

## **ANALYSES OF BANK PERFORMANCE ON FINANCIAL SYSTEM STABILITY IN INDONESIA**

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### **ABSTRACT**

*Institutions with high risk in their business. Large banks have a close relationship with bank risk. This study aimed to determine the effect of Commercial Bank Business Group with a minimum core capital of Rp. 30 trillion (the 4<sup>th</sup> CBBG) banks' performance in Indonesia on Indonesia's financial system stability using secondary data for 2005-2020. This study uses a simple panel regression estimation, namely the Common Effect Model, Fixed Effect Model, and Random Effect Model. The results showed that the NPL, LDR and NII, positively affected financial system stability, while the BOPO negative affected.*

**Keywords:** Banking Performance, the 4<sup>th</sup> CBBG Banks, Financial System Stability

### **I. INTRODUCTION**

The occurrence of the crisis has raised awareness in Indonesia of the importance of financial market stability and the health of financial institutions that make up the financial system (Bank Indonesia, 2003). (Schinasi, 2004) defines that financial stability is within the range of stability if it can facilitate (not hinder) the performance of an economy and eliminate endogenous finance imbalances or result from significant adverse and unexpected conditions. Financial stability is a broad concept consisting of three dimensions of the financial system (financial infrastructure, financial institutions, and financial markets). The interrelationship between the three is essential because any disturbance to individual components

undermines the financial system's stability (Houben et al., 2004).

The financial system's resilience monitors financial system stability through two approaches, namely macroprudential and microprudential. Macroprudential policy leads to an overall analysis of financial institutions in Indonesia. On the other hand, a macroprudential policy is a policy to monitor, maintain and prevent systemic risks arising from individual financial institutions. So macroprudential policies overcome systemic risk through the soundness of respective banks who are economic actors (Silalahi, 2018).

Bank Indonesia explained the importance of maintaining financial system stability through financial

institutions, especially banks. Banks are financial intermediaries and a means of transmitting monetary policy and institutions with high risk in their business. Therefore, banks are one of the financial system's most dangerous sources of instability (Bank Indonesia, 2003). The occurrence of banking liberalization is one of the triggers for a weak financial system, especially banking. The banking sector occupies a central role in every economy and is critical for financial stability.

Banks as a source of financial system instability arise due to information asymmetry and transaction costs. Banks as agents and monitors reduce the gap between savers and investors because banks have a comparative advantage over savers and investors. Banks provide transaction fees to the parties, bridge the maturity between savers and investors, and facilitate payments between economic parties by providing payment systems and clearing settlements. They are qualitative asset transformation activities. It is necessary to have safe and sound regulations for financial intermediaries providing bank monetary services.

The banking industry dominates the Indonesian financial market with an asset share of around 77%. The occurrence of shocks will impact banking stability, causing risks to banks. Examples are the 1998 crisis, the 2005 mini-crisis, and the 2008 global financial crisis. The more integrated the banking business is complex the sources of economic instability. Therefore, it is necessary

to be vigilant regarding financial product innovations accompanied by an explanation of risk mitigation and product transparency that can harm customers and endanger financial system stability.

Performance analysis is an essential tool used by various agents operating either within the bank or forming some part of the external operating environment of the bank. Performance estimation plays a critical role in understanding the determinants of effective performance. Banking performance looks at how business conditions such as banks carry out operational activities, including facing banking risks. On the other hand, the performance conditions of THE 4TH CBBG banks in Indonesia showed differences in performance before and after the 2008 global crisis. Large banks in Indonesia showed unstable conditions, both in terms of resilience, intermediation, and efficiency before the 2008 global crisis. after the crisis, Global movements in the performance of large banks in Indonesia have shown a decline. They are within the safe limits that allow for the soundness of banks.

The more integrated the banking business is, the more complex the sources of financial instability and the greater the risks banks face. Johnson (2008) explains that banks face six risks: interest rate, credit, liquidity, market, operational, and solvency risk. Interest rate risk affects interest rate volatility, making bank profits challenging to measure because bank fees and Income are

related to interest rates. Ramadona (2021) explains that interest rate volatility can suppress bank net interest margins, so banks must be able to find alternative sources of non-interest Income to maintain stability.

The size of the bank also influences the size of the influence of banking performance on financial system stability. In Indonesia, there are seven banks, that in THE 4TH CBBG BRI, BCA, Mandiri, BNI, Panin, CIMB Niaga, and Danamon. Thus, the purpose of this study is to see how the dynamics of the performance of THE 4TH CBBG banks in Indonesia and how the influence of banking performance as proxied by NPL, LDR and BOPO, and NII (Non-Interest Income ) on financial system stability in Indonesia as proxied by bank z-score.

## **II. LITERATURE REVIEW**

### **Asymmetric Information Theory**

Asymmetric information is a relationship where the agent holds information. In contrast, the other does not, so there will be information asymmetry in financing matters if one party to the agreement has more accurate information than the other party. If the bank has more information about the borrower, the bank can minimize credit risk (Tupangiu, 2017). Banks in the capacity of financial intermediaries have an interest as institutions that can finance parties who need funds. In this case, the bank required further information regarding the borrower to assess the loan (Tfaily, 2017).

Concerning credit risk, information asymmetry can increase credit risk and disrupt banking performance. Information asymmetry makes banks assume that the borrower has good quality and causes borrowers to demand higher interest rates and more extensive loan holdings. However, risky borrowers can harm banks (Ivashina, 2009).

### **Transaction Cost Theory**

Williamson (1989) states that transaction costs result from friction between exchange parties. Transaction costs due to asymmetric information between banks and borrowers can affect borrowers' decisions and loan quality (Bag, 2013). Financial intermediaries incur transaction costs, such as information search costs (Bag, 2013). This type of transaction fee refers information fee. Therefore, information costs define expenses incurred to ensure that the borrower complies with the loan terms. Therefore, information costs impact banking operational costs in their activities, namely providing loans and determining the success of financial transaction settlements (Cole, 1998). So, information costs play an essential role in deciding banking efficiency in minimizing banking operational costs (Bag, 2013).

### **Intermediation Institution Theory**

In modern financial intermediation theory, banks are present to facilitate flows and the economy (Zolkifli, 2019). Modern financial intermediation theory explains that it comprises three approaches: information asymmetry, transaction cost, and regulation

(Scholtens & Wensveen, 2003). Banks create liquidity by borrowing in the short term and lending back in a long time, which means that banks borrow from depositors with short maturities and lend to borrowers in long maturities (Dewatripont et al., 2010). Casu et al. (2006:18) state that banks, as other financial intermediaries, play an essential role in the economy, channelling funds from surplus units to deficit units. The theory of financial intermediation (Gurley & Shaw, 1956) explains that banks have a big task in a country's economy. Because banks have an intermediation function, namely channelling funds to the public.

### **Theory of Interest Rate Relationship and Financial Stability**

The interest rate is a stabilizing factor for one of the main elements of the financial system, namely banking (Daniel, 2018). The interest rate is one of the primary forms of risk banks face as financial intermediaries. The interest rate can be defined as the risk that the bank's income and market value will be negatively affected by interest rates. Low-interest rates contribute to increased bank risk (Altunbas et al., 2010). Staikouras (2006) also explains that the interest rate is the nature of the bank's business and is one of the exposures the banking industry faces at the domestic and international levels.

### **Neo-Keynesian Theory of Interest or Hicks ISLM Curve**

Classical economics determines the interest rate with the

help of savings and investments in the goods market. While determining the interest rate, Keynes tried to determine the interest rate with the help of money supply and demand in the money market. Hicks and Learner have synthesized the classical theory of the classical savings-investment theory and Keynes' theory of liquidity preference into a new theory known as Hicks' IS-LM model. This theory issues four critical elements, namely; (i) savings, (ii) investment from the classical theory, (iii) liquidity preference or demand for cash, and (iv) money supply from Keynes's theory of liquidity preference to determine interest rates and real Income together in both the fundamental and foreign markets. Money market with the help of the IS-LM curve. Neo-Keynesian interest rate theory determines interest rates based on the balance of the goods and money markets (Pal, 2018).

### **Bank Risk**

Johnson (2008) explains that banks face six main risks: interest rate, credit, liquidity, market, operational, and solvency risk. In dealing with or reducing all banking risks, Berry (1971) defines diversification as the means and methods that enable organizations to achieve growth and reduce overall risk. (Ebrahim and Hasan, 2008) define bank diversification as the expansion of new financial services and products and traditional intermediation activities. (Christiansen and Pace, 1994) explain diversification as the expansion of activities allowed by

banks to become non-traditional banking activities. Demirgüç-Kunt and Huizinga (2010) argue that diversification is an activity that generates non-interest Income to improve bank performance and help mitigate risk.

**Financial System Stability**

Financial stability is when the financial system consisting of financial intermediaries, markets, and market infrastructure can withstand shocks and unravel economic imbalances (ECB, 2007). Financial stability can be achieved at the systemic level by encouraging systemically critical financial institutions within a financial system (Peterson & Arun, 2018). Bank Indonesia explained the importance of maintaining financial system stability through financial institutions, especially banks, which have high risks in their business. Therefore, financial institutions are one of the financial system's most dangerous sources of instability (Bank Indonesia, 2003). Several empirical studies by Zeqiraj et al. (2021), Barra and Zotti (2018), and Kasman (2015) use bank z-score as a proxy for financial stability.

**III. RESEARCH METHOD**

This study utilizes secondary data. The data collected is in quarterly form from 2005 to 2020. The sample of this study uses panel data consisting of 7 banks in the THE 4TH CBBG group. The criteria for selecting a bank are based on a group of banks formed in THE 4TH CBBG or with a minimum core capital of Rp. 30 trillion, namely

Bank BRI, Bank BCA, Bank Mandiri, Bank BNI, Bank Panin, CIMB Niaga, Bank Danamon. The data source in this study comes from the Financial Services Authority (OJK) and the financial statements of each bank. Bank Z-score calculation as a proxy for financial system stability adoption from Kasman and Kasman (2015)

$$z_{it} = \frac{ROA_{it} + \left(\frac{E}{TA}\right)_{it}}{\sigma_{(ROA)_{it}}}$$

Where ROA is a return on assets, E/TA represents the equity ratio to total assets, and  $\sigma_{(ROA)}$  is the

standard deviation for the entire study period. A higher Z-score implies a lower probability of bankruptcy, while a low Z-score (or closer to zero) implies a high probability of bankruptcy, given the z-score categories as follows:

1. Safe Zone ( $Z > 2,6$ )
2. Gray Zone ( $1,1 < Z < 2,6$ )
3. Distress Zone  $Z < 1,1$

The Z value  $> 2.6$  indicates that the bank is in the healthy category. The value  $1.1 < Z < 2.6$  suggests that the bank is unhealthy but not bankrupt, while the Z value  $< 1.1$  indicates that it is declared bankrupt. In a state of bankruptcy (Budhijana & Nelmidia, 2018).

This research model adopts the research of Candrawati et al. (2019). So the research model is as follows:

$$SSK_{it} = \beta_0 + \beta_1 NPL_{it} + \beta_2 LDR_{it} + \beta_3 BOPO_{it} + \beta_4 NII_{it} + u_{it}$$

Information:

$SSK_{it}$  = Financial system stability

period t with z-score bank proxy

$NPL_{it}$  = Non-Performing Loan  
 bank i in period t  
 $LDR_{it}$  = Loan to Deposit Ratio  
 bank i in period t  
 $BOPO_{it}$  = Operating Expenses to  
 Operational Revenue bank i in period  
 t  
 $NII_{it}$  = Non-Interest Income of  
 bank i to total income of bank i in  
 period

This study uses simple panel regression analysis, namely the Common Effect Model, Fixed Effect Model, and Random Effect Model. It conducts hypothesis testing: t-test, f-test, and coefficient of determination. Besides, it performs classical assumption tests, including normality, multicollinearity, and heteroscedasticity.

## RESULTS

The research data analysis was carried out using the *Random Effect Model* estimation method as the best model in panel data regression analysis.

**Table 1.** Random Effect Model.

Variable	Coefficient	Probability	Explain
Coefficient (C)	6.042418	0.0000	-
NPL	1.221740	0.0000	Significant
LDR	0.040219	0.0000	Significant
BOPO	-0.044137	0.0000	Significant
NII	0.085251	0.0000	Signifikant
R-squared	0.378922		
Probability (F-Stats)	0.000000		

Regression Test Results

*Note.* NPL = Non Performing Loan, LDR = Loan to Deposit Ratio, BOPO = Operational Expense to Operational Income, NII = Non Interest Income.

Based on the Random Effect Model method, the R-square value is 0.378922 or 38%. Table 1 shows that the variable z-score proxy for financial system stability can explain the independent variables, namely NPL, LDR, BOPO, and 38%. Meanwhile, 62% of the z-score explain by other variables outside the research variables. The results of the Random Effect Model regression show that the NPL variable has a probability value of 0.0000, LDR (0.0000), BOPO (0.0000), and NII (0.0000), which means that it is significant to the dependent variable because the probability value is < alpha value (0.05). Furthermore, the probability (F-statistics) of 0.000000 < alpha value (0.05), so it concludes that the variables NPL, LDR, BOPO, and NII affect the dependent variable. Based on the results of the REM regression, the following equation is obtained:

$$Z = 6.042418 + 1.221740(NPL) + 0.040219(LDR) - 0.044137(BOPO) + 0.085251(NII) + \epsilon$$

The equation results interpret that the coefficient value is 6.042418, so when the NPL, LDR, BOPO, and NII change, the z-score value will increase by 6.042418 %. On the other hand, the coefficient of the NPL variable is 1.221740, which means that if there is a 1 per cent increase in NPL, the z-score will increase by 1.221740 %. The LDR

variable has a coefficient value of 0.040219, meaning an increase of 1 % in the LDR, and the z-score value will increase by 0.040219 %. In the BOPO variable, the coefficient value is -0.044137, which means an increase of 1 % in the BOPO will decrease -0.044137 % of the z-score value. Finally, the NII variable has a coefficient value of 0.085251, meaning that if there is an increase of 1 % in the NII, the z-score will increase by 0.085251 %.

## DISCUSSION

### Financial Stability In Indonesia

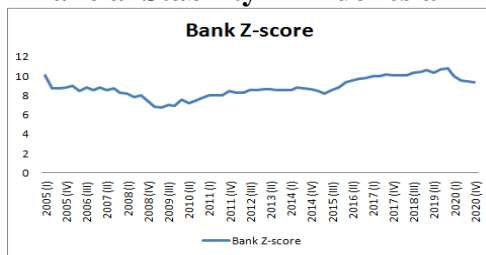


Figure 1. Condition of Financial Stability in Indonesia

The average bank z-score for each THE 4TH CBBG bank in Indonesia, namely BRI, Mandiri, BCA, BNI, CIMB Niaga, Panin and Danamon. In Figure 4.1, the bank's z-score is in the safe zone category ( $Z > 2.6$ ), meaning that the bank is declared healthy in the sample period of 2005 to 2020. However, several crises have been, such as the mini-crises in 2005 and 2008 and the Covid-19 outbreak in 2020 in Indonesia.

it hampered the country's economic growth, and the overall average bank z-score is 8.8175, which means that the bank's z-score is high and is in the category

The safe zone shows a low probability of bank bankruptcy and describes the stability of the financial system in Indonesia.

### Dynamics of THE 4TH CBBG Bank Performance in Indonesia

Banking is an active intermediary institution because of information asymmetry and transaction costs. Banks provide transaction fees to the parties, bridge the maturity between savers and investors, and facilitate payments between economic parties by providing payment systems and clearing settlements. As a result, banks are in qualitative asset transformation activities. It is necessary to have safe and sound regulations to ensure the continuity of financial intermediation, providing a basis for financial intermediaries to be needed to provide bank monetary services (Scholtens & Wensveen, 2003).

Banking performance in Indonesia is one of the determinants of financial system stability. The central bank carried out various policies to maintain stable banking performance, especially in dealing with situations that impacted the economy. Performance analysis is an essential tool used by multiple agents operating either within the bank or forming some part of the external operating environment of the bank. Performance estimation plays a vital role in understanding the determinants of effective performance, such as banks. Banking performance looks at how business conditions such as banks carry out operational activities, including

banking risks (Baele et al., 2017) use banking performance to view banking conditions in dealing with bank risks.

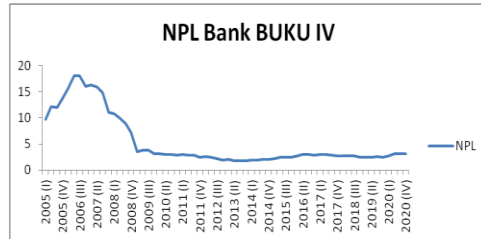


Figure 2. Average NPL of THE 4TH CBBG Banks in Indonesia

Figure 2 shows a graph of the average Non-Performing Loans (NPL) in 7 sample banks: BRI, Mandiri, BCA, BNI, CIMB Niaga, Panin, and Danamon. NPL conditions in CBBG 4 banks in Indonesia experienced stability after the global crisis in 2008. In 2005, the NPL condition in Indonesian banks was relatively high because it exceeded the maximum limit of the NPL level of 5%. The data shows that in 2005 the average NPL value was 13.76%. This figure continued to increase until 2006, when the highest average NPL value was 18.12%. However, in 2007-2008 the average NPL decreased to 7.19%. Furthermore, the average NPL of CBBG 4 banks in 2009-2020 was below 5% and moved steadily. It illustrates that the resilience of CBBG 4 banks in Indonesia began to show a stable condition in the year after the 2008 global crisis.

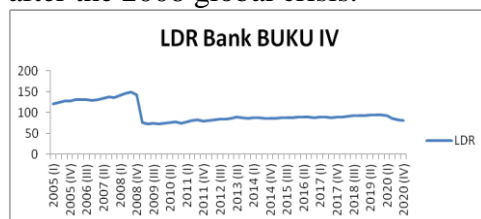


Figure 3. Average LDR of THE 4TH CBBG Banks in Indonesia

Concerning the intermediation condition of CBBG 4 banks in Indonesia, Figure 3 shows that the LDR condition of CBBG 4 banks in Indonesia also experienced stability after the global crisis in 2008. In 2005, the LDR condition of Indonesian banks was relatively high because it exceeded the maximum LDR level of 92%. The data shows that in 2005 the average LDR value was 121.57%. This figure continued to increase until 2008, when the highest average LDR value was 150.02%. However, in 2009-2010 the average LDR decreased to below the minimum limit allowed by the OJK of 78%. Furthermore, the average LDR of CBBG 4 banks in 2011-2020 is between 78%-92% and is moving steadily. It illustrates that CBBG 4 bank intermediation in Indonesia began to show a stable condition in the year after the 2008 global crisis.

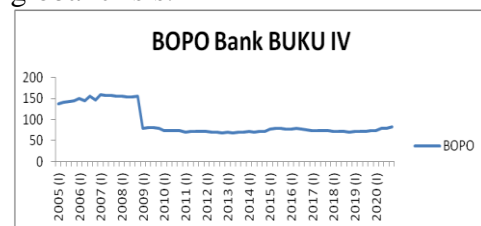


Figure 3. Average LDR of THE 4TH CBBG Banks in Indonesia

The efficiency of THE 4TH CBBG banks in Indonesia shows in Figure 4 that the BOPO conditions at CBBG 4 banks in Indonesia also experienced stability after the global crisis in 2008. In 2005 the BOPO conditions in Indonesian banks were relatively high because they exceeded the maximum limit of BOPO levels of



75 %. The data shows that in 2005 the average BOPO value was 138.01%. This figure continued to increase until 2008, when the highest average BOPO value was 156.18%. However, in 2009 the average BOPO decreased to 79.26%. Furthermore, the average BOPO of CBBG 4 banks in 2010-2020 is below 75% and moving stably. It illustrates that the efficiency of CBBG 4 banks in Indonesia began to show a stable condition in the year after the 2008 global crisis.

Figures 2,3 and 4 show the average condition of the NPL, LDR, and BOPO values at THE 4TH CBBG banks in Indonesia. The bank's performance has been stable after not separating from the ability to mitigate risks by the central bank by increasing the effectiveness of monitoring the financial system and conducting stress tests and direct monitoring of factors affecting financial system stability.

#### **Effect of Non-Performing Loans on Financial System Stability**

The coefficient value given by the NPL to the bank's z-score is 1.221740 and has a positive effect, meaning that the higher the level of NPL, the higher the value of the bank's z-score. The high value of the bank's z-score indicates that the financial system's stability is improving. This study's results align with previous research by Nugroho et al. (2021), which stated that NPL positively impacted the financial stress index (a proxy for financial system stability). However, the results of this study differ from the theoretical review. This difference is

caused by NPL data in the bank sample for 2008-2020, which shows the number is within the 5% safe limit allowed by the OJK. So this condition illustrates that although the increase in NPL is still below the safe limit, it is not dangerous for Indonesian banks.

The previous theoretical review explained that related to modern financial intermediation theory on the asymmetric information approach where banks are agents and monitors to reduce the gap between savers and investors because banks have a comparative advantage over savers and investors (Scholtens & Wensveen, 2003). Concerning credit risk, asymmetric information can increase credit risk and disrupt banking performance.

Asymmetric information makes banks assume that the borrower has good quality and causes borrowers to demand higher interest rates and more extensive loan holdings. However, risky borrowers can harm banks (Ivashina, 2009). Credit risk causes losses for banks, such as increasing costs, reducing profitability, and reducing bank reputation. Aduda & Gitonga, 2011. Chaibi (2015) states that Credit risk can affect banking stability. The higher the bank credit risk, the lower the banking stability.

#### **Effect of Loan to Deposit Ratio on Financial System Stability**

The coefficient value given by the LDR to the bank's z-score is 0.040219 and has a positive effect, which means that an increase in LDR will also increase the z-score (a proxy for financial system stability).

This study's results align with previous empirical studies by Candrawati et al. (2019), which state that LDR has an influence and is significant on financial system stability.

This result supports the theory of Gurley and Shaw (1956), in which intermediation functions, namely channelling funds to the public. Casu et al. (2006:18) state that banks, as other financial intermediaries, play an essential role in the economy and channel funds from surplus units to deficit units. Financial intermediaries exist to reduce information and transaction costs arising from information asymmetry between borrowers and lenders. Financial intermediaries have the primary function of providing liquidity. Therefore, the provisions on the minimum LDR limit and the maximum banking limit in distributing funds need to maintain banking liquidity Van Den End (2013). According to the IMF (2009), liquidity risk is an endogenous risk for banking. If banks experience liquidity risk directly or indirectly, it will affect the financial system's stability.

### **The Effect of BOPO on Financial System Stability**

The coefficient value given by BOPO to bank z-score is -0.044137 and has a negative effect, which means that an increase in BOPO will result in a decrease in z-score (a proxy for financial system stability). The results of this study are in line with theoretical studies based on transaction cost theory, and financial intermediation has placed

information costs at the centre of the total transaction costs incurred in conducting financial exchanges. Financial intermediaries incur transaction costs, such as information search costs (Bag, 2013). This type of transaction fee is also referred to as an information feed. Therefore, information costs are defined as costs incurred to ensure that the borrower complies with the loan terms. Therefore, information costs impact banking operational costs in their activities, namely providing loans and determining the success of financial transaction settlements (Cole, 1998). So, information costs play an essential role in determining banking efficiency in minimizing operational costs (Bag, 2013). According to Berger and Mester (1997), inefficient banks will have difficulty increasing the trust of bank customers and can affect financial intermediation costs. Weill (2003) explains that a high level of banking efficiency causes banking performance to be better in allocating financial resources as a whole and ultimately has an impact on increasing investment activities and economic growth.

### **Non-Interest Income on Financial System Stability**

The coefficient value given by the NII variable to the bank's z-score is 0.085251. It has a negative effect, which means an increase in the bank's NII will increase the z-score (a proxy for financial system stability). This study shows that activities that generate non-interest Income by Indonesian banks, especially sample banks, can improve Indonesia's financial system

stability. The results of this study are in line with previous empirical studies such as Baele et al. (2007), Pennathur et al. (2012), Luu et al. (2019), Brahmin et al. (2018), Moudud-Ul-Huq et al. (2018) which argue that diversification income through non-interest Income has a strong positive impact on bank performance and stability.

This result is also in line with the previous theoretical review where banks are in the business of managing risk. This risk can come from past, present, or future transactions and is present in almost every activity in which banks participate concerning market participants interacting with banks. The integration of global financial markets causes banks to face risks (Coetzee, 2016). Financial institutions that run with the principle of avoiding risk will stagnate. On the other hand, banks that take excessive risks are likely to experience difficulties. Johnson (2008) explains six main risks banks face, one of which is interest rate risk. Interest risk relates to the risk of loss arising from changes in market prices, for example, reduced interest margins on loans. (Ramadona, 2021) Interest rate volatility can suppress bank net interest margins, so banks must be able to find alternative sources of non-interest Income by diversifying Income to maintain stability. Demirgüç-Kunt and Huizinga (2010) argue that activities that generate non-interest Income can improve bank performance and help mitigate risk.

#### **IV. CONCLUSION**

1. The movement of banking performance at THE 4TH CBBG banks in Indonesia during the study period showed the same movement. THE 4TH CBBG banks in Indonesia had an unhealthy condition from 2005 to 2008. It proved that the high NPL, LDR, and BOPO ratios exceeded the safe limits allowed by the OJK, so this condition could endanger Indonesia's financial stability. However, after the 2008 global crisis, financial system stability improved, as indicated by the average NPL, LDR, and BOPO of THE 4TH CBBG banks within the permissible safe limits. It suggests that the condition of the performance of THE 4TH CBBG banks was stable after the 2008 global crisis, as evidenced by the movement of the performance ratios of THE 4TH CBBG banks, which were within the permissible safe limits following the provisions of the bank's soundness level.

2. The relationship between banking performance and financial system stability in Indonesia interpreted that the NPL, LDR, BOPO, and NII (*Non-Interest Income*) variables as independent variables and bank z-score as the dependent variable. The results show that all variables of banking performance affect the stability of the financial system in Indonesia. So it can conclude that financial stability in Indonesia influences banking performance, and banking conditions in Indonesia must remain healthy to reduce disturbances that can cause economic instability.

Thus, it is expected that banks in Indonesia will maintain a stable financial performance ratio. NPL is striving to be < 5% to maintain stable banking performance, so before providing loans to customers, it is necessary to consider the customer's character, capacity, capital, collateral, and condition as the basis for making decisions before granting credit. LDR is sought to approach 92% but must maintain the minimum limit of 78%. To maintain the LDR ratio, banks must balance TPF receipts with lending by banks. The BOPO ratio is measured at less than 75% by maximizing cheap funds or current account saving accounts (CASA). Because the interest given by banks for low-cost funds, namely savings and current accounts, is smaller than for expensive funds, namely deposits, the costs incurred by banks are more efficient. Non-Interest Income is one of the alternative sources of banking income. that can increase banking profits. Hence, banks need to increase fee-based Income or non-interest Income obtained by banks as rewards or commissions for financial services that have been performed.

#### **LIMITATION**

1. In proxies for financial system stability, this research only focuses on banks, which are intermediary financial institutions and a means of transmitting monetary policy and institutions. So that have high risk in their business and are one of the most dangerous sources of instability for the financial system. Thus, the bank z score as an index that

describes bank bankruptcy is used in proxies for financial system stability.  
2. This study uses seven banks in Indonesia that are included in the THE 4TH CBBG group. The THE 4TH CBBG bank group describes a bank with a minimum core capital of Rp. 30 trillion.  
3. The methods used in this research are the Common Effect Model (CEM), Fixed Effect Model (FEM) and Random Effect Model (REM) in analyzing panel.

#### **ACKNOWLEDGMENT**

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#### **DECLARATION OF CONFLICTING INTERESTS**

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