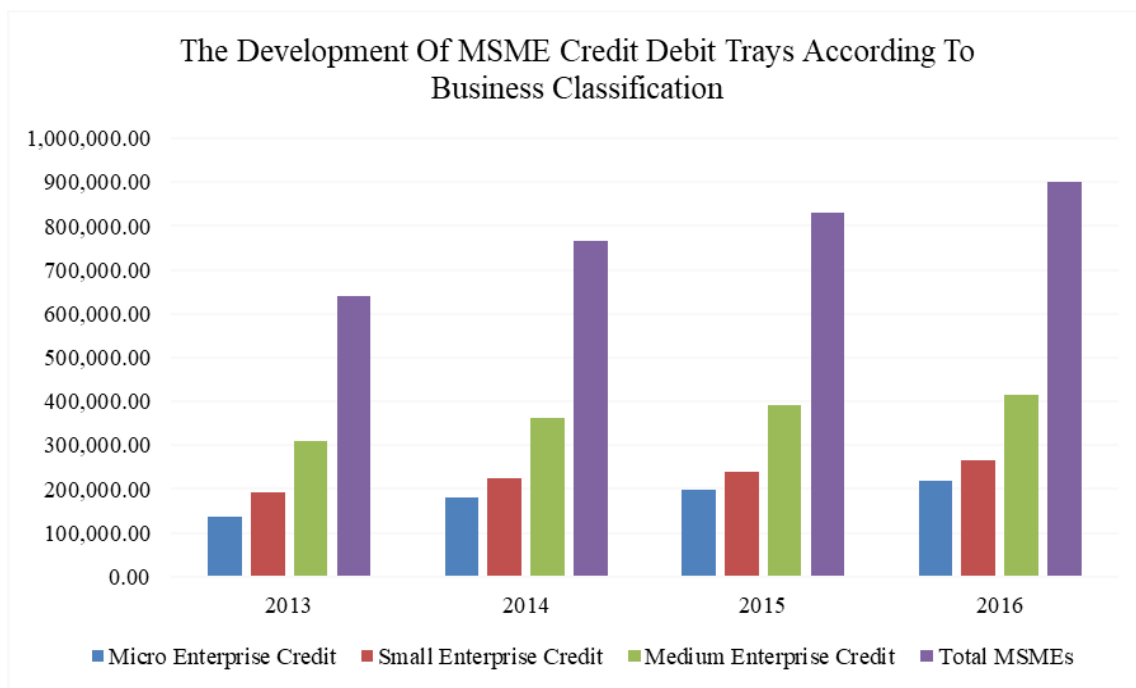


Figure 1. Development of Debit Credit Tray for MSME Credit (Billion IDR)

Source: Bank Indonesia, 2016

Based on Figure 1, we can see that the development of MSME loans after the Bank Indonesia Regulation Number 14/22/PBI/2012 was revised with Bank Indonesia Regulation Number 17/12/PBI/2015, from 2013 to 2016 each year MSME loans always experienced enhancement. In 2013 the total MSME loans amounted to 639,471.5 (billion rupiahs), in 2014 it increased to 767,577.6 (billion rupiahs), in 2015 amounting to 830,656.2 (billion rupiahs), and in 2016 increased by 900,389.8 (billion rupiahs).

The effect of credit interest rate on the efficiency of financial or banking intermediary institutions can be said to be inconsistent. In other words, when the credit interest rate increases, the efficiency of the bank will be decrease or inefficiency. Conversely, when the credit interest rate decreases, the more efficient the bank is. The development of the risk of lending or NPL (Non-Performing Loans) in 2013-2017 is shown in Figure 2.

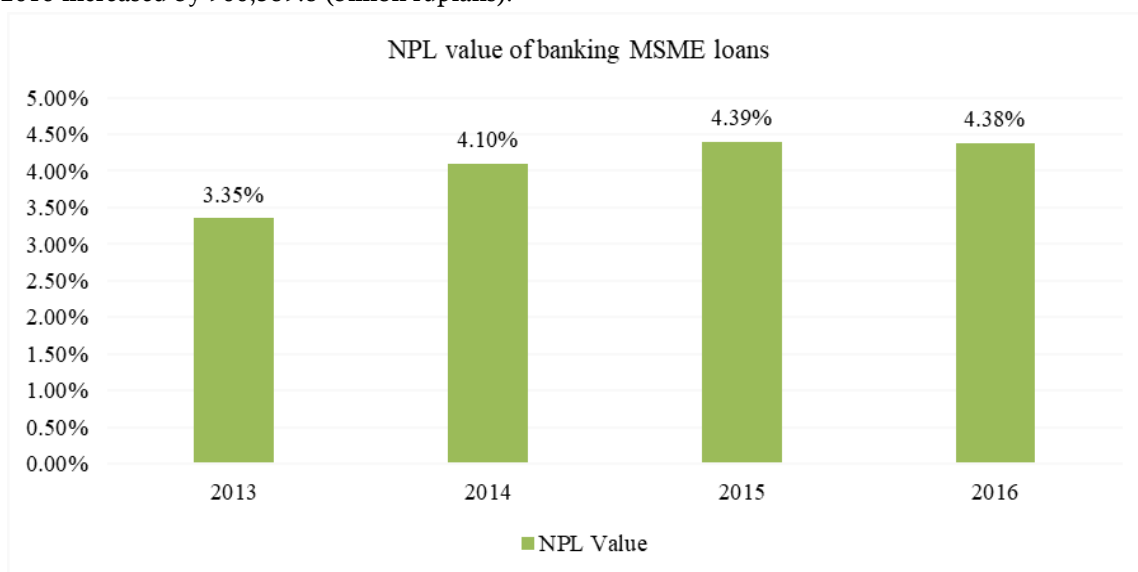


Figure 2. Developments of NPLs for Banking MSME Loans

Source: Bank Indonesia, 2016

Based on Figure 2 we can see that the development of gross NPLs in 2013 and 2016 tended to increase. The average increase in the gross NPL ratio per year is 0.39%. The highest increase in gross NPL ratio was from 2013 to 2014, which was 0.75%. While the decline in the gross NPL ratio that occurred from 2015 to 2016 was 0.01%. From these data it can be seen that every year gross NPL has increased, this indicates that there is inefficiency in the bank.

MSME loans can be a profitable business. However, managing distribution and collection of loans in large island countries is difficult. This is why the MSME credit potential has not been widely used. In 2016, the banking sector provided loans of Rp. 4,505 trillion, but only Rp. 900 trillion is intended for MSMEs, with Bank Rakyat Indonesia (BRI) as the bank that disburses the most credit to the MSME sector. However, millions of MSMEs in Indonesia are still having difficulty obtaining bank loans, there are many reasons. Many MSMEs are in areas where there are no bank branches, so banks find it difficult to reach these small businesses and serve them. In addition, without the right infrastructure, verification or underwriting (risk assessment) and loan collection require not a small amount of money (Bank Indonesia, 2017).

Many types of research on banking efficiency are carried out, with different perspectives. From a number of journals which talk regarding differences in efficiency between conventional commercial banks and Islamic commercial banks. Sakti and Mohammad in 2015 received DEA results which showed that Islamic banks were relatively more efficient than conventional banks, as indicated by higher overall efficiency. Ramly and the Hakim in 2017 obtained the results of DEA measurements. There were 9 Islamic banks DMUs which were declared to be perfectly efficient, and 11 DMUs that were declared inefficient. Whereas in conventional 7 banks, the DMU produced an efficient scale, and 13 banks were considered to be less efficient in their capacity. Feicylliasari, Ditta, and Suprayogi in 2015 found that Islamic banks have a level of financing efficiency with a relatively lower assumption of CRS and Scala Efficiency but have a level of financing efficiency assuming VRS is

relatively higher when compared to conventional commercial banks.

The research on bank efficiency in terms of regional or country. Kamarudin dan Yahya in 2013 obtained the results of differences in the level of cost efficiency and profits in the Malaysian banking sector not influenced by income efficiency, but more influenced by internal and external factors. Shawtari, Ariff, and Razak in 2015 obtained the results of research that the banking industry in Yemen is generally in a trend of efficiency decreasing with increasing instability during the study period. Khan, Samsudin, and Islam in 2016 obtained empirical results implying that bank efficiency has increased in Malaysia and the Philippines, but for Indonesia and Thailand still lagging behind in terms of Meta Technology Ratio (MTR).

There are also those who discuss bank efficiency from the size of the bank or type of bank. Lee, Joo, and Park in 2016 got results among the three bank groups, namely national banks, regional banks, and special banks, special banks showed outstanding performance in all efficiency measurement models and in all years (2010-2014). Azad, Teng, and Talib in 2017 obtained empirical results from this study that only a few banks in Malaysia had good performance in turning savings and equity into profits and minimizing loan loss provisions. Kamarudin, Hue, and Sufian in 2017 got results that foreign Islamic banks are slightly more productive than domestic Islamic banks, increasing efficiency change (EFCH) is higher but not significantly different.

Research on bank efficiency that addresses the financing of the SME or MSME sector has been a determining factor for bank efficiency by several researchers. In 2016, Anwar got the result that state-owned banks were the most efficient when the SME sector financing was included in the calculation of efficiency. However, when the SME sector financing was excluded, foreign banks became more efficient compared to state-owned banks. In 2016, Nisa found that the average credit growth to MSMEs for the period January 2013 to December 2015 (after regulation) decreased compared to the period January 2011 to December 2012 (before the regulation). Nurdianita in 2015 conducted a study that found

that bank efficiency had increased from the average number ratio of 0.77 before the regulation period to 0.82 in the period after regulation.

METHODS

The type of data used in this study was secondary data obtained from the Financial Services Authority (OJK). Furthermore, the library collection is carried out by reviewing literary books, journals, papers, and the internet to obtain theoretical foundations, developments, and answer the problems about the efficiency of commercial banks in financing MSMEs.

The population in this study is all commercial banks registered with the Financial Services Authority. The total population is 117 conventional commercial banks and sharia commercial banks consisting of 4 Commercial Banks or State-Owned Banks, 59 National Private Commercial Banks, 27 Regional Development Banks, 16 Mixed Banks, and 11 Foreign Banks. The sampling method used is nonprobability sampling, which is the type of purposive sampling. The sample used is 52 commercial banks consisting of 4 State-Owned Commercial Banks and 48 National Private Commercial Banks.

The samples used consisted of: (1) BUMN: Mandiri Bank, Rakyat Indonesia Bank, Nasional Indonesia Bank, dan Tabungan Negara Bank. (2) BUSN: Amar Indonesia Bank, Artos Indonesia Bank, Central Asia Bank, Bisnis Indonesia Bank, BRI Agrobisnis, Tabungan Pensiun Negara Bank, Bukopin Bank, Bumi Arta Bank, Capital Indonesia Bank, China Chonstruction Bank, CIMB Niaga Bank, Danamon Bank, Dinar Indonesia Bank, Fama International Bank, Ganesha Bank, Harda International Bank, HSBC Indonesia Bank, Ina Perdana Bank, Jasa Jakarta Bank, JTRUST Indonesia Bank, Keb Hana Indonesia Bank, Kesejahteraan Ekonomi Bank, Mandiri Taspen Bank, Maspion Bank, Mayapada Bank, Maybank Bank, Mayora Bank, Mega Bank, Mestika Dharma Bank, Mitraniaga Bank, MNC International Bank, Multiarta Sentosa Bank, National Nobu Bank, Nusantara Parahyangan Bank, OCBC NISP Bank, Oke Indonesia Bank, Pan Indonesia Bank, Permata Bank, Prima Master Bank, QNB Indonesia Bank, Royal Indonesia Bank, Sahabat Sampoerna Bank, SBI

Indonesia Bank, Sinar Mas Bank, Shinhan Indonesia Bank, UOB Indonesia Bank, Victoria Indonesia Bank, Yudha Bakti Bank.

The efficiency of commercial banks in this study was analyzed using non-parametric methods, namely Data Envelopment Analysis (DEA). By using input variables consisting of capital, third-party funds, and operational costs. Meanwhile, the output is financing for MSMEs. DEA method is able to identify the output or input of a bank that is used as a reference that can help find the cause and way out of the source of inefficiency of a bank. It can be said that DEA can be used to measure the level of efficiency of banks in general.

The purpose of hypothesis testing in the form of examines the difference using a t-test is to determine whether two unrelated samples have different mean values. In this analysis, we can see the value of the t-test to determine whether there are significant differences in mean values. The significance used is 95% with $\alpha=0.05$. Decision making in different testing of t-test to examine the hypothesis, H_0 = there is no difference in the efficiency of commercial banks before and after the Bank Indonesia Regulation Number 17/12/PBI/2015, H_1 = there are differences in the efficiency of commercial banks before and after the regulation. The provisions are as follows:

1. If the value of Sig. (2-tailed) > 0.05, then H_0 is acceptable.
2. If the value of Sig. (2-tailed) < 0.05, then H_0 can be rejected.

RESULTS AND DISCUSSION

This research measures the efficiency of commercial banks using the DEA (Data Envelopment Analysis) method. The approach used is intermediation. Commercial banks are said to be efficient if they have an efficiency level of 1 or 100%, but if the efficiency is less than 1 or 100% it will declare as inefficient or inefficient commercial banks.

The results of measuring the efficiency of commercial banks in MSME financing in Indonesia showed that they have not all achieved efficiency. The results of calculating the efficiency of commercial banks before and after Bank Indonesia Regulation Number 17/12/PBI/2015

can be seen in Table 1. There are seven banks that have been efficient in financing MSMEs prior to the regulation. They are BRI Bank, Amar Bank, Artos Bank, Bukopin Bank, Fama Bank, Kesejahteraan Bank, dan Prima Master Bank.

Banks whose efficiency value approaches 1 is Royal Bank with an efficiency value of 0.995. Then the next position is Oke Bank with an efficiency value of 0.972, Bisnis Bank with an efficiency value of 0.908, Pan Indonesia Bank with an efficiency value of 0.841, Mandiri Taspen Bank with an efficiency value of 0.781, Sahabat Bank with efficiency value 0.760, Danamon Bank with efficiency value 0.754, Shinhan Bank with an efficiency value of 0.733, Nusantara Bank with an efficiency value of 0.729, UOB Bank with an efficiency value of 0.724. Then banks with the lowest efficiency value are Sinar Mas Bank with an efficiency value of 0.063. Then the next position is QNB Bank with an efficiency value of 0.084, Mayapada Bank with an efficiency value of 0.099, Victoria Bank with an efficiency value of 0.099, MNC Bank with an efficiency value of 0.110 and JTRUST Bank with an efficiency value of 0.117.

After the Bank Indonesia Regulation Number 17/12/PBI/2015, efficient banks in financing MSMEs reached 12 banks, namely BRI Bank, Amar Bank, Artos Bank, Bisnis Bank, Bukopin Bank, Danamon Bank, Fama Bank, Mandiri Taspen Bank, Oke Bank, Prima Master Bank, Royal Bank, Sahabat Bank with the value of efficiency 1. From these results, banks that are consistently efficient in financing MSMEs are BRI, Amar Bank, Artos Bank, Bukopin Bank, Fama Bank, and Prima Master Bank.

After the Bank Indonesia Regulation Number 17/12/PBI/2015, banks whose efficiency value is close to 1, namely the Kesejahteraan Bank with an efficiency value of 0.776. Then the next position is Pan Indonesia Bank with an efficiency value of 0.711 and Mitra Niaga Bank with an efficiency value of 0.706. Banks with the lowest efficiency scores are Mayapada Bank, QNB Bank, MNC Bank, Victoria Bank, Sinar Mas Bank and Permata Bank, with efficiency values of 0.054, 0.092, 0.094, 0.100, 0.104 and 0.108 respectively. Bank efficiency values were obtained from the contribution of input and output variables.

Table 1. The Results of Average Calculation of Commercial Banks Efficiency Before and After Bank Indonesia Regulation Number 17/12/PBI/2015

Name of Bank	Before BIR	After BIR	No	Name of Bank	Before BIR	After BIR
Mandiri	0.350	0.332	27	Mandiri Taspen	0.781	1.000
BNI	0.353	0.431	28	Maspion	0.375	0.381
BRI	1.000	1.000	29	Mayapada	0.099	0.054
BTN	0.487	0.342	30	Maybank	0.461	0.596
Amar	1.000	1.000	31	Mayora	0.559	0.552
Artos	1.000	1.000	32	Mega	0.345	0.177
BCA	0.250	0.317	33	Mestika	0.703	0.470
Bisnis	0.908	1.000	34	Mitraniaga	0.572	0.706
BRI Agro	0.281	0.459	35	MNC	0.110	0.094
BTPN	0.510	0.475	36	Multiarta	0.580	0.486
Bukopin	1.000	1.000	37	Nationalnobu	0.469	0.286
Bumi Artha	0.487	0.570	38	Nusantara	0.729	0.633
Capital	0.173	0.134	39	OCBC	0.317	0.626
China	0.506	0.629	40	Oke	0.972	1.000
CIMB	0.317	0.321	41	Pan Indonesia	0.841	0.711
Danamon	0.754	1.000	42	Permata	0.251	0.108
Dinar	0.500	0.535	43	Prima Master	1.000	1.000
Fama	1.000	1.000	44	QNB	0.084	0.092
Ganesha	0.570	0.420	45	Royal	0.995	1.000

Harda	0.596	0.584	46	Sahabat	0.760	1.000
HSBC	0.132	0.153	47	SBI	0.224	0.188
Ina	0.519	0.544	48	Sinarmas	0.063	0.104
Jasa	0.486	0.600	49	Shinhan	0.733	0.520
JTRUST	0.117	0.148	50	UOB	0.724	0.543
Keb Hana	0.530	0.514	51	Victoria	0.099	0.100
Kesejahteraan	1.000	0.776	52	Yudha	0.441	0.353
				Efficiency Average	0.541	0.540

Source: Financial Services Authority, 2016

Based on the description of the discussion and table 1, it can be concluded that the efficiency of commercial banks before and after Bank Indonesia Regulation Number 17/12/PBI/2015 as in table 2:

Table 2. The Efficiency of Commercial Banks Before and After Bank Indonesia Regulation Number 17/12/PBI/2015

	Before Regulation	After Regulation
Number of Banks	52	52
Number of Efficient Banks	7	12
Number of Inefficient Banks	45	40
Average Efficiency Value	0.541	0.540
Efficient Banks	BRI Bank, Amar Bank, Artos Bank, Bukopin Bank, Fama Bank, Kesejahteraan Bank, Prima Master Bank	BRI Bank, Amar Bank, Artos Bank, Bukopin Bank, Danamon Bank, Fama Bank, Mandiri Taspen Bank, Oke Bank, Prima Master Bank, Royal Bank, Sahabat Bank
Bank with The Most Approaching Efficiency to 1	Bisnis Bank, Danamon Bank, Mandiri Taspen Bank, Nusantara Bank, Oke Bank, Pan Indonesia Bank, Royal Bank, Sahabat Bank, Shinhan Bank, UOB Bank	Kesejahteraan Bank, Mitra Niaga Bank, Pan Indonesia Bank
Banks with the Lowest Efficiency	JTRUST Bank, Mayapada Bank, MNC Bank, QNB Bank, Sinar Mas Bank, Victoria Bank	Mayapada Bank, MNC Bank, Permata Bank, QNB Bank, Sinar Mas Bank, Victoria Bank

Source: Financial Services Authority, 2016

Based on Table 2, it is known that before Bank Indonesia Regulation Number 17/12/PBI/2015 out of fifty-two banks there were seven banks that were efficient in financing MSMEs namely BRI Bank, Amar Bank, Artos Bank, Bukopin Bank, Fama Bank, Kesejahteraan Bank, Prima Master Bank. Following the regulation, there are twelve banks that are efficient in financing MSMEs, namely BRI Bank, Amar Bank, Artos Bank, Bisnis Bank, Bukopin Bank, Danamon Bank, Fama Bank, Mandiri Taspen Bank, Oke Bank, Prima Master Bank, Royal

Bank, and Sahabat Bank. From these results, banks that are consistently efficient in financing MSMEs both before and after the existence of Bank Indonesia Regulations Number 17/12/PBI/2015 are BRI Bank, Amar Bank, Artos Bank, Bukopin Bank, Fama Bank, and Prima Master Bank.

The average efficiency ratio before Bank Indonesia Regulation Number 17/12/PBI/2015 is 0.541 or 54.10%. This means that on average the production of outputs in commercial bank efficient frontiers only uses 54.10% of the inputs

currently used, so there is an inefficient use of input by 45.90%. Besides, after the regulation, it was on 0.540 or 54%. This means that the average on the production of outputs in public bank efficient frontiers only uses 54% of the inputs currently used, so there is an inefficient use of input by 46%.

In addition to calculate the average efficiency of commercial banks before and after the regulation, to reinforce the answer to the research hypothesis, the hypothesis testing is carried out using a t-test. Based on the calculation results, it obtained the outcome as in table 3 below:

Table 3. Different Test Results for t-test of Commercial Banks Before and After Bank Indonesia Regulation Number 17/12/PBI/2015

Paired Samples Test		
Mean		0.00094
Std. Deviation		0.12105
Std. Error Mean		0.01679
95% Confidence Interval of the Difference	Lower	-0.03276
	Upper	0.03464
t		0.056
df		51
Sig. (2-tailed)		0.955

Source: Financial Services Authority, 2016

Based on table 3, it shows that the result of sig. (2-tailed) is 0.955. Because the results are sig. (2-tailed) is 0.955 which means greater than 0.05, then H_0 cannot be rejected or must be accepted. It can be said that the results of the different t-test experiment have no difference in the efficiency of commercial banks before and after the existence of Bank Indonesia Regulation.

Based on the analysis conducted by the researchers, it found that the performance of commercial banks has decreased after the existence of the regulation. Although this decline is not significant, it is supported by the results of different t-test experiment which state that there is no difference in the efficiency of commercial banks before and after the Bank Indonesia Regulation Number 17/12/PBI/2015. The results of this analysis are not in line with the research conducted by Nurdianita (2015), who also examined the performance of banks before and

after the existence of Bank Indonesia Regulations. The results of Nurdianita's research state that the performance of commercial banks after the existence of the regulation has increased the efficiency of the distribution of MSME financing. The difference in conclusions occurs, one of the causes is the research variable and research sample where the research conducted by Nurdianita only uses two input variables namely DPK and operational costs while this study uses three input variables namely capital, DPK, and operational costs. Regarding the research sample, Nurdianita took eight commercial banks while this study took fifty-two commercial banks.

Whereas, the research that is in line with the results of the analysis in this study is research from Nisa (2016). The results of Nisa's study state that the banking performance after the existence of Bank Indonesia Regulation Number 14 of 2012 has decreased the efficiency of the distribution of MSME financing. Based on the research, the regulation has not had a significant impact on increasing financing for MSMEs. The conclusion equation occurs because the research variable where the research conducted by Nisa is the same as the variables in this study, namely capital, DPK, and operational costs.

CONCLUSION

Efficiency measurement results prior to Bank Indonesia Regulation Number 17/12/PBI/2015 included seven efficient commercial banks in MSME financing, namely BRI Bank, Amar Bank, Artos Bank, Bukopin Bank, Fama Bank, Kesejahteraan Bank, and Prima Master Bank. Besides, 45 other commercial banks are inefficient. After the regulation, there are twelve efficient commercial banks in MSME financing, namely BRI Bank, Amar Bank, Artos Bank, Bisnis Bank, Bukopin Bank, Danamon Bank, Fama Bank, Mandiri Taspen Bank, Oke Bank, Prima Master Bank, Royal Bank, and Sahabat Bank. While 40 other commercial banks are showing the inefficiencies.

There is no difference in efficiency before and after the existence of Bank Indonesia Regulation Number 17/12/PBI/2015. It is proved by the results of different tests the significance value is 0.955 which is greater than the alpha

value of 0.05. Then based on the results of the DEA analysis, there is a decrease in the average efficiency of commercial banks before and after the existence of Bank Indonesia Regulation Number 17/12/PBI/2015 which is 0.001. This value is very small, so it has no effect and it can be concluded that there is no difference in efficiency.

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