**COMPETITION AND PROFITABILITY: IMPACT ON STABILITY IN INDONESIAN BANKING**

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| **INDEXING** |  | **ABSTR AC T** |
| **Keywords:**Market Orientation, Innovation, Business Performance***Keywords:****market orientation,**Innovation,**Business Performance.* |  | *Currently the banking industry has undergone major changes in recent years due to regulatory deregulation. Seeing this, in implementing it, banks must be managed more carefully, one of which is by maintaining it. Banking instability occurs because banks face too many risks. The purpose of this study is to examine how the influence of competition and profitability on banks in the Indonesian banking industry.**The population used is commercial banks listed on the Indonesia Stock Exchange in 2015-2019. A series of indicators from internal and external banks are also used in this study to support the research results, which consist of bank size, concentration, inflation, and GDP. That is, banking is measured using three risks, credit risk with NPL proxy, liquidity risk with LDR proxy, and insolvency risk with Z-score proxy. Using panel data analysis, the following results were found: in the 2015-2019 research period, competition had a positive and insignificant effect on credit risk, competition had a negative and insignificant effect on liquidity risk and insolvency risk. Profitability has a negative and significant effect on credit risk and insolvency risk, and profitability has a positive and insignificant effect on liquidity risk.* Currently the banking industry has undergone major changes in recent years due to regulatory deregulation. Seeing this, in carrying out its functions, banks must be managed more carefully, one of which is by maintaining stability. Banking instability occurs because banks face too many risks. The purpose of this study is to examine how the influence of competition and profitability on bank stability in the Indonesian banking industry. The population used is conventional commercial banks listed on the Indonesia Stock Exchange in 2015-2019. A series of indicators from internal and external banks are also used in this study to support the research results, which consist of bank size, concentration, inflation, and GDP. Meanwhile, banking stability is measured using three risks, namely, credit risk with NPL *proxy* , liquidity risk with LDR *proxy* , and insolvency risk with Z-score *proxy .* Using panel data analysis, the following results were found: in the 2015-2019 research period, competition had a positive and insignificant effect on credit risk, competition had a negative and insignificant effect on liquidity risk and insolvency risk. Profitability has a negative and significant effect on credit risk and insolvency risk, and profitability has a positive and insignificant effect on liquidity risk  |

# *PRELIMINARY*

Banks as financial institutions that greatly affect the economy, both micro and macro, thus have a very important role to encourage the economy (financial services authority, 2020) . Seeing this, in carrying out its functions, banks must be managed more carefully, one of which is by maintaining stability. Stability as opposed to vulnerability or instability, refers to the state of functioning of the institutions and markets that make up the financial system. Financial vulnerability will create a dangerous situation of uncertainty, and in extreme cases any disruption to the financial sector will have dire consequences on economic activity and even on political stability.

An example of a world event that has corroborated the above statement is the Malaise in 1930. Although this crisis originally started as *a shock* in the capital market, but shortly after the shock effect hit the banking world in the US, the aftermath of the impact was felt. The performance of the world economy has also stalled for a decade. The banking industry is thus the main channel through which vulnerabilities are transmitted to other sectors of the economy by disrupting interbank lending markets and payment mechanisms, and/or by reducing the availability of financing (Berger et al., 2009). Thus analyzing bank stability is one of the important factors for policy makers in an effort to achieve financial development and economic growth (Adusei, 2015) .

Banks have business activities that show complexity so that they depend on public trust, where this complexity can be seen from the completeness of the business activities carried out by banks. The complexity of these business activities places the bank as a business that also brings huge profits, where the bank still applies interest in generating company profits. High bank interest includes inefficient behavior which in turn will have an impact on the inhibition of financing factors that pose risks. Risk taking can be influenced by several factors, one of which is competition between banks.

The impact of competition between banks and the financial system became a major concern after the emergence of the phenomenon of massive and simultaneous bank failures during the 2008 global financial crisis. According to Allen & Gale (2004) , intense competition will encourage banks to take excessive risks and pose a threat to stability. financial system. On the other hand, according to Acemoglu et al (2015) in their research, they argue that the lack of competition actually causes the banking system to become fragile. According to Apriadi et al (2017) research investigating the dynamic causality relationship between competition and banking stability in Indonesia has emerged, where the relationship between competition and banking stability has been a debate before various world crises occurred both theoretically and empirically.

The unprecedented 2008 financial crisis highlighted the importance of the factors that determine bank profitability. In measuring the financial performance of a bank, profitability is one indicator that can be used. According to Hu & Xie (2016) managing a bank is a complex process which involves the interaction of various factors including risk taking and profitability, where these two indicators are the most important of bank performance. According to Tan (2016) profitability reflects bank management especially in the Chinese banking industry, because all banks are encouraged to be listed on the stock exchange in order to get external supervision and funds, higher profitability can increase bank competitiveness. According to Tan et al (2021) banks with low levels of profitability generally have incomplete monitoring and management mechanisms, thereby increasing the volume of non-performing loans and thus leading to an increase in the level of credit risk.

Banking instability occurs because banks face too many risks. The level of bank stability in this study was measured using three risk indicators, namely credit risk, liquidity risk, and insolvency risk. According to Ghenimi et al (2017a) , the biggest risks faced by banks are credit risk and liquidity risk. Meanwhile, according to Tan et al (2021) using *the Z-Score* as an indicator in measuring bank stability explains the ratio of provision for loan losses to total loans and ROA volatility. These ratios reflect different risk indicators primarily reflecting credit risk and bankruptcy risk. The independent variables used in this study include: competition and profitability.

Competition in recent years has opened a debate about the economic role of market competition in the banking industry (Cetorelli, 1999) . According to Cetorelli (1999) , greater competition is likely to result in a larger number of credits, greater market power and will increase the incentives of banks to produce information about potential borrowers, thus leading to a higher quality applicant pool. The next factor is profitability, where profitability is considered an important factor affecting risk in the banking industry. According to Hu & Xie (2016) companies earn higher profits in a concentrated market than in a competitive market.

In addition to the independent variables above, there are other factors that influence various types of risk in the banking industry, namely the size of the bank. *Bank size* is basically an important thing in a company. This is because the size of the company describes the size of a company which can be shown by total assets (Laeven et al., 2016) . Other factors that influence various types of risk in the banking industryin this study is concentration. According to Berger & Klapper (2008) concentration does not only have an impact on profitability but also on stability. Other factors that influence various types of risk in the banking industryin this study are inflation and GDP. According to Personal & Archive (2011) said that macroeconomic control variables such as inflation and cyclical output clearly affect the performance of the banking sector.

**Figure 1. Research Framework**



Based on the research framework that has been presented, the authors formulate the following hypotheses:

*H 1.1 : Competition has a positive and significant effect on credit risk*

*H 1.2 : Competition has a positive and significant effect on liquidity risk*

*H 1.3 : Competition has a positive and significant effect on insolvency risk*

*H 2.1 : Profitability has a negative and significant effect on credit risk*

*H 2.2 : Profitability has a negative and significant effect on liquidity risk*

*H 2.3 : Profitability has a negative and significant effect on insolvency risk*

*H 3.1 : Bank size has a positive and significant effect on credit risk*

*H 3.2 : Bank size has a positive and significant effect on liquidity risk*

*H 3.3 : Bank size has a positive and significant effect on insolvency risk*

*H 4.1 : Concentration has a positive and significant effect on credit risk*

*H 4.2 : Concentration has a positive and significant effect on liquidity risk*

*H 4.3 : Concentration has a positive and significant effect on the risk of insolvency*

*H 5.1 : Inflation has a negative and significant effect on credit risk*

*H 5.2 : Inflation has a negative and significant effect on liquidity risk*

*H 5.3 : Inflation has a negative and significant effect on the risk of insolvency*

*H 6.1 : GDP has a positive and significant effect on credit risk*

*H 6.2 : GDP has a positive and significant effect on liquidity risk*

*H 6.3 : GDP has a positive and significant effect on insolvency risk*

*RESEARCH METHODS*

**Data/Research Object**

The research data used are conventional commercial banks listed on the Indonesia Stock Exchange. In this study the population uses 41 commercial banks in Indonesia. The sample in this study is 37 banks listed on the Indonesia Stock Exchange and which have a complete *annual report* on the IDX. Then with the observation period from 2015 to 2019. The sample criteria used are as follows:

1. Public banking listed on the Indonesia Stock Exchange (IDX) for the 2015-2019 period.
2. General banking that consistently has complete data or annual financial reports and is available for further research.

**Operational Definition and Measurement of Variables**

### *Dependent Variable*

#### Credit Risk

According to Bank Indonesia (2003) credit risk is the risk arising from the failure of the debtor and/or other parties to fulfill their obligations to the Bank. Formulated as follows:

$$Risiko Kredit=NPL=\frac{Kredit Bermasalah}{Total Kredit}×100\%$$

#### Liquidity Risk

Liquidity risk is the risk due to the Bank's inability to meet maturing obligations from cash flow funding sources and/or from high quality liquid assets that can be used without disrupting the bank's activities and financial condition (Bank Indonesia, 2003).

$$LDR=\frac{Kredit yang diberikan}{Dana Pihak Ketiga}×100\%$$

#### Insolvency Risk

The default risk of an individual bank ( $Z-score\_{i,t}$) is calculated using the following formula:

$$Z-score\_{i,t}=\frac{ROA+E/TA}{σROA}$$

### Independent Variable

#### Competition

*The Lerner index* is used as a proxy for current and future gains derived from price strength.

$$Lerner Index=\frac{TR-TC}{TR}$$

#### Profitability

Profitability can be defined as the company's ability to earn a profit through its business operations using asset funds owned by the company.

$$ROA=\frac{Laba bersih setelah pajak}{Total aset}$$

### Control Variable

#### Bank Size

The size of the bank is the amount of wealth owned by a company . Bank size is calculated by the *bank size ratio* as follows:

$$Size Bank :Ln (total assets bank)$$

#### Concentration

Concentration was measured using *the 'Herfindahl Hirschman* (HH) *index'* . The *Herfindahl Index* is a methodology used to measure the distribution of market share or to calculate market concentration within an industry.

$$H=S\_{1}^{2}+S\_{2}^{2}+…+S\_{N}^{2}$$

#### Inflation

According to Ratna & Ginting (2015) inflation can be formulated as a general price increase originating from the disruption of the balance between the flow of money and the flow of goods.

$$INF :Inflation rate (\%)$$

#### GDP

GDP is the added value of goods and services. Gross Domestic Product (GDP) is calculated with the following ratio:

$$GDP :GDP growth rate (\%)$$

The equation model is as follows:

$$Y\_{it}=β\_{0}+β\_{1}X\_{1it}+β\_{2}X\_{2it}+β\_{3}X\_{3it}+β\_{4}X\_{4it}+β\_{5}X\_{5it}+β\_{6}X\_{6it}+ε\_{it}…(1)$$

$Y\_{it}$ : Credit Risk, Liquidity Risk, Insolvency Risk

$β\_{0}$ : Constant

$β\_{1},β\_{2},β\_{3},β\_{4},β\_{5},β\_{6}$ : Coef. independent variable

$X\_{1it}$ : Competition

$X\_{2it}$ : Profitability

$X\_{3it}$ : Company Size

$X\_{4it}$ : Concentration

$X\_{5it}$ : Inflation

$X\_{6it}$ : GDP

$ε\_{it}$ : Another coefficient

# *C. RESULTS AND DISCUSSION*

## Classic assumption test

***Normality test***

*Credit Risk*

Based on the Kolmogorov-Smirnov test, a value of 0.069 is obtained, therefore it can be said that the residuals are normally distributed because they have a value of $>0,05$.

*Liquidity Risk*

Based on the Kolmogorov-Smirnov test, the value obtained is equal $0,550$to, therefore it can be said that the residuals are normally distributed because they have a value of $>0,05$.

*Insolvency Risk*

Based on the Kolmogorov-Smirnov test, the value obtained is equal $0,438$to, therefore it can be said that the residuals are normally distributed because they have a value of $>0,05$.

***Multicollinearity Test***

Based on the tests that have been carried out on the dependent variable of various types of risk, the VIF obtained from each variable can be seen in the table below:

**Table 4.2 Multicollinearity Test Results**

|  |  |  |
| --- | --- | --- |
| Variable | VIF | 1/VIF |
| Competition | 1.82 | 0.548916 |
| Profitability | 1.98 | 0.506057 |
| Bank Size | 1.47 | 0.681757 |
| Concentration | 1.15 | 0.867388 |
| Inflation | 1.03 | 0.969670 |
| GDP | 1.11 | 0.897206 |
| Mean VIF | 1.43 |  |

Source: Stata15 (processed)

***Heteroscedasticity Test***

*Credit Risk*

**Table 4.3 Credit Risk Heteroscedasticity Test Results**

|  |  |
| --- | --- |
| *chi2 (1)* | 7.26 |
| *Prob>chi2* | 0.0070 |

Source: Stata15 (processed)

Based on the results from table 4.3 with a *Prob>chi2 value* of 0.0070 where $<0,05$, it can be concluded that there are symptoms of heteroscedasticity. In the equation variable that has heteroscedasticity symptoms, it will produce a biased analysis, so that in the statistics for heteroscedasticity symptoms , a *robust command is used* which can eliminate these symptoms.

*Liquidity Risk*

**Table 4.4 Heteroscedasticity Test Results Liquidity Risk**

|  |  |
| --- | --- |
| *chi2 (1)* | 0.04 |
| *Prob>chi2* | 0.0012 |

Source: Stata15 (processed)

Based on the results from table 4.4 with a *Prob>chi2 value* of 0.0012 where $<0,05$, so it can be concluded that there are symptoms of heteroscedasticity.

*Insolvency Risk*

**Table 4.5 Insolvency Risk Heteroscedasticity Test Results**

|  |  |
| --- | --- |
| *chi2 (1)* | 86.04 |
| *Prob>chi2* | 0.0000 |

Source: Stata15 (processed)

Based on the results from table 4.5 with a *Prob>chi2 value* of 0.0000 where $<0,05$, so it can be concluded that there are symptoms of heteroscedasticity.

**Panel Data Regression Model Selection**

***Credit Risk***

* + - * 1. *Chow Test*

**Table 4.6 Credit Risk *Chow Test Results***

|  |  |
| --- | --- |
| *F( 36, 142)* | 4.14 |
| *Prob > F* | 0.0000 |

Source: Stata15 (processed)

Based on the results of table 4.6, the obtained *probability* of 0.0000 where $<0,05$, so it can be concluded that the model used is the *Fixed Effect Model* .

* + - * 1. *Hausman Test*

**Table 4.7 *Hausman* Credit Risk Test Results**

|  |  |
| --- | --- |
| *chi2(6)* | 9.18 |
| *Prob>chi2* | 0.1634 |

Source: Stata15 (processed)

Based on the results of table 4.7, the obtained *probability* of 0.1634 where $>0,05$, so it can be concluded that the model used is the *Random Effect Model* .

* + - * 1. *Multiplier Test*

**Credit Risk LM *Test Results***

|  |  |
| --- | --- |
| *chibar2(01)* | 32.92 |
| *Prob > chibar2* | 0.0000 |

Source: Stata15 (processed)

Based on the results from table 4.8, the *probability obtained is* 0.0000 where $<0,05$, so it can be concluded that the model used is the *Common Effect Model* .

***Liquidity Risk***

1. *Chow Test*

**Table 4.9 Liquidity Risk *Chow Test Results***

|  |  |
| --- | --- |
| *F( 36, 142)* | 4.55 |
| *Prob > F* | 0.0000 |

Source: Stata15 (processed)

Based on the results from table 4.9, the obtained *probability is* 0.0000 where $<0,05$, so it can be concluded that the model used is the *Fixed Effect Model* .

1. *Hausman Test*

**Table 4.10 *Hausman Test Results* Liquidity Risk**

|  |  |
| --- | --- |
| *chi2(6)* | 0.78 |
| *Prob>chi2* | 0.9927 |

Source: Stata15 (processed)

Based on the results of table 4.10, the *probability obtained is* 0.8658 where $>0,05$, so it can be concluded that the model used is the *Random Effect Model* .

1. *Multiplier Test*

**Table 4.11 Liquidity Risk LM *Test Results***

|  |  |
| --- | --- |
| *chibar2(01)* | 63.88 |
| *Prob > chibar2* | 0.0000 |

Source: Stata15 (processed)

Based on the results of table 4.11, the *probability is obtained* of 0.0000 where $<0,05$, so it can be concluded that the model used is the *Common Effect Model* .

**Insolvency Risk**

1. *Chow Test*

**Table 4.12 Results of Insolvency Risk *Chow Test***

|  |  |
| --- | --- |
| *F( 36, 142)* | 7.55 |
| *Prob > F* | 0.0000 |

Source: Stata15 (processed)

Based on the results of table 4.12, the obtained *probability is* 0.0000 where $<0,05$, so it can be concluded that the model used is the *Fixed Effect Model* .

1. *Hausman Test*

**Table 4.13 *Hausman Test Results* Insolvency Risk**

|  |  |
| --- | --- |
| *chi2(6)* | 6.86 |
| *Prob>chi2* | 0.3340 |

Source: Stata15 (processed)

Based on the results of table 4.13, the *probability obtained is* 0.3340 where $>0,05$, so it can be concluded that the model used is the *Random Effect Model* .

1. *Multiplier Test*

**Table 4.14 LM Insolvency Risk *Test Results***

|  |  |
| --- | --- |
| *chibar2(01)* | 105.05 |
| *Prob > chibar2* | 0.0000 |

Source: Stata15 (processed)

Based on the results of table 4.14, the *probability obtained is* 0.0000 where $<0,05$, so it can be concluded that the model used is the *Common Effect Model* .

**Panel Regression Model**

***Credit Risk***

**Table 4.15 Credit Risk Panel Regression Results with *Common Effect Model***

|  |  |  |
| --- | --- | --- |
| Variable | *Coef* | *Probability* |
| constant | 1.131495 | 0.831 |
| Competition | 2.983975 | 0.110 |
| Profitability | -0.5210492 | 0.000 |
| Bank Size | -0.0703443 | 0.333 |
| Concentration | 0.0393658 | 0.681 |
| Inflation | -8,724989 | 0.372 |
| GDP | 34.12375 | 0.731 |

Source: Stata15 (processed)

Based on the table above, the regression equation is obtained as follows:

*Yit = 1.131495 + 2.983975 X 1it – 0.5210492X 2it – 0.0703443X 3it + 0.0393658X 4it – 8.724989X 5it + 34.12375X 6it + e*

**Liquidity Risk**

**Table 4.16 Liquidity Risk Panel Regression Results with *Common Effect Model***

|  |  |  |
| --- | --- | --- |
| Variable | *Coef* | *Probability* |
| constant | 4.798288 | 0.000 |
| Competition | -0.0841223 | 0.366 |
| Profitability | 0.0003375 | 0.967 |
| Bank Size | 0.0291133 | 0.001 |
| Concentration | 0.0134219 | 0.078 |
| Inflation | -0.8728667 | 0.528 |
| GDP | -25.0295 | 0.073 |

Source: Stata15 (processed)

Based on the table above, the regression equation is obtained as follows: *Yit = 4.798288 - 0.0841223X 1it + 0.0003375X 2it + 0.0291133X 3it + 0.0134219X 4it - 0.8728667X 5it - 25.0295X 6it + e*

**Insolvency Risk**

**Table 4.17 Results of Insolvency Risk Panel Regression with *Common Effect Model***

|  |  |  |
| --- | --- | --- |
| Variable | *Coef* | *Probability* |
| constant | -53.60398 | 0.056 |
| Competition | -3.145495 | 0.372 |
| Profitability | -1.486037 | 0.000 |
| Bank Size | 0.7402904 | 0.027 |
| Concentration | 0.0159668 | 0.948 |
| Inflation | -10,54474 | 0.825 |
| GDP | 717,408 | 0.181 |

Source: Stata15 (processed)

Based on the table above, the regression equation is obtained as follows:

*Yit = -53.60398 - 3.145495X 1it - 1.486037X 2it + 0.7402904X 3it + 0.0159668X 4it – 10.54474X 5it + 717.408X 6it + e*

**Determination Test ( *R 2* )**

**Table 4.18 Coefficient of Determination Test Results ( *R2 )***

|  |  |
| --- | --- |
|  | *Weighted Statistics* |
| Credit Risk | *R-Squared* | 0.2911 |
| *Adj R-Squared* | 0.2613 |
| Liquidity Risk | *R-Squared* | 0.0861 |
| *Adj R-Squared* | 0.0553 |
| Insolvency Risk | *R-Squared* | 0.2529 |
| *Adj R-Squared* | 0.2277 |

Source: Stata15 (processed)

# CLOSING

The conclusions obtained from the results of the previous analysis and discussion are for the 2015-2019 period. The results of testing the first hypothesis found that competition has a positive and insignificant effect on credit risk, competition has a negative and insignificant effect on liquidity risk and insolvency risk in banks listed on the Indonesia Stock Exchange. The second hypothesis is found that profitability has a negative and significant effect on credit risk and insolvency risk, and profitability has a positive and insignificant effect on liquidity risk.

The results of testing the third hypothesis, namely the control variable, found that bank size had a negative and insignificant effect on credit risk, bank size had a positive and significant effect on liquidity risk and insolvency risk. The fourth hypothesis found that concentration had a positive and insignificant effect on credit risk and insolvency risk, but had a positive and significant effect on liquidity risk. The results of testing the fifth hypothesis, namely inflation, were found to have an insignificant negative effect on credit risk, liquidity risk, and insolvency risk. The sixth hypothesis is that GDP was found to have an insignificant and insignificant effect on credit risk, and was found to be negative and insignificant to liquidity risk and insolvency risk.

Based on the data, the average banking NPL in 2015-2019 with annual data has a value of 2.034324 percent, where this figure is still below the safe limit of 5%. This means that even in an unsafe situation, the condition of the banking sector is still relatively well maintained. The liquidity conditions in the banking industry for the 2015-2019 period were relatively loose as seen from the *loan to deposit ratio* (LDR), which had an average of 84.81963 percent. It can be said that banking conditions are still at a safe level, which can be reflected in the capital adequacy ratio of each bank.

**Suggestion**

There are several shortcomings and weaknesses due to the limitations of the results found in the study, including the sample used is limited to banking companies and does not include other financial institutions. Therefore, further research should be able to use a larger sample size or include other financial institutions that are also listed on the Indonesia Stock Exchange. In addition to the sample, judging from the test results, this study has a low *R-Squared* value which shows that there are still many other variables that can be used in subsequent research. These other variables will later affect various types of risk in banking, both bank-specific variables and industry-specific variables.

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