Determinan Analysis of Net Interest Margin and Banking Profitability in Indonesia

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Abstract: *This study aims to analyze the factors that influence the net interest margin and profitability of Indonesian banks caused by liquidity, the level of problem loans, non-interest income, efficiency and asset growth. This type of research is a descriptive study with secondary data. Analysis of the data used using the method of multiple linear regression analysis with time series periods of the period 2014 - 2018 multiple linear analysis method is used to see the factors that affect the net interest margin and profitability of Indonesian banks. All of the data processing in this study uses the Eviews 10 and SPSS 26 measurement tools. From this study it was found that net interest margins affect liquidity and levels of problem loans and profitability is influenced by net interest margins, efficiency and levels of problem loans.*

Keywords: Profitabilitas, net interert margin, Indonesian of Banking

1. INTRODUCTION

Kasmir (2014) Revenue Bank is a business entity that collects funds from the public in the form of deposits and channel them back to the community in the form of credit or other forms in order to improve the lives of many people. Banks have the risk to control the circulation of funds from the public, therefore the spread (the difference in interest) between savings and loan facilities is used as a reserve for possible losses incurred by banks due to non-current loans. According to Triwahyuniat (2008) the function of banks to provide loan facilities is to get profitability and safety, profitability is aimed at getting the results of loans in the form of interest benefits that must be paid by customers. While safety is a security measure of the loan facility provided must be guaranteed so that the main goal of the bank is profitability can be achieved (Kasmir 2014).
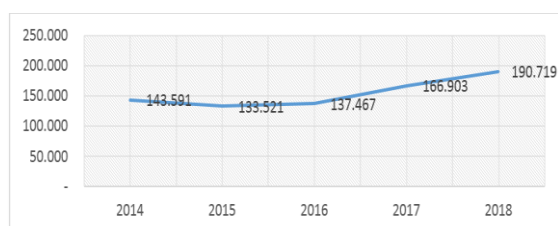
(Rp) In billion rupiah
Figure 1: Profit / Loss

Based on Figure 1 Profitability of banks in Indonesia experienced a decline in profit / loss in 2014-2015, different in the following period in 2015-2018 banking profit / loss in Indonesia always experienced profitability growth. The data above provides information that banks in Indonesia in the last 3 years showed consistency in generating profit / loss.

Sofyan (2003) believes that profitability is an appropriate indicator to measure the performance of a bank. The financial performance of a bank can be measured using several financial ratios, such as NIM (Net Interest Margin), LDR (Loan to Deposit Ratio), CAR (Capital Adequacy Ratio), ROA (Return On Asset), NPL (Non Performing Loans) and BOPO (BOPO (Operating Expenses / Operating Income).
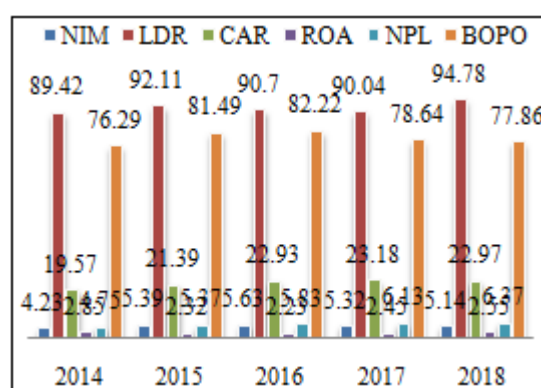

Banking Performance Ratio (%)
Figure 2: Ratio of banking performance

Based on Figure 2 from the Financial Services Authority (OJK) statistical data source, there are several ratios to measure the soundness of a bank. At present the credit that generates interest is indeed still the main engine of bank income. Based on Figure 2 during the period 2014-2016 the NIM ratio has increased but, the last 2 years 2017 and 2018 have decreased.

Based on Figure 2 above the performance of banks in Indonesia, Net interest margin or spread as one of the important aspects in the intermediation process is a key indicator in the efficiency of financial intermediation in banks. Large spreads in the deregulation environment indicate minimal competition in the banking system or represent a certain degree of monopoly (Patti and Dell'Ariccia 2004). Then spreads that are too large can burden the public savings and investment potential in the economy. On the other hand, too low spreads can affect bank profit margins imposing on base capital, so that it can make banks vulnerable to shocks especially if there is no capital adequacy due to market movements such as interest rates (Kunt and Huizinga 1999).

Based on the above background profitability is the main goal of banks to achieve profit. Indonesian banking in the period 2014 to 2018 was stable with an average profit of eight percent, not as significant as the achievement of net interest margins of banks in Indonesia which grew by two percent

per year and in the last two years had decreased net interest margins by nine percent 9 percent per year.
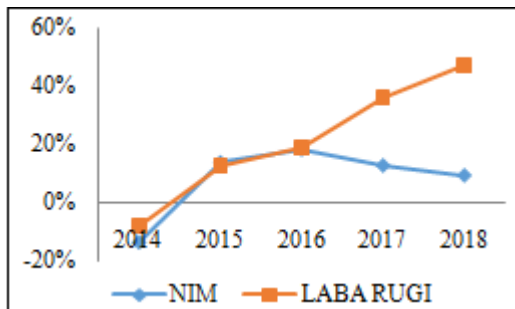
Figure 3: Indonesian banking profit with a proxy for net interest margin

Based on Figure 3 in that period the average bank profit has increased in the last 2 years of the period but is inversely proportional to the net interest margin. Based on the background and problems that have been formulated above, the purpose of this study is to:
1) Analyze the factors that affect NIM and the profitability of banks and NIM as well as the profitability of each group of commercial banks in Indonesia
2) Formulate strategies that can be considered by banks to maintain profitability growth and keep the bank's net interest margin stable

2. Literature Review

Determinant Theory of Net Interest Margin in Banking Regulations
The equation function used in determining what factors significantly influence bank spreads in the banking industry is the Kannan, Narain and Ghosh (2001) model. In the journal they conducted research in India in the 1995-1996 period up to the 1999-2000 period, Kannan, Narain and Ghosh (2001) in their research stated that: First, bank size does not have much effect on high spreads. Second, high non-interest (fee) income causes banks to tolerate low spreads. Third, with regard to government regulation variables, it is found that capital has an important role in influencing spreads on commercial banks. Fourth, non-performing assets generally have an important role in all banking groups in influencing spreads.

Determinant of the Bank's interest margin and profitability
Kunt and Huizinga (1999) in a journal examine the differences in spreads and profitability of banks in several countries due to several factors such as bank characteristics, macroeconomic conditions, explicit and implicit bank taxation, regulations on deposit insurance, financial structure, and institutional indicators and regulations. Greater banking asset and gross domestic product ratios and lower market concentration ratios lead to lower margins and profitability. Then in the study it was found that foreign banks have higher margins and profits than domestic banks in developing countries, while this is contrary to conditions in developed countries. Then there is the fact that the corporate tax burden is charged directly to the customer, while not with a minimum statutory reserve, especially in developing countries.

Market Concentration, Foreign Ownership and Bank Spreads
Peria and Mody (2003) in their research looked at the impact of the entry of foreign banks and the concentration of the banking market on spreads in Latin America in the 1990s. Using banking data in Argentina, Chile, Colombia, Mexico, and Peru the study has several objectives. First this study examines the conditions that affect foreign banks to operate at low spreads, which benefit the customer. This is called own effect on the presence of the foreign bank. Both of these studies look at the effect of the methods used by foreign banks to enter the banking market. In other words this study looks at banks entering the banking market with the acquisition of domestic banks or by starting a business from scratch. These three studies look at the spillover effect resulting from the entry of foreign banks into the banking market. These four studies look at the impact of market concentration on spread.

3. Research Methods

3.1 Reaserch Data

This study uses secondary data which is panel data from companies in the banking industry. The author uses the Indonesian Banking Directory data from OJK, the data is in the form of financial reports from all banks operating in Indonesia. These categories are based on ownership and type of operation. In this data there are approximately 114 companies each year. The time span of this study was conducted in the period 2014, 2015, 2016, 2017 and 2018 based on the latest data published by the OJK.

3.2 Variables

The form of financial statements released by OJK through Indonesian banking statistics has been standardized so that the accounts in each financial statement can be used as a consistent measurement at each bank. The variables used are:

NIM = $(Total\ Interest\ Income - Total\ Interest\ Expenses)/(Total\ Asets)$
$SIZE$ = $Logaritma\ of\ total assets$
FEE = $(Non\ Interest\ income)/(Total Assets)$
LG = $(Total\ Revenue - Total\ Cost)/(Total\ Revenue)$
CAR = $Capital\ Adequacy\ Ratio$
NPL = $Non Performing Loan$
$BOPO$ = $(Operating\ Cost)/(Gross Income)$
LDR = $(Total\ credit\ to\ third\ party)/((Total\ third\ party\ fund)$
ROA = $Return\ On\ Asset$

This data taken from the bank's financial statements are Total Interest Income, Total Interest Expenses, Total Assets, Total Revenue, Total Cost, Operating Cost, Gross Income, CAR, and NPL, LDR, BOPO, ROA. This study uses an econometric analysis tool in the form of computer software, namely EVIEWS 10 and SPSS 26. The study was conducted using panel data in the period 2014 to 2018.

4. Results and Discussion

4.1 Net Interest Margin (SPREAD) banking in Indonesia

The results of determining the data model selected in the table, then used in data processing to determine the factors that affect the net interest margin (SPREAD), both for the banking industry in Indonesia and based on commercial bank groups in Indonesia. The results of data processing on the factors that affect the SPREAD in full are presented in the table.

From this table, it is known that the coefficient of determination (R-squared) that explains the variation of all variable variables, both for internal variables and external variables used in this study, both for Indonesian banks and for each group of commercial banks in Indonesia differ. . Indonesian banking has a coefficient of determination of 94.51% or in other words internal and external variables used in this study can explain variations in the banking NIM variable in Indonesia by 94.16% and the remaining 5.84% can be explained and influenced by other variables which was not covered in this study. Likewise, variations in the SPREAD variables of the BUKU I, BUKU II, BUKU III and BUKU IV bank groups can be explained and influenced by other variables not covered in this study.

The SIZE variable has a negative effect on the net interest margin of BUKU II banks, BUKU III, BUKU IV and Indonesian banks or in other words can be interpreted if an increase results in a decrease in net interest margins but is inversely proportional to SIZE in BUKU I which has a positive effect indicating the presence of the increase in assets is able to increase the Indonesian banking net interest margin. During the period of December 2014 to December 2018, Indonesian banking assets continued to experience growth without an increase in net interest margins. The growth of Indonesian banking assets was due to an increase in productive assets which was dominated by an increase in the number of loans extended. The increase in the number of loans extended will increase bank interest income which will ultimately increase bank interest and net interest margins. The results of this study are not in accordance with research conducted by Kosmidou (2008) which states that the growth of bank assets (SIZE) has a positive relationship with NIM, but the results of this study are consistent with the results of research conducted by Sidabalok and Viverita (2011) and Manurung and Anugerah (2013), which states that the growth of bank assets has a negative influence on bank NIM.

FEE variable has a positive influence on the net interest margin of BUKU II banks and Indonesian banks in Indonesia or in other words if the FEE rises it will have an effect on increasing net interest margins, whereas for banks BUKU I, BUKU III and Indonesian banks non-interest income has a negative effect on Net interest margin due to an increase in non-interest income does not affect the net interest margin. The level of non-interest income of a bank makes the bank has a tolerance level for certain NIMs, the higher the non-interest income, the bank can tolerate lower NIMs, the FEE negatively affects the NIM (Kannan, Narain, and Ghosh, 2001).

The variables that significantly affect the net interest margin of banks in Indonesia at the level of 1% and 5% are:
Data Processed Results Table1

	KELOMPOK BANK				
VARIABEL	BUKU I	BUKU II	BUKU III	BUKU IV	PERBANKAN
SIZE	0.0225	-0.0165*	-0.0068	-0.0436*	-0.0081
FEE	-0.0053	0.0554	-0.0199	-0.1507	0.0027
LG	-0.0011	0.0197*	0.0363*	0.0596	0.0020
CAR	-0.0213	-0.0033	0.0410	0.0089	0.0026
NPL	-0.1160*	0.0732	0.0547	0.3586	-0.0644*
BOPO	0.0091	0.0034	0.0289*	0.0578	0.0041
LDR	0.0174*	0.0051*	0.0051	0.0117	0.0081**
R-squared	0.8338	0.9710	0.9419	0.9544	0.9416
Data Observasion	135	290	110	35	570
Model	FEM	FEM	FEM	FEM	FEM
Option Panel	Cross-section	Cross-section	Cross-section	Cross-section	Cross-section

*Signifikan 1%
**Signifikan 5%

Source: Data Processing Results

Market concentration (LG) in a statistically positive study of the net interest margins of BUKU II, BUKU III, BUKU IV banks and Indonesian banks. Market strength of a bank illustrates the degree of competition of the bank in the industry, the greater the market power, the greater the margin applied to the market. Kannan, Narain, and Ghosh (2001) whereas for BUKU I banks, this had a negative effect, indicating that BUKU I banks had lower market power compared to other BUKU banks.

The bank capital adequacy ratio (CAR) variable has a negative effect on BUKU I and BUKU II banks but has a positive effect on the net interest margin of BUKU III banks, BUKU IV banks and Indonesian banks. This shows that any increase in the bank's capital adequacy ratio in Indonesia will have an impact on the increase in the bank's net interest margin. This is because, the higher the capital adequacy ratio of a bank, the bank will have the ability to expand its business more and more, especially in increasing the amount of loans granted so that it will increase income on loan interest income, which in turn will increase the net interest margin (NIM). These results are consistent with the results of research conducted by McShane and Sharpe (1985) and research conducted by Brock and Suarez (2000).

The increase in bank operating costs is indicated by an increase in the ratio of operating costs to operating income (BOPO), which reflects that the growth in operating costs is greater when compared to the growth in operating income. The

Data Processed Results Table1 increase in the BOPO ratio will encourage banks to raise their NIMs. This is reflected in the Table above which shows that the banking NIM variable is positive. Every increase in BOPO will have an impact on the increasing banking NIM. The increase in NIM was done to cover the increase in operational costs. The results of this study are consistent with the results of research conducted by Brock and Suarez (2000), Lieberg and Schwaiger (2006), and Sidabalok and Viverita (2011). While the results of research conducted by Manurung and Anugerah (2013) stated that BOPO has a negative correlation with NIM.

Another variable that affects the net interest margin is the Loan to Depostit Ratio (LDR). This ratio has a positive positive effect. LDR is the ratio of the amount of credit to the amount of savings that banks have collected. The

increase in LDR reflects greater credit growth compared to the increase in deposit funds. This indicates that the increase in interest income is greater than the increase in interest costs so that it will increase the net interest margin. These results are consistent with the results of previous studies conducted by Kosmidou et al. (2005) and Tin et al. (2011). Kosmidou et al. (2005) argues that liquid funds generate comparatively lower profits than profits derived from lending, and if banks maintain sufficient liquid funds to optimize their productive assets in the form of credit, it will increase the net interest margin obtained.

4.2 Profitability (ROA) of banking in Indonesia

The results of determining the data model selected in the table, then used in data processing to determine the factors that affect Profitability (ROA) both for the banking industry in Indonesia and based on commercial bank groups in Indonesia. The results of data processing on the factors that influence ROA in full are presented in the table.

From this table, it is known that the coefficient of determination (R-squared) that explains the variation of all variable variables, both for internal variables and external variables used in this study, both for Indonesian banks and for each group of commercial banks in Indonesia differ. . Indonesian banking has a coefficient of determination of 88.37% or in other words internal and external variables used in this study can explain variations in banking ROA variables in Indonesia at 88.37% and the remaining 11.63% can be explained and influenced by other variables which was not covered in this study. Likewise, the variation in ROA variables of the BUKU I, BUKU II, BUKU III and BUKU IV bank groups can be explained and influenced by other variables not covered in this study.

Internal variables that influence banking Return on Assets (ROA) in Indonesia significantly at the level of 1% and 5%

Table 2: Data Processed Results

VARIABEL	KELOMPOK BANK				
	BUKU I	BUKU II	BUKU III	BUKU IV	PERBANKAN
NIM	0.1420	0.1284	0.2332*	0.3107*	0.1906*
SIZE	-0.0115	0.0060	-0.0093*	-9.00E-	0.0058
FEE	-0.0141	0.1124*	0.0747*	0.1179	-0.0104
LG	0.0024	0.0624*	0.0528**	-0.0170	0.0105*
CAR	0.0337*	0.0034	0.0487*	-0.0633*	0.0078
NPL	-0.1512*	-0.1375*	-0.1377*	-0.0075	-0.2002*
BOPO	-0.1100*	-0.0205*	-0.0153*	-0.1222**	-0.0606*
LDR	-0.0084*	-0.0009	0.0040	-0.0016	-0.0028*
R-squared	0.9183	0.9430	0.9095	0.9915	0.8837
Data Observasion	135	290	110	35	570
Model	FEM	FEM	FEM	FEM	FEM
Option Panel	Cross-section	Cross-section	Cross-section	Cross-section	Cross-section
*Signifikan 1%					
**Signifikan 5%					

Data Processed Results Table 2
Source: Data processing results

Net Interest Margin (NIM) variable significantly influences ROA of BUKU II, BUKU III, BUKU IV and Indonesian banking categories while the BUKU I bank has a positive direction. Net interest margin has a positive effect on bank profitability, the higher the net interest margin, the higher the bank's profitability.
(SIZE) the size of the company is negative towards ROA in BUKU I, BUKU III, and BUKU IV while the BUKU II

banks and Indonesian banks are positive towards profitability, with the higher value of asset growth showing increasing profitability towards BUKU II banks instead the negative direction obtained by banks BUKU I, BUKU III and BUKU IV are influenced by the value of productive assets that are not directly proportional to the value of bank profitability growth.

(FEE) operating income is significantly positive towards BUKU II, III ROA and positive for BUKU IV banks while negative for BUKU I and Indonesian banking. This shows that bank income is not only from interest income but also non-interest income such as fee base income, SKN (National Kriling System) etc.

(LG) The direction of the company is significantly positive towards ROA BUKU II, BUKU III, Indonesian banking and positive for BUKU I, BUKU II and Indonesian banking, it is inversely proportional to BUKU IV, the direction is negative towards ROA.

Capital (CAR) has a positive direction on ROA of BUKU I, BUKU II, BUKU III and Indonesian banking, on the other hand ROA BUKU IV has a significantly negative direction on the capital ratio (CAR). The higher the level of capital increase followed by increased profitability will further increase the confidence of outsiders towards the company. With the increase in external confidence in the company, making investors interested in investing their funds into the company and the more stable the level of sales results in a more stable level of profits obtained by the company, the greater the possibility of the company is able to meet its fixed obligations. also the profitability that will be obtained.

The ratio of non-performing loans (NPL) tends to be significantly negative towards BUKU I, BUKU II and BUKU III and Indonesian banking is significantly negative towards ROA, while NPL for BUKU IV has a negative direction towards ROA. This shows that the higher the level of problem loans will burden the profitability of banks due to the high level of problem loans will increase the allowance for loss of value income (CKPN) which results in eroded profitability.

Efficiency ratio (BOPO) is significantly negative to ROA of BUKU I, BUKU II, BUK III and Indonesian banking and significantly negative 5% to ROA bank BOOK IV. This shows that the more efficient Indonesian banking shows the more profitability.

The Liquidity Ratio (LDR) is negative towards ROA of BUKU I, BUKU II, BUKU IV banks and Indonesian banks, while for BUKU III the direction is positive towards ROA.

5. Managerial Recommendations

Bank BUKU I
Based on the results of the research, the BUKU I bank net interest margin was significantly affected by liquidity (LDR) in a positive direction. From the BUKU I bank data, there are 4 banks with liquidity values that are still able to maximize their credit expansion potential, namely Mitraniaga bank at 0.4912, then JP Morgan bank 0.6720,

then Dinar Indonesia bank at 0.7353 and CITIBANK bank at 0, 7834. By maximizing the liquidity of the 4 banks, they were able to increase the net interest margin of BUKU I's banks.

The profitability of BUKU I banks was significantly affected by the level of efficiency (BOPO) which was negative. Based on Indonesian banking statistics, there are 8 BUKU I banks that have efficiency values (BOPO) above 1,0000, namely Agris bank at 1.0069, Amar Indonesia bank at 1.0380, Syariah BJB at 1.0956, Harda International bank at 1.1214 , Artos bank at 1.1696, Victoria Syariah at 1.1725, BPD Banten at 1.3556 and Maybank sharia at 1.4117. The level of bank efficiency is not good one of the indicators to improve the efficiency of the BUKU I bank by increasing low-cost funding CASA (Current Account Saving Account) and then reducing the cost of expensive Time Deposit / Special Rate funds.

Bank BUKU II

Bank BUKU II net interest margin is significantly affected by the level of liquidity (LDR) in a positive direction. Based on statistical data from Indonesian banks there are 9 banks with liquidity values that are still able to be maximized by increasing credit expansion at BUKU II banks namely Capital Indonesia at 0.5436, NationalNobu at 0.6129, Victoria banks at 0.7053, Multiarta Sentosa 0.7551, Ina Perdana at 0.7622, SBI bank at 0.7711, Deutsche bank at 0.7730, Ganesha at 0.7926 and MNC International bank at 0.7945. With the increase in credit expansion at the nine banks, the Bank's BUKU II net interest margin level will be maximized.

Return on Assets (ROA) of BUKU II banks is significantly affected by the level of non-performing loans (NPL) which is negative. From the data obtained by Indonesian banking statistics, there are nine BUKU II banks that have non-performing loan (NPL) levels above 0.0500, namely SBI banks at 0.0510, Muamalat Syariah banks at 0.0516, BRI Syariah at 0.0544, BPD Babel Sumsel at 0.0591, J Trust bank at 0.0603, Bank of India at 0.0713, Riau Riau Regional BPD at 0.0816, East Kalimantan BPD at 0.0816 and Papua BPD at 0.1083, increasing the profitability of the nine banks This is by increasing credit expansion to a liquidity value of 0.9000 while maintaining credit quality levels to improve the level of problem loans (NPL).

Bank BUKU III

The results of the study showed the net interest margin of BUKU III banks was significantly influenced by market power (LG) in a positive direction. The Permatabank market power (LG) value of -0.0538 can be increased by increasing the Permatabank credit expansion value until the bank gemstone liquidity (LDR) value is at the limit of 0.9000.

The profitability of BUKU III banks was significantly affected by the increase in net interest margin in a positive direction. Bank Mega and Bank Mandiri Syariah each have a liquidity value (LDR) of 0.6199 and 0.7960, this can increase the expansion of lending which results in an increase in the net interest margin then can increase the profitability of Bank Mega and Bank Mandiri Syariah in the bank category BUKU III.

Bank BUKU IV

Finally, the BUKU IV bank shows a significant negative direction of net interest margin on asset growth (SIZE). This shows that the BUKU IV bank must manage portfolio distribution of funds so that the BUKU IV bank can maintain stable net interest margin growth.

The profitability of BUKU IV banks is significantly influenced by the value of efficiency (BOPO) which is negative. Bank CIMB Niaga and Panin banks have efficiency values of 0.8750 and 0.8147, this value is above the average efficiency of BUKU IV banks of 0.7375. The efficiency values of the two banks can be improved by increasing CASA (Current Account Saving Account) funding to keep the net interest margin stable and improve the value of efficiency at CIMB Commerce and Panin banks.

6. Conclusion

The factors that influence the BUKU I bank's net interest margin (NIM) are liquidity (LDR) and efficiency (BOPO), then the factors that influence the BUKU II bank's net interest margin (NIM) are the level of problem loans (NPL), liquidity (LDR) and growth assets (SIZE), then BUKU bank's net interest margin (NIM) level of non-performing loans (NPL) and profitability (ROE) after that the BUKU IV bank's net interest margin (NIM) is efficiency (BOPO) and profitability (ROA) and finally affecting the net interest margin (NIM) of Indonesian banks is efficiency (BOPO), liquidity (LDR) and asset growth (SIZE). Then the factors that influence the profitability (ROA) of BUKU I banks are capital (CAR), the level of problem loans (NPL) and efficiency (BOPO), then the factors that affect the profitability (ROA) of BUKU II banks are net interest margin (NIM), non-income interest (FEE), market power (LG), level of non-performing loans (NPL) and efficiency (BOPO), then profitability (ROA) of BUKU III banks are net interest margin (NIM), non-interest income (FEE), market power (LG), capital (CAR), asset growth (SIZE), level of problem loans (NPL) and efficiency (BOPO) and profitability (ROA) of BOOK IV banks are net interest margin (NIM), capital (CAR) and efficiency (BOPO) and the last which affected the profitability (ROA) of Indonesian banks was net interest margin (NIM), market power (LG), level of non-performing loans (NPL) and efficiency (BOPO).

From the results of this study to maintain the growth of the net interest margin (NIM) of BUKU I banks, BUKU II banks, and BUKU III banks by increasing the liquidity ratio to banks that still have liquidity allowances (LDR) in order to maximize their credit distribution expansion, then for BUKU banks IV to maintain net interest margin growth by managing portfolio distribution. Meanwhile, to manage the profitability growth of BUKU I, BUKU II, BUKU III and BUKU IV banks by improving the efficiency level of banks that have above average average efficiency (BOPO) by increasing CASA (Current Account Saving Account) on deposit and fixed funding maintain loan quality so that reserve costs are monitored.

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