Analysis of Banking Efficiency in Indonesia (Case Study in General Banks of Business Activities Level 2 Go Public)

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January 18, 2020

ANALYSIS OF BANKING EFFICIENCY IN INDONESIA (CASE STUDY IN GENERAL BANKS OF BUSINESS ACTIVITIES LEVEL 2 GO PUBLIC)

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Abstract
This efficiency is calculation of the ratio between input and output variables. This research is using non-parametric Data Envelopment Analysis (DEA) for General Banks of Business Activities (BUKU) level two banks which registered at IDX with period of analysis in 2014- 2018. To analyze its efficiency by using intermediary approach, there are two variables which consist of input variables i.e. labor cost, third party funds and fixed asset, and the output variables i.e. total financing, operating income and current assets. The sample analysis are taken from all population banks in BUKU II that already Go Public, which consist of two sharia banks, and sixteen conventional banks (four foreign banks, one state-owned bank and eleven national private banks). The result of this study shown that foreign bank and national private bank had consistency and better level of efficiency compared other bank during 2014-2018. Shariah bank was able to achieved the best level of efficiency (Bank BTPN Syariah in 2018). Most of foreign bank were able to achieved level of efficiency (Bank Woori Saudara in 2014 & 2018, Bank QNB Indonesia in 2015 & 2018, Bank of India in 2014, 2015 & 2016). In national private bank, there were only four bank that able to achieved, which were Bank Ina Perdana (2014, 2015, 2016 & 2017) Bank Victoria (2017 & 2018), Bank Nationalnobu (2014) and Bank Sinarmas (2016). There was no state-owned bank, in this achieved level of efficiency

Keywords: Data Envelopment Analysis, Banking Efficiency, Go Public, Intermediary Approach

BACKGROUND
Regional and global dynamic developments, as well as to support Indonesia's economic growth optimally and sustainable, are needed to increase the resilience, competitiveness and efficiency of the national banking industry. In order to increase the resilience, competitiveness and efficiency of national banks, it is necessary to restructure the scope of business activities and the opening of office networks that are adjusted to the bank's capital capacity. This condition was taken into consideration by Bank Indonesia to issue Bank Indonesia Regulation No.14 / 26 / PBI / 2012 concerning Business Activities and Office Networks based on Bank Core Capital. In Article 3 of

the provisions, this regulation classified Banks into 4 categories of General Banks of Business Activities (BUKU) based on core capital, namely:
1. BUKU 1 is a Bank with a Core Capital of <Rp1 trillion .
2. BUKU 2 is a Bank with Core Capital between IDR 1 trillion - IDR 5 trillion .
3. BUKU 3 is a Bank with Core Capital between IDR 5 trillion - IDR 30 trillion .
4. BUKU 4 is a Bank with a Core Capital > = IDR 30 trillion .

The development of banking in BUKU 2 shows diverse dynamics in both conventional banks and sharia banks during the period of 2015 - 2018. Together with the growth of financing or credit and third party fund collection that occurs in BUKU 2 of conventional banks and sharia banks has caused an impact in financing to deposit ratio (FDR) ratio. In BUKU 2 conventional banks, an average FDR during 2015 - 2018 has reached 95.27%, whilst for sharia banks has reached 84.61%. The increase raised on sharia Bank third party during 2017 to 2018, certainly has an impact on the high cost of funds for sharia banks in BUKU 2.

The impact of these developments is further seen from the development of profits obtained in sharia banks which larger than conventional banks. In conjunction with the increase in performance obtained by BUKU 2 conventional banks and sharia banks, capital has also increased. The biggest increase occurred in sharia banks compared to conventional banks. Furthermore, several financial ratios at BUKU 2 banks are presented in the following Table 1:

Table 1. BUKU 2 Bank Financial Ratio

FINANCIAL RATIO	Conventional Banks BUKU 2				Sharia Banks BUKU 2			
	2015	2016	2017	2018	2015	2016	2017	2018
Capital Adequacy Ratio (CAR)	23.05%	23.72%	26.47%	26.28%	14.96%	17.78%	18.68%	22.12%
Operational Cost / Operating Income (BOPO)	85.48%	85.38%	86.33%	86.21%	96.03%	91.58%	92.21%	85.67%
ROA	1.62%	1.66%	1.57%	1.54%	0.48%	1.08%	0.94%	1.58%
Loan to Deposit Ratio (LDR)	97.81%	98.04%	91.22%	94.03%	90.55%	89.21%	80.18%	78.51%

(Source: Indonesian Banking Statistics - Financial Services Authority)

Regarding operational management, the increase in operational costs of BUKU 2 sharia banks is greater than conventional banks. On average during 2014 – 2018, the increase in operational costs in sharia Banks was 10.91%, much higher than conventional banks which on average during 2014 - 2018 were able to reduce operating costs by -0.64%. However, the increase in operational costs was also followed by an increase in the operating income of sharia banks which was larger than conventional banks. Sharia banks have been able to increase the average operating income in 2014 - 2018 by 15.09%, which is greater than conventional banks whose average dropped by -0.94%. This is certainly a challenge on how efficient efforts are made both by conventional banks and sharia banks that can be done to be able to manage their operations efficiently.

For this reason, it is necessary to conduct a more strategic study related to the level of efficiency that exists in the bank groups in BUKU 2. At the end, banks, especially banks in BUKU 2 categories, need to find a strategy to be able to increase revenue and to be able to improve their performance in order to compete with other banks. This trend encourage this research to carried

out analysis of efficiency and determination of strategies in the bank groups in BUKU 2 from the perspective of practical banking applications and practices that will create and guarantee the sustainability of banks in Indonesia.

OBJECTIVE AND POTENTIAL CONTRIBUTIONS

Until June 2019, there are 59 banks in BUKU 2 bank categories. Based on data obtained from the Indonesia Stock Exchange, there are 18 banks in BUKU 2 classied as of them public companies or go public with variable core capital of Rp.1 trillion to under of Rp.5 trillion. In order to conduct an analysis of efficiency analysis in BUKU 2 bank group, especially for BUKU 2 banks that already go public. The eighteen BUKU 2 banks are based on their total assets representing 70.45% of the total assets of 19 BUKU 2 banks that exist. The nine banks are 1) BTPN Syariah Bank, 2) Victoria Bank, 3) Mestika Dharma Bank, 4) BRI Agro Bank, 5) QNB Indonesia Bank, 6) BRI Syariah Bank, 7) Artha Graha Internasional Bank, 8) Woori Saudara Bank and 9) Sinarmas Bank. The following is a summary of the financial ratios for the nine banks as in table 2 below:

Table 2. Summary of 2018 Financial Ratios of Nine BUKU 2 Banks Go Public

No	Bank Name	Asset (Milion Rupiah)	CAR (%)	NPL Gross (%)	ROA (%)	ROE (%)	BOPO (%)	LDR (%)
1	BTPN Syariah Bank	12,039,275	40.92	1.39	12.37	30.82	62.36	95.60
2	Victoria Bank	28,360,624	16.73	3.48	0.33	3.41	100.24	73.61
3	Mestika Dharma Bank	12,175,309	34.58	2.33	2.96	9.01	68.09	86.93
4	BRI Agro Bank	23,363,910	28.34	2.86	1.54	5.80	82.99	86.75
5	QNB Indonesia Bank	20,490,684	26.50	2.49	0.12	0.42	99.43	72.59
6	BRISyariah Bank	38,480,749	29.72	6.73	0.43	2.49	95.32	75.49
7	Artha Graha Internasional Bank	26,109,836	19.80	5.99	0.27	1.43	97.12	77.18
8	Woori Saudara Bank	29,782,514	23.04	1.72	2.59	13.01	70.39	145.26
9	Sinarmas Bank	30,803,601	17.60	4.74	0.25	1.12	97.62	84.24
10	Bank of India	3,896,760	39.46	4.90	0.24	0.94	97.65	99.48
11	Jtrust Indonesia Bank	17,845,096	14.03	4.26	-2.25	-29.13	116.32	77.43
12	MNC International Bank	10,854,855	16.27	4.10	0.74	5.43	93.51	88.64
13	Bumi Arta Bank	7,297,274	25.52	4.45	1.77	6.81	81.43	84.26
14	Capital Bank	18,019,614	18.66	2.95	0.90	8.46	92.11	51.96
15	Ganesha Bank	4,497,122	31.85	4.25	0.16	0.51	97.57	87.81
16	Ina Perdana Bank	3,854,174	55.03	2.43	0.50	0.97	93.06	69.28
17	Nationalnobu Bank	11,793,981	23.27	0.97	0.42	3.39	94.77	75.35
18	Maspion Bank	6,694,024	21.28	2.14	1.54	6.35	87.25	100.87

(Source: Indonesian Banking Statistics - Financial Services Authority)

All banks in BUKU 2 banks that have listed show different performance based on the performance in December 2018. Based on the total assets held, the biggest is BRI Syariah Bank which is Rp 38.48 Trillion and the lowest is Ina Perdana Bank, which is Rp 3.85 trillion. The largest capital adequacy ratio (CAR) owned by BTPN Syariah, which is 40.92% and the lowest is owned by Bank Victoria which is 16.73%.

The purpose of the study was to analyze the level of efficiency in banks in BUKU 2 categories that had listed in IDX, while the specific objectives of the study is to measure the level of efficiency in BUKU 2 bank categories that had listed. The purpose of research is expected to provide the benefits in the form of a thorough understanding of the level of efficiency in banks in BUKU 2 categories that had listed, dynamically in the short term and long term.

METHODS AND DATA
According to Hadad et.al. (2003), there are several approaches that can be used to explain the relationship of input and output of financial institutions, namely the production approach, intermediary approach, and asset approach. This intermediary approach sees financial institutions as intermediaries. These financial institutions change and transfer financial assets, from excess funds to units that are underfunded. Output in this approach is to measure through credit loans and financial investments, whilst institutional inputs are labor and capital costs and interest payments on deposits. Basically the intermediary approach is complementary to the production approach. The intermediary approach describes banking activities as transforming money borrowed from depositors into money lent to debtors.

The thinking framework of this study was developed from several previous studies relating to the assessment of efficiency in commercial banks based on an intermediary and production approach. Based on the research, it can be explained that the research carried out measurement of the level efficiency banks in BUKU 2 go public that has been listed using Data Envelopment Analysis (DEA). The study design was carried out using a descriptive approach using secondary data. The analysis is done by using Data Envelopment Analysis (DEA) to find out the value of efficiency banks in BUKU 2 go public. The approaches are used to determine the efficiency value, namely the intermediary approach. The input and output variables for the two approaches area) Input Variables : Labor Costs, Third Party Funds, Fixed Assets; b) Output Variables : Total Loan, Operational Income, and Current Assets.

Efficiency analysis uses Data Envelopment Analysis techniques. Data Envelopment Analysis (DEA) is a mathematical program optimization method that measures the efficiency of a Decision Making Unit (DMU) technique, and compares it relative to other DMUs. DEA analysis techniques are specifically designed to measure the relative efficiency of a DMU in conditions of many inputs and outputs. The relative efficiency of a DMU is the efficiency of a DMU compared to other DMUs in the sample using the same type of input and output. DEA formulates DMU as a fractional linear program to find a solution, if the model is transformed into a linear program with the weight values of input and output.

This research was conducted in March to April 2019 of nine banks in BUKU 2 categories in Indonesia that had listed or go public. The study was conducted in Jakarta using secondary data with a range of years from 2014 to 2018. As for the object of research are 9 (nine) banks in BUKU 2 in Indonesia that had listed or go public, namely BRI Syariah Bank, Sinarmas Bank, Woori Saudara Bank, Victoria Bank, Artha Graha Internasional Bank, BRI Agro Bank, QNB Indonesia Bank, Mestika Dharma Bank, BTPN Syariah Bank

RESULTS
The analysis has been completed, using the Constant Return to Scale (CSR) model which is represented by the CCR value and the VRS Variable Return to Scale (VRS) model which is represented by the BCC value. In the CSR model it is assumed that the ratio between the addition of input and output is the same (constant return to scale). Additionally, if there is an additional input of a certain amount, then the output will increase by a certain amount as well. Another assumption used in this model is that each company or Decision Making Unit (DMU) operates on an optimal scale. For the VRS model, adding an input of a certain size will not cause the output to increase by a certain size, it can be smaller or larger. Increasing proportions can be increased return to scale (IRS) or can be a decreasing return to scale (DRS).

The results of research conducted in 2014 using the CSR model, followed by either the input or output approach which achieved by four banks with optimum efficiency, namely Ina Perdana Bank, Bank of India, Nationalnobu Bank, Woori Saudara Bank. In 2015, there were only three banks that achieved optimum efficiency, namely Ina Perdana Bank, Bank of India, QNB Indonesia Bank. Further, in 2016 achieved by Ina Perdana Bank, Bank of India and Sinarmas Bank, and in 2017 achieved by Ina Perdana Bank and Victoria Bank. Whereas in 2018, there are four banks, namely BPTN Syariah, QNB Indonesia Bank, Victoria Bank, Woori Saudara Bank.

The next analysis is carried out using the VSR model, using either the input or output approach, so there is generally no significant difference with the analysis carried out using the CSR model. The differences in the results was occurred in 2014, where the results of analysis with the VSR model are six banks that achieve optimum efficiency values, i.e. BTPN Syariah Bank, Ina Perdana Bank, Bank of India, Nationalnobu Bank, Victoria Bank and Woori Saudara Bank. Meanwhile, in 2015 there were four banks that achieved optimum efficiency values, namely Ganesha Bank, Ina Perdana Bank, Bank of India Bank and QNB Indonesia Bank. In 2017 the number of banks that achieved optimum efficiency with the VSR model amounted to four banks, namely Capital Bank, Ina Perdana Bank, Nationalnobu Bank, and Victoria Bank. And in 2018 the number of banks that achieved optimum efficiency with the VSR model amounted to eight banks, namely BRI Agro Bank, BRI Syariah Bank, BTPN Syariah Bank, Capital Bank, Jtrust Bank, QNB Indonesia Bank, Victoria Bank, and Woori Saudara Bank

Furthermore, the results of the analysis carried out also provide results of several banks that become a reference or reference for efficiency. In 2014, banks that were referred to as efficiency level were Nationalnobu Bank and Bank of India, in 2015 banks were made a lot of efficiency references were QNB Indonesia Bank, Ina Perdana Bank and Bank of India. In 2016, there are three banks that become efficiency references, namely Sinarmas Bank, Ina Perdana Bank and Bank of India, in 2017 there were two banks, namely Ina Perdana Bank and Victoria Bank. And in 2018 there are two banks, namely Bank Woori Saudara, and BTPN Syariah Bank.

The results of research produced in general have results that are in line with what has been done by some previous studies regarding measurement of efficiency in banks in Indonesia. But what distinguishes this research from other studies is that it is located on the object being analyzed. Other research regarding the level of efficiency of banks in Indonesia is also done by Rubeda, et al (2012). In this study aims to analyze the efficiency of banks in Indonesia for the period 2007-2009. The analytical tool used is Data Envelopment Analysis (DEA). Data is sourced from

financial statements of commercial banks published by Bank Indonesia. The results of the DEA analysis show that in general commercial banks in Indonesia have not yet reached the level of efficiency, especially national private banks. This is evidenced from 21 commercial banks, only 7 banks that have achieved efficiency, consisting of 2 state banks, namely BRI and BTN, 3 banks namely West Java BPD, East Java BPD, 1 private bank, namely commercial banks and 1 Islamic bank, Muamalat Bank. This fact shows that the performance of banks in Indonesia is still not maximal with the use of waste on several input variables used by banks in their economic activities.

Analysis of efficiency in addition to commercial banks has also been carried out on Rural Credit Banks (BPR) in the Jabodetabek area by using the acceleration of Data Envelopment Analysis by Hartono (2008). The purpose of the study is to measure and analyze the level of efficiency of BPRs and formulate steps that can be done to improve the efficiency of BPR in the variables studied. In this study the scope was Conventional Rural Banks in the Jabodetabek area in the period 2005-2007.

Efforts to improve, in order to improve efficiency, which is characterized by the lowest efficiency value, need to be done by several banks in the form of increasing output from the resources they already have. Based on the CRS model approach, using the input and output approach, the bank is based on the results of the analysis that has been carried out, so there are several banks that have the lowest value, Maspion Bank (2014-2015), Artha Graha International Bank (2016-2017), Bumi Arta Bank (2018). The results of the analysis using the VRS model, the banks that have the lowest efficiency value are Artha Graha International Bank (2014-2018), Bumi Arta Bank (2015-2018.

CONCLUSION
Based on intermediary approach, the results showed that in 2014, there were two national private bank (Bank Ina Perdana and Bank Nationalnobu), and two foreign bank (Bank of India and Bank Woori Saudara) that shown the level of efficiency. In the 2015, there were only two foreign bank (Bank QNB Indonesia and Bank of India) and only one national private bank (Bank Ina Perdana) that shown the level of efficiency. In the 2016, there were three bank that achieved efficiency, one was foreign bank (Bank of India) and the other was two national private bank (Bank Ina Perdana and Bank Sinarmas). In 2017, there were two national private bank (Bank Ina Perdana and Bank Victoria) that shown the level of efficiency. And in 2018, there were four bank has achieved efficiency : one shariah bank (Bank BTPN Syariah), two foreign bank (Bank Woori Saudara and Bank QNB Indonesia) and one national private bank (Bank Victoria)

Shariah bank was able to achieved the best level of efficiency (Bank BTPN Syariah in 2018). Most of foreign bank were able to achieved level of efficiency (Bank Woori Saudara in 2014 & 2018, Bank QNB Indonesia in 2015 & 2018, Bank of India in 2014, 2015 & 2016). In national private bank, there were only four bank that able to achieved, which were Bank Ina Perdana (2014, 2015, 2016 & 2017) Bank Victoria (2017 & 2018), Bank Nationalnobu (2014) and Bank Sinarmas (2016). There was no state-owned bank, achieved level of efficiency

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