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"Nurturing Business and Banking Sustainability"

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FOREWORD

Alhamdulillah, praise be to Allah Subhanahu Wa Ta'ala for granting us the opportunity to organize and publish the proceedings of the 2nd International Conference on Business and Banking Innovations (ICOBBI) with the topic "*Nurturing Business and Banking Sustainability*". This proceeding contains several researches articles from many fields in Marketing, Management Technology, Finance, Banking, Human Resources Management, Information System Management, and Islamic Economics.

The 2nd International Conference on Business and Banking Innovations was held on 14th – 15th August 2020 by virtual (online) meeting and organized by the Master Management Study Program of STIE PERBANAS Surabaya in Collaboration with six Higher Education Institutions in Indonesia and five Universities from Asia countries. Keynote speakers in this conference were: Prof. Angelica M..Baylon, Ph.D (Director of the Maritime Academy of Asia and the Pacific, Philippines), Chonlatis Darawong, Ph.D. (Head of the Master of Business Program Sripatum Chonburi University - SPU Graduate School Bangkok, Thailand), Prof. Madya Dr. Reevany Bustami (Director of Centre for Policy Research and International Studies Universiti Sains Malaysia), Associate Prof. Dr. Ellisha Nasruddin (Graduate School of Business Universiti Sains Malaysia), Associate Prof. Pallavi Pathak Ph.D. (School of Management Sciences, Varanasi, India) and Prof. Dr. Tatik Suryani (Head of the Master of Management Study Program of STIE Perbanas Surabaya, Indonesia).

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Hopefully, the proceeding will become a reference for academics and practitioners, especially the business and banking industry to get benefit from the various results of the research field of Business and Banking associated with Information Technology. Proceedings also can be accessed online on the website https://pascasarjana.perbanas.ac.id.

Chair of the Master Management Study Program
STIE Perbanas Surabaya

Prof. Dr. Tatik Suryani, M.M.

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Credit Quality Stress Tests Based on Macroeconomics at State-Owned Bank in Indonesia in 2008-2016

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A B S T R A C T

Analysis of the strength of the banking industry system and the factors that influence the stability of the banking industry is very necessary given the importance of the banking industry in a country. One way to evaluate the relationship between banking systems stability and macroeconomic conditions in dealing with crisis conditions through stress tests. This study aims to determine the effect of macroeconomics proxied by GDP growth, inflation rates and interest rates on credit quality proxied by NPL values, and determine the extent to which banks survive when facing shocks in macroeconomic crisis conditions through a stress test scenario. The object of research used was the banking sector companies that included the Persero's banks listed on the Indonesia Stock Exchange in the 2008-2016 period. Data were analyzed using multiple regression analysis, classic assumptions, ARCH models, and stress test scenarios. Based on the results of research GDP growth variables and interest rates significantly influence Non Performing Loans, while the inflation rate does not significantly influence Non Performing Loans. Based on the results of stress test scenarios, where GDP shocks and interest rates occur it can be indicated that the level of resilience of the Persero's banks will begin to falter when the GDP is 10% and the interest rate is 11.5% and threatened to collapse if the GDP reaches 12% and the interest rate is 13,5% because the value of NPL exceeds 5%.

1. INTRODUCTION

The country's financial system plays an important role in the country's economy, especially when a financial crisis occurs. One sector that has the biggest impact is the banking sector because the banking sector is the backbone of the financial system in many countries (Quagliariello, 2009). The heavy losses suffered by the banking industry resulted in the stability of the financial system. For this reason, a significant amount of money and time is needed to restore the banking industry. During the 1998 crisis, the government spent more than Rp 500 trillion to save and rehabilitate the banking industry, including Bank Indonesia Liquidity Assistance and Banking Recapitulation (www.bi.go.id).

Analysis of the strength of the banking industry system and the factors that influence the stability of the banking industry is very necessary given the importance of the banking industry in a country. One way to evaluate the relationship between banking system stability and macroeconomic conditions in dealing with crisis conditions through stress tests. Stress tests have enormous benefits for the banking world, especially supervisory authorities because stress tests are considered capable of providing complete and in-depth information regarding the extent to which the defense of the banking sector is facing several scenarios of macroeconomic pressures that can cause losses.

Jones et al. (2004) explain that stress tests are a method used to measure financial system stability through the calculation of credit risk. According to Zerman et al (2008) credit risk is one of the most important factors to see the strength of the banking sector in dealing with possible risks faced. Credit is the main source of credit risk (Basel Committee on Banking Supervision, 2000). Credit management is not optimal resulting in non-performing loans (Non-Performing Loans) increases. An uncontrolled increase in NPLs causes losses and even the worst possibility is bankruptcy because interest income and principal repayments have decreased. Therefore, the bank as the creditor must maintain the quality of its credit so as not to cause bad credit which will later have a negative impact on the performance and operational activities of the bank. Based on the above explanation, the stress test method plays an important role for the banking world because it is able to measure the level of resilience of the banking system in dealing with

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crisis conditions. Many factors cause crisis conditions, one of which is macroeconomic indicators derived from national economic conditions. Aviliani et al (2015) explained that macroeconomic conditions are generally seen through economic growth, inflation rates, and interest rates.

Related to several phenomena that occur, researchers are interested in conducting research on credit quality stress tests based on macroeconomics. Where credit quality is proxied by NPL (Non-Performing Loans), while macroeconomics is proxied by GDP growth, inflation rates, and interest rates.

This study uses State-Owned Bank data listed on the Indonesia Stock Exchange for the period 2008 - 2016. The 2008 period was chosen because in that year there was a global economic crisis marked by the collapse of Lehman Brother, the fourth largest financial institution in the United States, bad credit in the housing sector (subprime mortgage) and the bankruptcy of the General Motor and Ford automotive industries. The research sample is a banking sector company that is included as a Persero.

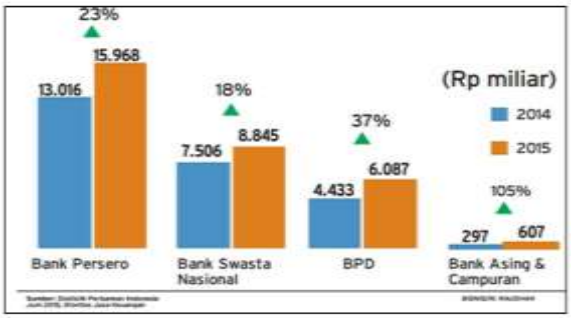

Figure 1.1 NPL Value by Bank Group 2014-2015

Based on the graph above, state banks were chosen because they have the highest NPL values compared to other bank groups. High NPLs describe the condition of banks that are not healthy. The higher the value of NPLs, the more it shows that the bank is unhealthy and vulnerable if faced with various conditions. Based on this background, the authors formulate the problem of whether macroeconomics which is proxied by GDP growth, inflation rates, and interest rates affect Non Performing Loans on State-Owned Bank listed on the Indonesia Stock Exchange for the period 2008 - 2016?

2. THEORY FRAMEWORK AND HYPOTHESES

GDP GROWTH

Gross Domestic Product (GDP) or also known as Gross Domestic Product (GDP) is considered the best measure of economic performance (Mankiw, 2000). The concept of GDP is essentially a measure of a country's ability to produce goods and services over a certain period (Sukirno, 2004). GDP depicts overall economic activity. So if GDP growth occurs, the economy will also experience growth. The growth is related to the increase in income and the lack of financial difficulties experienced by the community. That way the ability of the community and business units to pay off debt (credit) increases and the impact of NPL decreases. But on the contrary, if the economy goes into a recession, economic activity will deteriorate resulting in decreased income, business that fails and has trouble paying. This leads to deteriorating portfolio quality (Zeman and Jurca, 2008). Poor portfolio quality indicates that the ability to repay debt (credit) is also bad so that the impact on high NPLs and if left untreated will pose a risk of bank failure. Based on the explanation above, the first hypothesis that was built in this study is:

H1: Growth of GDP influences credit quality

Inflation rate

Inflation is a process of continuously increasing prices for goods that has an impact on the decline in people's purchasing power because in real terms the level of income also decreases with the assumption that the level of community income is constant (Mankiw, 2013).

Inflation is a state of the economy of a country characterized by periodic price increases without any growth in the money supply. The occurrence of inflation will have an impact on declining people's purchasing power, rising interest rates, and decreasing the level of people's welfare. The impact of inflation has triggered the occurrence of problem loans because the ability of people and companies to pay their loans is

bad due to declining income of the community and companies, coupled with rising interest rates making people and companies more unable to repay their credit obligations so that the level of problem loans (NPL) is higher . From the above explanation it can be concluded that the higher the inflation rate the higher the NPL level will occur. Based on the explanation above,
H2: Inflation rates affect credit quality

Interest Rates

The interest rate is the service fee paid by the debtor / borrower for the money borrowed. In Indonesia, the determination of interest rates, both the cost of funds and lending rates, refers to the BI rate. BI Rate is a policy made by Bank Indonesia regarding interest rates, which is announced to the public that reflects the attitude or stance of monetary policy. Badar and Javid (2013) state that interest rates are defined as returns paid for money borrowed. Therefore, when interest rates increase, many people and companies that have credit obligations will not be able to repay their loans, which will worsen the quality of the loan.

Bofondi and Ropele (2011) also stated that the higher the credit costs, the more difficult the debtor's ability to pay his credit obligations so that it has an impact on increasing non-performing loans (NPL). Based on the explanation above, the first hypothesis that was built in this study is:
H3: Interest Rates affect credit quality

Stress Test Method

Stress test is a tool used by bank supervisors especially the central bank in order to assess the level of resilience and health of banks when faced with extreme conditions. In addition, stress tests are also an important instrument of bank management in providing bank financial information using an internal system designed to measure risk. The Bank association for Risk Management (2012: II-40) explains that the methodology that can be used in stress testing is:

a. Sensitivity Analysis; Estimated impact of changes in one particular risk factor (risk driver) on the value of the bank's portfolio.
b. Scenario Analysis; evaluate the combined effects of changes in all risk factors by using a simulated extreme stress scenario. So scenario analysis is often used for overall stress testing in the banking industry (bank-wide).

3. RESEARCH METHOD

The population of this study is companies in the banking sector, including State-Owned Bank, which were listed on the Indonesia Stock Exchange in the period 2008-2016. The sampling technique is purposive sampling. The data used in this research is secondary data. The data was obtained from quarterly reports of banking sector companies which included State-Owned Bank which were listed on the Indonesia Stock Exchange in 2008-2016. This data will then be processed as research material and then tested using the STATA test equipment. The technical stages of data analysis in this study are the estimation of the regression model using time series data, multiple linear regression regression, the classic assumption test, and the statistical test. First the data will be tested using multiple linear regression tests, if after estimating it turns out that in the model there is a heterokesdaticity problem (using the Lagrange - Multiplier Engle test to determine the feasibility of using the ARCH method), then the estimation will be continued using the ARCH model to overcome the heterokesdaticity problem in order to produce a good model. After that, the results of the ARCH model will be used as a reference for conducting the stress test scenario method.
The equation in the ARCH model in this study are:

$$NPL_t = \beta 0 + \beta 1 GDP_t + \beta 2\ BI_t + \beta 3\ LI_t + \varepsilon_t$$

Where :
NPL t = credit quality in period t
GDP t = GDP growth in period t
BI t = interest rate in period t
LI t = inflation rate in period t
β0 = constant
β1,2,3 = Regression coefficient

ε = Error term

The stress test scenario in the study is as follows:
Step 1: Create a macroeconomic scenario

The researcher will provide a simulation of shocks to the macroeconomic variables that have been tested for their effects on previous tests. If the variable is proven to affect the Non-Performing Loan, the variable will be used in the stress test scenario. In each stress test scenario, one of the two variables will be surprised, and the other variable will use the average value of the variable as seen from the descriptive test results. The following 6 stress test scenario simulations to determine the simulation value of each independent variable in this study:

Table 3.1
Description of Stress Test Scenario Simulation

Stress test scenario	Version	MACROECONOMIC VARIABLES		
		GDP	INFLATION RATE	INTEREST RATE LEVEL
Scenario I	Empirical Data	GDP equal to the average value	Inflation rate is the average value	Interest Rates are equal to the average value
Scenario II	Empirical Data + (1 x std.dev)	GDP of average value + (1 x std.dev)	Inflation Rate is an average value of + (1 x std.dev)	Interest Rate at an average value of + (1 x std.dev)
Scenario III	Empirical Data + (2 x std.dev)	GDP of average value + (2 x std.dev)	Inflation Rate is an average value of + (2 x std.dev)	Interest Rate at an average value of + (2 x std.dev)
Scenario IV	Empirical Data + (3 x std.dev)	GDP of average value + (3 x std.dev)	Inflation Rate is an average value of + (3 x std.dev)	Interest Rate at an average value of + (3 x std.dev)
Scenario V	*Moderate*	GDP by 10%	Inflation rate of 5%	Interest Rate of 11.5%
Scenario VI	*Severe*	GDP of 12%	Inflation Rate of 8%	Interest Rate of 13.5%

Step 2: Predict bank NPL ratios with scenarios created.
The estimated NPL in the stress test scenario will be measured by the following equation:

$$NPL\ t = \beta 0 + \beta 1 GDP\ t + \beta 2\ LI\ t + \beta 3\ BI\ t + \varepsilon\ t$$

a) Scenario stress test with simulated GDP shocks
In this scenario, the LI and BI variables are the mean values of the descriptive test results, while the GDP variable is shocked by the artificial values mentioned in table 3.1.

b) Stress test scenarios with LI shock simulation
In this scenario, the GDP and BI variables are the mean values of the descriptive test results, while the LI variable is shocked by the artificial values mentioned in table 3.1.

c) Stress test scenarios with simulated BI shocks
In this scenario, the GDP and LI variables are the mean values of the descriptive test results, while the BI variable is shocked by the artificial values mentioned in table 3.1.

The above simulation is expected to be able to demonstrate the condition of State-Owned Bank's resilience in facing crisis situations through their NPL values. Banks are said to be shaken if the NPL value exceeds 5% in accordance with regulations set by Bank Indonesia. The procedures and stages, as well as the stress test scenario test results in the above simulations will be explained in the next discussion.

4. DATA ANALYSIS AND DISCUSSION

Based on the criteria, the sample in this study were 36 data. The following are descriptive data Descriptive Analysis:

Table 4.1
Descriptive Test Results

```
. summarize GDP LI  BI NPL

    Variable |        Obs        Mean    Std. Dev.       Min        Max
-------------+---------------------------------------------------------
         GDP |         36     5.62825     .902252       4.136      7.956
          LI |         36    1.420833    1.195798        -.43       4.44
          BI |         36        7.05    1.013481         4.8        9.5
         NPL |         36    3.331129    .8603111    2.319278   5.837917
```

Source: STATA processed product

Based on table 4.1 above, it shows that the lowest GDP growth rate throughout the study period of 4.136 occurred in 2009 the second quarter while the highest GDP growth occurred in 2010 the fourth quarter of 7.956. The lowest inflation rate was -0.43 in 2015 the first quarter while the highest value was 4.44 in 2008 the second quarter. The high value of inflation was due to the global economic crisis marked by the collapse of Lehman Brother the fourth largest financial institution in United States of America. In table 4.1 it can also be seen that the average interest rate during the study period was 7.05 with a standard deviation of 1.013481. The lowest interest rate was 4.8 in the fourth quarter of 2016 while the highest was 9.5 in the fourth quarter of 2008.

In this study to detect the presence or absence of heteroscedasticity is to use the Breusch-Pagan method. H0 of this method is homoscedastic residual. If the value of Prob> chi2 is more than the significant value of 95%, then HO is rejected.

Table 4.2
Heteroskedastistas Test Results

```
. estat hettest

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
         Ho: Constant variance
         Variables: fitted values of NPL

         chi2(1)      =     2.86
         Prob > chi2  =   0.0406
```

Source: STATA processed product

Based on table 4.2, the results of the Breusch-Pagan test with a chi square value of 2.86 and p-value of 0.0406 (0.0406 <0.05), indicate a heteroscedasticity problem on the independent variables in this study. Thus it can be concluded that HO is rejected where the data is heteroscedasticity. The existence of heteroscedasticity causes multiple regression analysis models cannot be used because the models are not good so researchers use the ARCH model to overcome the problem of heterokesdaticity in order to produce a good model. Before using the ARCH model, the researcher used the Lagrange - Multiplier Engle Test aimed to detect whether the variables were feasible to use the ARCH model given the high volatility needed to be able to use the ARCH model.

Table 4.3
Lagrange Test Results - Engle Multiplier

```
. estat archlm
LM test for autoregressive conditional heteroskedasticity (ARCH)
```

lags(p)	chi2	df	Prob > chi2
1	7.757	1	0.0053

H0: no ARCH effects vs. H1: ARCH(p) disturbance

Source: STATA processed product

Based on table 4.3, the Lagrange - Multiplier Engle test results show a Prob> chi2 value of 0.0053 (0.0053 <0.05), so H0 is rejected, which means that there is an ARCH (heteroscedaskitas) effect, so an ARCH model is needed to eliminate the problem of volatility.

Table 4.4
ARCH Model Results

```
. arch  NPL GDP LI  BI, arch(1/1) nolog

ARCH family regression

Sample:  2008q1 - 2016q4                        Number of obs     =        36
                                                Wald chi2(3)      =     21.20
Log likelihood = -32.19737                      Prob > chi2       =    0.0001
```

NPL	Coef.	OPG Std. Err.	z	P>|z|	[95% Conf.	Interval]
NPL						
GDP	.3427166	.1049993	3.26	0.001	.1369218	.5485115
LI	-.0169722	.0440403	-0.39	0.700	-.1032895	.0693451
BI	.3159612	.073977	4.27	0.000	.1709689	.4609535
_cons	-1.054656	.9425429	-1.12	0.263	-2.902006	.7926945
ARCH						
arch L1.	1.35615	.5814699	2.33	0.020	.2164897	2.49581
_cons	.0671007	.0577577	1.16	0.245	-.0461024	.1803039

Source: STATA processed product

Based on table 4.4, the results of the ARCH Model (1) show the value of p> | z | 0.020 on ARCH L1 which means that the ARCH lag 1 model is feasible to use because 0.020 <0.05.

Stress Test Method

Based on data obtained through financial statements of State-Owned Bank listed companies on the Indonesia Stock Exchange for the period 2008-2016, the stress test scenario was arranged as follows:

Step 1: Create a macroeconomic scenario

The researcher will provide a simulation of shocks to the macroeconomic variables that have been tested for their effects on previous tests. The results of the ARCH model in Table 4.4 show that the inflation rate variable does not affect the NPL due to its significant value> 5% so that the stress test scenario does not include that variable. In each stress test scenario, one of the two variables will be surprised, and the other variable will use the average value of the variable as seen from the descriptive test results.

Step 2: Predict bank NPL ratios with scenarios created.

The estimated NPL in the stress test scenario will be measured by the following equation:

$$NPL\ t = \beta 0 + \beta 1 GDP\ t + \beta 2\ BI\ t + \varepsilon\ t$$

Following are the results of 6 simulated stress test scenarios conducted by researchers:

Table 4.5
Results *Stress Test Scenario*

Stress Test Scenario	GDP			INTEREST RATE LEVEL		
	GDP shocks	BI	NPL	GDP	BI Shocks	NPL
Scenario I	5.63	7.05	3.16	5.63	7.05	3.16
Scenario II	6.53	7.05	3.46	5.63	8.06	3.48
Scenario III	7.40	7.05	3.76	5.63	9.07	3.79
Scenario IV	8.30	7.05	4.07	5.63	10.08	4.11
Scenario V	10.0	7.05	4.65	5.63	11.50	4.56
Scenario VI	12.0	7.05	5.34	5.63	13.50	5.19

Source: Processed products

After carrying out a number of simulations above, it can be indicated that the level of resilience of Persero's banks will begin to falter when the GDP is at the moderate level of 10% and the interest rate is at the moderate level of 11.5% because the NPL value of 4.65% and 4.56% is still below 5%. Meanwhile, banks are threatened to collapse if the GDP level reaches 12% and the interest rate reaches 13.5% because the NPL value of 5.34% and 5.19% exceeds the 5% level.

1. Influence of GDP growth on Non-Performing Loans.

Based on the results of the ARCH Regression hypothesis, it was found that H01 is rejected, which means that the GDP growth variable influences the Non-Performing Loans. These results support the hypothesis. However, this study shows that GDP growth has a positive effect on Non-Performing Loans, which means that GDP growth causes Non-Performing Loans to increase. Inversely related to previous

research which explains that GDP growth causes a decrease in Non-Performing Loans. Zeman et. al (2008) states that GDP growth has a negative effect on problem loans. The difference is allegedly because when GDP growth or it can be said that the economy is improving, most banks will loosen their loans where all sectors will be financed including several sectors which should not be financed to be financed.

The results of this study support previous research conducted by Putri (2016) and Shingjergji (2013) that GDP growth has a positive effect on problem loans. Unlike the research conducted by Vo Thi Ngoc Ha et. al (2016) and Nir Client (2013) show that GDP growth has a significant negative effect on problem loans. Ouhiby and Hammami's research (2015) which states that GDP growth has no significant effect on problem loans.

2. Influence of Inflation Rate on Non Performing Loans.

Based on the ARCH Regression hypothesis results found that H01 is accepted which means that the Inflation Rate variable has no effect on the Non Performing Loan. These results contradict the research hypothesis which states otherwise. This means that in Indonesia as long as the inflation rate is still below 10% it indicates that demand is rising not because there is no supply of goods. This was proven during Eid, inflation rose because of THR (salary rose 2x) so that demand for goods also rose. Rising inflation does not affect the ability of the public or debtors to repay debts so that it does not affect the value of the Non Performing Loan.

The results of this study support previous research conducted by Vo Thi Ngoc Ha et. al (2016), Rizvi and Khan (2105) who stated that inflation had no effect on problem loans. While this study is different from the results of Nir Client's research (2013) and Schechtman (2012) which states that inflation affects non-performing loans (NPLs).

3. Influence of Interest Rates on Non-Performing Loans.

Based on the results of the ARCH Regression hypothesis, the finding is that H01 is rejected, which means that the interest rate variable influences the Non Performing Loan. These results support the hypothesis. An increase in BI interest rates results in an increase in deposit rates. That way, the costs incurred by banks to raise third party funds have also increased. If this happens, the loan interest rate will also increase, making many people and companies who have credit obligations feel very burdened or even unable to repay their loans and will have an impact on increasing non-performing loans (NPLs).

The results of this study support previous research conducted by Vo Thi Ngoc Ha et. al (2016), and Zeman et. al (2008) which shows that interest rates affect credit. While the results of this study differ from the studies of Setyaningsih et. al (2015) which states that interest rates have no effect on problem loans.

Based on the results of the stress test scenario, it is indicated that the resilience level of State-Owned Bank in Indonesia is quite good when the GDP growth is at the moderate level of 10% and the interest rate at the moderate level of 11.5%, causing the NPL value of State-Owned Bank to be around 4.65% and 4, 56%. This figure is still below 5% or it can be interpreted that the resilience of State-Owned Bank is starting to falter. State-Owned Bank is threatened to collapse when the GDP level reaches 12% and the interest rate reaches 13.5% because the NPL value is 5.34% and 5.19% exceeds the 5% level. In accordance with PBI regulation number 15/2 / PBI / 2013 which states that the NPL level must not exceed 5%. In accordance with PBI regulation number 15/2 / PBI / 2013 which states that the NPL level must not exceed 5%, if it crosses the line the bank is threatened to collapse and enter into special supervision conducted by the FSA. However, this condition is highly dependent on the capital position held by the bank. In a bank that has a little capital, it could be that even though the NPL value is still below 5%, the condition can be very dangerous because of 2 things:

1. Cash flow of loan installments and interest stops
2. The allowance for impairment losses (CKPN) increases, which means that it erodes bank capital and income.

5. CONCLUSIONS, IMPLICATIONS, SUGGESTIONS, AND LIMITATIONS

Based on the results of research and discussion that has been carried out it can be concluded that the variable growth in GDP and interest rates significantly influence the Non-Performing Loans at the Persero listed on the Stock Exchange 2008 to 2016, while the inflation rate does not significantly influence the Non-Performing Loans at the Persero listed on the Indonesia Stock Exchange for the period 2008 to 2016. In this study GDP growth caused the Non-Performing Loan to increase. This is allegedly because when GDP growth or it can be said the economy is improving, most banks will loosen their loans where all sectors will

be financed including some sectors which should not be financed to be financed. So when there is a change in economic conditions that are not too significant will affect the ability to pay the sector that should not be financed and have an impact on the increase in NPLs. The influence of interest rates on Non-Performing Loans occurs because when interest rates increase, many people and companies that have credit obligations cannot repay their loans, which will worsen the quality of loans. Based on the results of the stress test scenario, it is indicated that the level of resilience of State-Owned Bank in Indonesia began to falter when GDP growth was at the moderate level of 10% and interest rates at the moderate level of 11.5%. State-Owned Bank is threatened with collapse when the GDP level reaches 12% and the interest rate reaches 13.5%. The limitation in this study is that there are no internal company factors used to test this study such as ROE and NIM, because researchers only refer to external factors (macroeconomics) to determine their effects on Non-Performing Loans, while the macroeconomic factors used are only three factors, namely GDP growth, inflation rate, and interest rates, and NPL data are industrial data not individual banks. The stress test method in this study only uses two scenarios. Also, limited time periods are only from 2008 to 2016. Based on the results of research conducted by researchers is expected to be an evaluation material for banks in Indonesia, especially banks Persero to pay more attention to external factors (macroeconomics) that can affect non-performing loans (Non-Performing Loans). In addition, the government is expected to increase GDP growth, stabilize inflation and maintain interest rates so that the ratio of problem loans will be maintained so that the economic crisis can be avoided.

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