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# Credit Risk Influence on Insurance Performance During Credit Restructuring Policy

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## ABSTRACT

This study analyzes the relationship between banking credit risk and general insurance performance during the banking credit restructuring policy period in Indonesia from March 2020 to March 2024. Credit, Nonperforming loans (NPL), and credit interest rates variables are used as proxies for banking risk. General insurance performance is proxied by credit premium, credit claim, and profit before tax. Through multiple regression analysis using Ordinary Least Squares (OLS), this study shows that there is a significant effect of banking risk on general insurance performance. The relationship between banking and insurance can be a complementary or substitution relationship, depending on how important risk transfer and capital allocation. The result provides useful insights to achieve co-evolution of banking and insurance in maintaining financial system stability.

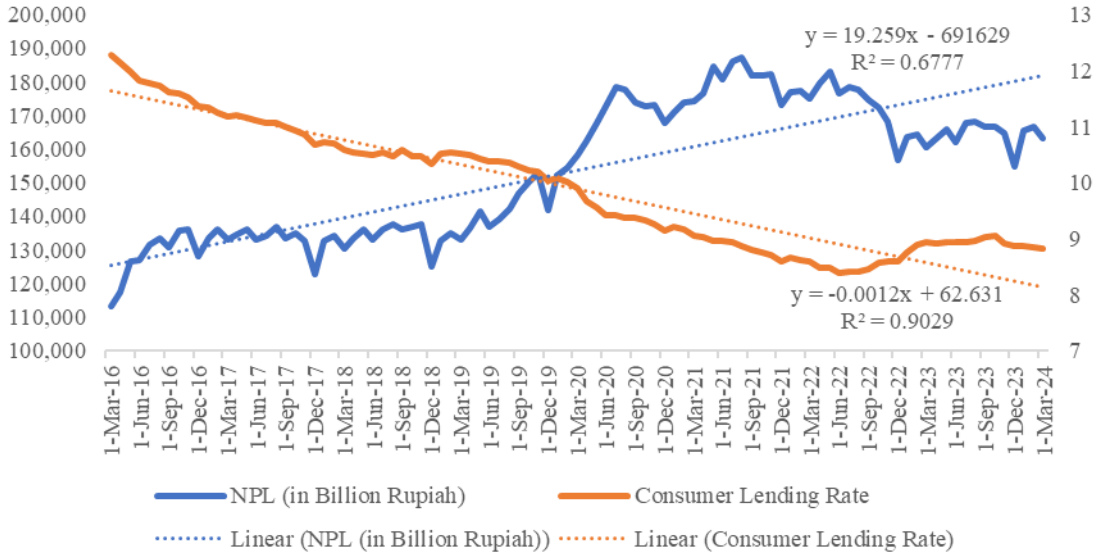
***Keywords:*** banking credit risk; credit restructuring policy; general insurance performance

## INTRODUCTION

In order to support the government's program in reducing the impact of the Covid-19 pandemic on the economy, in March 2020 the Indonesian Financial Services Authority (OJK) stipulated regulation Number 11/POJK.03/2020 concerning National Economic Stimulus as a Countercyclical Policy for the Impact of the Spread of Covid-19 which was implemented from March 2020 to March 2024. This regulation was issued to provide relief for individual debtors, MSMEs, and corporations to restructure their credit due to the systemic impact of the Covid-19 pandemic. One of the requirements for restructured credit is that credit has been determined as good quality credit until March 31, 2021.

Credit restructuring policies tend to affect small banks, both government and private banks. Erlina Yulianti Pratiwi (2023) found that the Covid-19 pandemic had a significant impact on Non-Performing Loans (NPL) and credit provision. Figure 1 below shows the opposite trend of credit interest rate developments with NPL. The interest rate trend continues to decline, both before, during, and after the pandemic. On the other hand, the interest rate trend has started to increase slightly since July 2022 to October 2023.

**Figure 1. NPL and Credit Interest Rate Development**




**Source: CEIC 2024 (processed)**

Business relationships between banking and other industries can trigger the effect of credit risk transmission (default/NPL) from banking debtors into the banking value chain. The effect of credit risk transmission from banking debtors has been proven by a series of events, for example the impact of the sub-prime crisis in 2007 not only spread to other industries in America, but has spread throughout the world and significantly affected the money markets in many countries (Xie et al., 2023). The insurance industry will be affected by credit risk from default/NPL of banking debtors. Banks can minimize credit risk by transferring the risk to third parties, through credit insurance premium payments or credit guarantee fees. Thus, the insurance company will accept the risk of default from banking creditors during the coverage period.

The impact of transferring banking credit risk to insurance companies is that the performance of insurance companies will be affected in fulfilling claims when there is a default by banking debtors. The Indonesian General Insurance Association (AAUI) in the daily kontan.co.id, (2024) noted that total claims payments for the general insurance industry during 2023 increased by IDR 46.13 trillion or 10.5% compared to the previous year. The Chairman of AAUI said that the credit insurance line made the largest claim payments in the general insurance industry during 2023. In addition, the kompas newspaper, 2023 stated that credit insurance claims contributed 71% of the total industry claim payments. This value has increased compared to the level of credit insurance claim payments last year, which was 59%. The increase in claims from credit line insurance is one indication that the performance of the insurance industry is affected by banking credit restructuring policies.

Based on the problems above, the researcher wants to answer the research question whether banking credit risk (credit, NPL, and credit interest rates) affect the performance of general insurance companies (credit premiums, credit claims, and profit before tax) during the credit restructuring policy period? The purpose of this study is to empirically analyze and measure the effect of banking credit risk on general insurance performance within the period of the banking credit restructuring policy from March 2020 to March 2024.

This research is expected to provide results and contributions that can be utilized by various parties who need them, i.e for academics to hows the influence of banking

credit risk on general insurance performance during the banking credit restructuring policy period empirically, for practitioners to develop business strategy, and for policy maker to making policy which can balance the impact of one industry's policies on other industries and can take supervisory actions that can maintain financial stability in banking and insurance.

## LITERATURE REVIEW

The insurance industry plays an important role in maintaining economic stability. One of its roles is as a transfer of risk of loss due to industrial activities and financial health. Thus, health level of insurance companies become interests of all parties, especially the insurance policy owners and government. Failure of an insurance will affect the economic conditions and public trust. Several cases of insurance company failure have resulted in many policyholders being harmed.

George E. Rejda and Michael J. McNamara, 2014 explained that insurance has several basic characteristics:

a. pooling of losses, to reduce variations in possible outcomes, thereby reducing risk;
b. payment of fortuitous losses, payment for losses that cannot be predicted and occur as a result of changes;
c. risk transfer, transfer of risk from the insured to the insurance company (in this case considered to be in a better financial condition) to pay for losses than the financial condition of the insured; and
d. indemnification, the insured will be restored to the same financial condition as before the event that caused the loss.

In carrying out its main activities, insurance companies will always be faced with the problem of adverse selection. Adverse selection is a tendency for someone with a higher potential for loss but trying to find a standard rate of insurance. If not controlled by underwriting, it will result in a higher level of loss for the insurance company. Underwriting is the process of selecting and classifying parties who want to get insurance protection. If the underwriting standards cannot be met, the insurance application may be rejected, the application will be charged a higher fee, or only receive limited coverage. An example of adverse selection is when a bank debtor with poor financial conditions tries to get credit protection by buying insurance at a standard rate.

Indonesia Financial Group, (2022) stated that profitability and income indicators are used to determine the extent to which an insurance company is able to carry out its business strategy as seen from the company's profits and growth in a sustainable manner. Some of the indicators used include: insurance premiums, claims, and net profit.

One of the impacts of transferring credit risk to insurance companies is that it will affect the performance of insurance companies in terms of premium receipts and fulfillment of claims from customers. The Indonesian General Insurance Association (AAUI) in the daily kontan.co.id, (2024) noted that total claims payments for the general insurance industry during 2023 increased by 10.5%, namely IDR 46.13 trillion when compared to the previous year. The Chairman of AAUI said that the credit insurance line made the largest claim payments in the general insurance industry during 2023. In addition, the daily kompas, 2023 contained news that credit insurance claims contributed 71% of the total industry claim payments. This value has increased compared to the level of credit insurance claim payments last year, which was 59%. The increase in claims from credit lines submitted by policyholders is one indication of the performance of the insurance industry which was affected during the period of the banking credit restructuring policy.

Using a model with the banking and insurance sectors, research (Allen & Carletti, 2006) shows that credit risk transfer between the banking and insurance sectors is beneficial. Banks invest in short-term assets and risky loans, while insurance

companies also hold long-term assets to facilitate their ability to transfer risk. Insurance companies are forced to liquidate long-term asset investments when insurance customers experience major losses. Vaughan, (2014) defines risk as a state of discomfort due to the possibility of deviation from expected targets or initial objectives. Risk has two elements, namely the first is the uncertainty of the place of occurrence, the time of occurrence, and to whom the event occurs. The second element of risk is in the form of losses quantified in money.

In this study, author using several theories as a basis for research, as follows:

a. Credit Market Theory

The banking and insurance industry is closely related to the credit market theory. According to Stiglitz & Weiss, (1981), The credit market is a market that brings together lenders and borrowers, where borrowers receive funds with the obligation to repay the loan and interest within a certain period of time. The credit market basically follows the basic economic principles of supply and demand. Credit demand comes from individuals, companies, or governments that need funds for investment, consumption, or project financing. Credit offers come from banks, financial institutions, or individuals who have funds they want to lend (Mankiw & Ball, 2011).

b. Risk Transfer Theory

Vaughan, (2014) defines risk as a state of discomfort due to the possibility of deviation from the expected target or initial goal. Risk has two elements, the first is the uncertainty of the place of the incident, the time of the incident, and to whom the incident occurred. The second element of risk is in the form of a loss quantified in money. The theory of risk transfer states that a risk is an uncertainty regarding the loss that will affect insurance. Uncertainty about the losses that someone might get will cause the desire to transfer risk. The transfer of risk owned to another party is carried out at a cost that must be paid by someone when using insurance (Robert Irwin Mehr & Emerson Cammack, 1980).

c. Probability Theory and the Law of Large Numbers

The law of large numbers explains that if a number of the same experiments are carried out in large numbers, the results will be close to the expected value. When the same risk appears in large numbers, then by applying the law of large numbers, insurance companies are able to predict the amount of claim costs from a risk or the actual amount of loss in a period. A fair premium can be determined by the insurance company in assessing the risk of coverage in a certain period. To ensure the premium obtained is sufficient to meet the claim payment, a insurance products need to be attractive so that many parties are interested in buying. If the premium income from the sale of insurance products that do not make claims is small, then this mechanism cannot run effectively to finance claims. Insurance companies that receive large premiums will be able to make accurate calculations to predict future losses.

d. Credibility Theory

Credibility theory can be used to estimate the net premium value obtained from insurances costumer. The calculation results from the credibility theory model are called credibility estimates. Credibility theory is widely used by actuaries in calculating the amount of premium rates based on past claim data (Isnandar Slamet & Kristina Natalia, 2007). Premium payments made by the insured are based on premium pricing, calculated based on events experienced by the insurance company. Insurance companies will tend to calculate the amount of premium in accordance with the potential risk that will be faced as a form of anticipation of future losses (Melati et al., 2013). As compensation for the transferred risk, the amount of premium must be paid by the insured is a certain percentage of the insurance value (Djojosoedarso, 1999).

e. Information Asymmetry Theoy

Asymmetric information conditions will give advantages for one party who have more information, while the other party is disadvantaged due to lack of information in a transaction (Frederic S. Mishkin, 2022). In asymmetric information conditions, there will be an imbalance of power in transactions, which if not resolved will create market failure. Problems occur due to asymmetric information conditions include adverse selection and moral hazard (Akerlof, 1970). The high uncertainty of transmission and the Covid-19 pandemic period has also disrupted economic stability and increased information asymmetry, making it increasingly difficult for companies to assess the credit risk of banking debtors.

Financial Services Authority Circular Letter Number 14/SEOJK.03/2017 about Assessment of General Bank Health Level states that credit risk is usually encountered in the banking industry as inherent risk. The definition of credit risk is the risk arising from the failure of another party to fulfill its obligations to the Bank. On March 2016, OJK issued a banking credit restructuring policy as stated in Financial Services Authority Regulation Number 11/POJK.03/2020 concerning National Economic Stimulus as a Countercyclical Policy for the Impact of the Spread of Covid-19. This regulation provides relaxation to individual debtors, MSMEs, and corporations to carry out credit restructuring due to the systemic impact of Covid-19. On March 2020, OJK also issued Financial Services Authority Regulation Number 14/POJK.05/2020 about Countercyclical Policy for the Impact of the Spread of Coronavirus Disease 2019 for Non-Bank Financial Services Institutions (LJKNB). This regulation is a stimulus for LJKNB. This policy is designed to maintain the financial stability of IKNB and provide relief to debtors of financing companies who have a financing value less than IDR 10 billion.

In order to anticipate deviations from the purpose of insurance deal, several principles must be implemented absolutely in an insurance agreement. The principles in life insurance are: Utmost Good Faith, Insurable Interest, and Proximate Cause. The principles in general insurance are: Utmost Good Faith, Insurable Interest, Indemnity, Subrogation, Proximate Cause, and Contribution (Financial Services Authority, 2019):

a. The utmost good faith principle is all important facts about a risk that in the process of being insured should be disclosed voluntarily, accurately, and completely (whether requested or not).
b. The insurable interest principle is the financial interest of the insured that is legally recognized in the object of insurance.
c. The indemnity principle is the provision of financial compensation by the insurer as an effort to restore the insured's financial position to its initial condition if no loss occurs.
d. The subrogation principle regulates the transfer right of the third-party lawsuit to the insurer as a result of the completion of the payment of compensation experienced by the insured.
e. The principle of proximate cause is a chain of events that occur due to the main cause without any intervention of power from a new source (independent).
f. The principle of contribution, the emergence of a loss will be charged to each insurance company in proportion to the inherent responsibility, in the case of more than two insurance companies insuring an object.

Various studies have been conducted to evaluate the impact or influence of the Covid-19 pandemic on the banking industry. However, there is still little research conducted to test the impact or influence of banking credit risk on the general insurance industry in Indonesia. Pamungkas et al. (2023) found that credit restructuring policy affect banking stability, however the restructuring policy with non-performing loans (NPL) did not have a significant relationship. Erlina Yulianti Pratiwi (2023)

found that the Covid-19 pandemic had an impact on the banking industry in Indonesia, directly and indirectly. In addition, the rating agency Fitch Ratings said that the second wave of credit relief measures manifested in the form of credit restructuring would have a negative impact on banks in the long term, indicating weakening credit conditions in the future (LLC, 2020).

## MATERIALS & METHODS

The author uses secondary data from OJK and use quantitative approach with data from March 2020 to March 2024. The unit of analysis is the commercial banking and insurance industry which has a monthly reporting obligation to the OJK during the period of the banking credit restructuring policy. Macroeconomic variables issued by Central Bureau of Statistics and Central Bank (BI) are used as control variables: quarterly GDP, semi-annual unemployment, and monthly inflation rate.

The following table is operational definitions of variable and data sources.

**Table 1. Variables and Data Sources**

| No | Variable | Variable Definition | Period | Unit | Source |
|---|---|---|---|---|---|
| **Dependen Variable** | | | | | |
| | Credit Premium | total cost paid by the policyholder to insurance company according to the agreement | Monthly | Billion Rupiah | OJK |
| | Credit Claim | total claims filed by banks to insurance companies because borrowers are unable to repay their loans | Monthly | Billion Rupiah | OJK |
| | Profit before tax | the amount of profit earned by all insurance companies before deducting tax liabilities | Monthly | Billion Rupiah | OJK |
| **Independen Variable** | | | | | |
| | Kredit | total banking credit to non-bank third parties | Monthly | Billion Rupiah | OJK |
| | Non-Performing Loan (NPL) | the total value of loans or credits that cannot be repaid according to the agreement of all commercial banks | Monthly | Billion Rupiah | OJK |
| | Suku Bunga Kredit | the interest rate charged by the bank on the loan amount given to the debtor | Monthly | % | BI |
| **Control Variable** | | | | | |
| | Produk Domestik Bruto (PDB) | the total monetary value of all goods and services produced in a country in a given time period to measure a country's economic performance | Quarterly | Billion Rupiah | BPS |
| | Pengangguran | the number of people who are unemployed or who are looking for work but are unable to find it | Semester | People | BPS |
| | Tingkat Inflasi | the percentage change in the prices of goods and services that occurs in an economy over a certain period of time | Monthly | % | BI |

**Source: Author, 2025**

To produce data in a monthly period, specifically for unemployment and GDP data, data interpolation techniques are carried out. Interpolation is carried out because the available unemployment data is presented every semester, while GDP is presented every quarter, so it has gaps (missing values) when compared with other monthly data.

In this study, the author applies the Ordinary Least Square (OLS) method in multiple linear regression to explain the functional causal relationship between more than two variables. The law of cause and effect explains that a phenomenon can occur because there is another phenomenon that influences. For this reason, regression is suitable for testing the functional relationship between research variables

(Irwan Gani, 2018). Before conducting the model estimation test, the regression assumptions are first fulfilled with the classical assumption test: heteroscedasticity test, autocorrelation test, and multicollinearity test.

This study analyzes the influence of credit risk on insurance performance within the period of credit restructuring policies in Indonesia using the following research model:

a. Model 1: The Influence of Banking Risk on Credit Premiums
$PRMIt = \alpha_i + \beta_1 KRED_t + \beta_2 NPL_t + \beta_3 INTR_t + \beta_4 INFL_t + \beta_5 UNEM_t + \beta_6 GDP_t + \varepsilon_t$

b. Model 2: The Influence of Banking Risk on Credit Claims
$CLM_t = \alpha_i + \beta_1 KRED_t + \beta_2 NPL_t + \beta_3 INTR_t + \beta_4 INFL_t + \beta_5 UNEM_t + \beta_6 GDP_t + \varepsilon_t$

c. Model 3: The Influence of Banking Risk on Profit Before Tax
$LSPA_t = \alpha_i + \beta_1 KRED_t + \beta_2 NPL_t + \beta_3 INTR_t + \beta_4 INFL_t + \beta_5 UNEM_t + \beta_6 GDP_t + \varepsilon_t$

Information:
$PRMI_t$ : Credit Premium of Insurance Company
$CLM_t$ : Credit Claims to Insurance Companies
$NPBT_t$ : Net Profit Before Tax of Insurance Company
$\alpha_i$ : constant
$\beta$ : coefficient
$CRED_t$ : Banking Credit to Non-Bank Third Parties
$NPL_t$ : Banking Non-Performing Loan (NPL)
$INTR_t$ : Credit Interest Rate
$INFL_t$ : Inflation
$UNEM_t$ : Number of Unemployed
$GDP_t$ : Nominal Gross Domestic Product
$\varepsilon_t$ : error term

Based on the formulation of the problem and the existing theoretical review, the hypothesis of this research are as follows:

**First hypothesis**:
H1: β1; β2; β3; ≠ 0 the variables of Banking Credit, Non-Performing Loan (NPL), and Interest Rates, have a significant effect on Insurance Company Premiums.
**Second Hypothesis**:
H2: β1; β2; β3; ≠ 0 the variables of Banking Credit, Non-Performing Loan (NPL), and Interest Rates, have a significant effect on Insurance Company Credit Claims.
**Third Hypothesis**:
H3: β1; β2; β3; ≠ 0 the variables of Banking Credit, Non-Performing Loan (NPL), and Interest Rates, have a significant effect on Insurance Company Net Profit Before Tax.

## STATISTICAL ANALYSIS

This study uses population data of 49 months of aggregate data during the credit restructuring policy period from March 2020 to March 2024. The characteristics and number of observations in this study can also be described from descriptive statistics as shown in the following table.

**Table 2. Descriptive Statistics**

| Variable | Obs | Mean | Std. Dev. | Min | Max |
|---|---|---|---|---|---|
| CRED | 49 | 6.060.228,1 | 558.731,5 | 5.397.122,7 | 7.244.637 |
| NPL | 49 | 171.898,17 | 7.916,46 | 154.976,99 | 187.371,16 |
| INTR | 49 | 9,54 | 0,40 | 8,95 | 10,55 |
| CLM | 49 | 6.247,58 | 4.543,04 | 446,25 | 20.231,16 |
| PRMI | 49 | 9.559,39 | 6.710,04 | 790,38 | 29.207,52 |
| NPBT | 49 | 4.644,62 | 2.659,44 | 898,43 | 11.928,93 |
| INFL | 49 | 2,86 | 1,43 | 1,32 | 5,95 |
| UNEM | 49 | 8.396.341,2 | 638.540,8 | 7.195.000 | 9.767.750 |
| GDP | 49 | 962.353,14 | 56.764,14 | 860.244,4 | 1.052.926 |

**Source: Author, 2025**

## RESULT

From the results of the classical assumption test, it was concluded that all classical assumption tests had been met. The results of the autocorrelation test show that the Durbin Watson value of 1.35301 is located in an area where there is no autocorrelation, dL = 1.50 and dU = 1.59 for a significance level of 0.05. The VIF value for the Credit variable (9.150), NPL (4.49), Interest Rate (3.91), GDP (7.60), Unemployment (5.19), and Inflation (2.61) indicate that these variables do not experience symptoms of Multicollinearity. As for the heteroscedasticity test, based on the Breusch-Pagan/Cook-Weisberg test for heteroscedasticity, the probability chi-square significance value of 0.8918 is greater than the value of 0.05 so that it can be concluded that no heteroscedasticity problems in the variables.

Furthermore, the results of the research model estimation are as follows:

Model 1: The Effect of Banking Risk on Credit Premiums

**Table 3. Results of Banking Risk Variable Regression Estimation on Credit Premiums**

| PRMI | Coef. | St.Err. | t-value | p-value | [95% Conf | Interval] | Sig |
|---|---|---|---|---|---|---|---|
| CRED | 0.024 | 0.004 | 5.85 | 0.000 | 0.016 | 0.032 | *** |
| NPL | -0.489 | 0.194 | -2.52 | 0.016 | -0.879 | -0.098 | ** |
| INTR | -7250.581 | 3720.296 | -1.95 | 0.058 | -14758.441 | 257.280 | * |
| INFL | -47.723 | 687.572 | -0.07 | 0.945 | -1435.298 | 1339.853 | |
| UNEM | 0.014 | 0.003 | 5.08 | 0.000 | 0.009 | 0.020 | *** |
| GDP | -0.145 | 0.026 | -5.57 | 0.000 | -0.198 | -0.093 | *** |
| Constant | 37123.798 | 80778.654 | 0.46 | 0.648 | -125894.130 | 200141.720 | |

| | | | |
|---|---|---|---|
| Mean dependent var | 9559.399 | SD dependent var | 6710.047 |
| R-squared | 0.547 | Number of obs | 49 |
| F-test | 7.661 | Prob > F | 0.000 |
| Akaike crit. (AIC) | 976.804 | Bayesian crit. (BIC) | 990.046 |

*** p<.01, ** p<.05, * p<.1

**Source: Author, 2025**

The function of the research model is:

$PRMIt = \alpha_i + \beta_1 CRED_t + \beta_2 NPL_t + \beta_3 INTR_t + \beta_4 INFL_t + \beta_5 UNEM_t + \beta_6 GDP_t + \varepsilon_t$

If the test results are entered into the research model, the following model will be formed:

$PRMIt = 37.123{,}8 + 0{,}024\ CRED_t - 0{,}488\ NPL_t - 7.250{,}58\ INTR_t - 47{,}72\ INFL_t + 0{,}014\ UNEM_t - 0{,}145\ GDP_t + \varepsilon_t$

The calculation results in the table above show F value of 7.66 with a significance level of 0.0000 (Sig F <α =0.05). This shows that the regression model built using banking risk variables consisting of credit, NPL, Interest Rates and control variables of Inflation, Unemployment, and GDP and the dependent variable of credit premium is good and very feasible (goodness of fit). In total, 54.66% of the distribution of credit premium variables can be explained by banking risk variables consisting of credit, NPL, Interest Rates and control variables of Inflation, Unemployment, and GDP. The remaining 45.34% is explained by variables that are not studied (error components).

The constant value of 37,123.8 means that in conditions where all independent variables are zero, during the relaxation period, banking credit policies generate a credit premium of Rp37,123.8 billion. This means that if there is an increase in the credit value of Rp1 billion, it will increase the credit premium by Rp24,024,200. Furthermore, if the NPL increases by Rp1 billion, it will reduce the credit premium by Rp488,519,500. Then if the interest rate increases by 1%, it will reduce the credit premium by Rp7,250.58 billion. Meanwhile, when inflation increases by 1%, it will reduce the credit premium by Rp47.72 billion. If unemployment increases by 1 person, it will increase the credit premium by Rp14,292,500. Lastly, if GDP increases

by Rp1 billion, it will reduce the credit premium by Rp145,290,500.

The t-test results show a significant t-stat value on the Credit and NPL variables and the control variables Unemployment, and GDP because the Prob value is less than 0.05 while the Interest Rate and Inflation variables are not significant because the t-stat value is above 0.05. Therefore, H1 is accepted considering that there is a credit risk variable that affects the Credit Premium of insurance companies. It is concluded that credit risk consisting of Credit and NPL variables has a significant effect on the Insurance Company Premium variable.

Based on the results of the t-test, the author concludes that the banking credit relaxation policy during the Covid-19 pandemic period has a significant impact on insurance performance (credit premium). The increase in banking NPLs has caused a significant decrease in premiums received by insurance companies. With the credit relaxation policy, it helps insurance companies in holding back the rate of premium decline which will be deeper than if there was no banking credit relaxation policy. However, the impact of the increase in credit on premium income has not been felt by the insurance industry, this indicates the need for support from policy makers to help increase the insurance industry's premium income after the decrease in premiums due to the increase in banking NPLs during the Covid-19 pandemic. In addition, monetary indicators consist of interest rates and inflation did not have an impact on insurance industry premiums during the Covid-19 pandemic.

Model 2: The Effect of Banking Risk on Credit Claims

**Table 4. Results of Banking Risk Variable Regression Estimation on Credit Claims**

| CLM | Coef. | St.Err. | t-value | p-value | [95% Conf | Interval] | Sig |
|---|---|---|---|---|---|---|---|
| CRED | 0.017 | 0.002 | 6.73 | 0.000 | 0.012 | 0.022 | *** |
| NPL | -0.359 | 0.136 | -2.63 | 0.012 | -0.633 | -0.084 | ** |
| INTR | -5153.926 | 2355.443 | -2.19 | 0.034 | -9907.402 | -400.451 | ** |
| INFL | 431.693 | 434.488 | 0.99 | 0.326 | -445.140 | 1308.526 | |
| UNEM | 0.010 | 0.002 | 5.23 | 0.000 | 0.006 | 0.013 | *** |
| GDP | -0.107 | 0.016 | -6.66 | 0.000 | -0.139 | -0.075 | *** |
| Constant | 38146.575 | 52017.359 | 0.73 | 0.467 | -66828.705 | 143121.860 | |

| | | | |
|---|---|---|---|
| Mean dependent var | 6247.587 | SD dependent var | 4543.042 |
| R-squared | 0.593 | Number of obs | 49 |
| F-test | 10.956 | Prob > F | 0.000 |
| Akaike crit. (AIC) | 933.320 | Bayesian crit. (BIC) | 946.563 |

*** p<.01, ** p<.05, * p<.1

**Source: Author, 2025**

The function of the research model is:

$CLMt = \alpha_i + \beta_1 CRED_t + \beta_2 NPL_t + \beta_3 INTR_t + \beta_4 INFL_t + \beta_5 UNEM_t + \beta_6 GDP_t + \varepsilon_t$

If the test results are entered into the research model, the following model will be formed:

$CLMt = 38.146{,}58 + 0{,}016\ CRED_t - 0{,}358\ NPL_t - 5.153{,}92\ INTR_t + 431{,}69\ INFL_t + 0{,}009\ UNEM_t - 0{,}106\ GDP_t + \varepsilon_t$

The calculation results in the table above show F value of 10.96 with a significance level of 0.0000 (Sig F $<\alpha = 0.05$). This shows that the regression model built with banking risk variables consisting of credit, NPL, Interest Rates and control variables of Inflation, Unemployment, and GDP with the dependent variable of credit claims is good and very feasible (goodness of fit). In total, 59.27% of the distribution of credit claim variables can be explained by banking risk variables consisting of credit, NPL, Interest Rates and control variables of Inflation, Unemployment, and GDP. The remaining 40.73% is explained by variables that are not studied (error components).

The constant value of 38,146.58 means that in conditions where all independent variables are zero, during the credit policy relaxation period, credit claims amounting to Rp38,146.58 billion will be generated.

The estimation results also illustrate that if credit increases by Rp1 billion, it will increase credit claims by Rp16,550,600. Furthermore, if the NPL increases by Rp1 billion, it will decrease credit claims by Rp358,478,000. In addition, when the interest rate increases by 1%, it will decrease credit claims by Rp5,153.92 billion. Then, if inflation increases by 1%, it will increase credit claims by Rp431.69 billion. Meanwhile, when unemployment increases by 1 person, it will increase credit claims by Rp9,568,400. Lastly, if GDP increases by Rp1 billion, it will decrease credit claims by Rp106,960,900.

The t-test results show a significant t-stat value on the Credit, NPL, Interest Rate, and Unemployment control variables, and GDP because the Prob value is not more than 0.05 while the Inflation variable is not significant because the t-stat value is above 0.05. Based on this, H1 is accepted with the conclusion that credit risk consisting of the Credit, NPL, and Interest Rate variables has a significant effect on the Insurance Company Claims variable.

Based on the results of the t-test, the author concludes that the credit relaxation policy during the Covid-19 pandemic has a significant impact on insurance performance (insurance company claims). Although there has been an increase in NPL, insurance companies can still handle customer claims with financial difficulties due to the emergence of the Covid-19 pandemic. In addition, the credit relaxation policy can also help channel bank credit as seen by an increase in credit and claims in insignificant amounts. This indicates that the banking credit relaxation policy will be beneficial if continued, but with a scheme that supports increased premiums and reduced claims against the insurance industry.

Model 3: The Effect of Banking Risk on Profit Before Tax

**Table 5. Results of Banking Risk Variable Regression Estimation on Credit Claims**

| NPBT | Coef. | St. Err. | t-value | p-value | [95% Conf | Interval] | Sig |
|---|---|---|---|---|---|---|---|
| CRED | 0.009 | 0.002 | 5.54 | 0.000 | 0.006 | 0.013 | *** |
| NPL | -0.140 | 0.074 | -1.90 | 0.064 | -0.289 | 0.008 | * |
| INTR | -2859.021 | 1499.228 | -1.91 | 0.063 | -5884.586 | 166.543 | * |
| INFL | -27.015 | 276.573 | -0.10 | 0.923 | -585.163 | 531.133 | |
| UNEM | 0.005 | 0.001 | 4.93 | 0.000 | 0.003 | 0.007 | *** |
| GDP | -0.050 | 0.012 | -4.32 | 0.000 | -0.074 | -0.027 | *** |
| Constant | 4402.637 | 32464.605 | 0.14 | 0.893 | -61113.588 | 69918.862 | |

| | | | |
|---|---|---|---|
| Mean dependent var | 4644.620 | SD dependent var | 2659.441 |
| R-squared | 0.521 | Number of obs | 49 |
| F-test | 6.437 | Prob > F | 0.000 |
| Akaike crit. (AIC) | 888.807 | Bayesian crit. (BIC) | 902.050 |

*** p<.01, ** p<.05, * p<.1

**Source: Author, 2025**

The function of the research model is:

$NPBT_t = \alpha_i + \beta_1 CRED_t + \beta_2 NPL_t + \beta_3 INTR_t + \beta_4 INFL_t + \beta_5 UNEM_t + \beta_6 GDP_t + \varepsilon_t$

If the test results are entered into the research model, the following model will be formed:

$NPBT_t$ = 4.402,63 + 0,009 $CRED_t$ - 0,140 $NPL_t$ - 2.859,02 $INTR_t$ + 27,01 $INFL_t$ + 0,005 $UNEM_t$ - 0,05 $GDP_t + \varepsilon_t$

The calculation results in the table above show F value of 6.44 with a significance level of 0.0001 (Sig F $<\alpha = 0.05$). This shows that the regression model built with banking risk variables consisting of credit, NPL, Interest Rates, and control variables Inflation, Unemployment, and GDP with the dependent variable of credit claims is good and very feasible (goodness of fit). In total, 52.09% of the distribution of the Insurance Company's Profit Before Tax variable can be explained by banking risk variables consisting of credit, NPL, Interest Rates and control variables Inflation, Unemployment, and GDP. The remaining 47.91% is explained by variables that are not studied (error components).

The constant value of 4,402.63 means that in conditions where all independent variables are zero, during the credit policy relaxation period, the insurance company's profit before tax (LSPA) will be Rp4,402.63 billion. From the estimation results table, it can also be seen that if credit increases by Rp1 billion, it will increase LSPA by Rp9,354,500. Furthermore, if NPL increases by Rp1 billion, it will decrease LSPA by Rp140,117,200. In addition, when the Interest Rate increases by 1%, it will decrease LSPA by Rp2,589.02 billion. Meanwhile, when Inflation increases by 1%, it will increase LSPA by Rp27.01 billion. Then, if Unemployment increases by 1 person, it will increase LSPA by Rp5,193,800. Meanwhile, if GDP increases by Rp1 billion, it will decrease LSPA by Rp50,497,000.

The t-test results show a significant t-stat value on the credit variable, unemployment, and GDP variable because the prob value is not more than 0.05 while the NPL, interest rate, and inflation variables are not significant because the t-stat value is above 0.05. Thus, H1 is accepted because there is one credit risk variable that affects the net profit before tax of insurance. It is concluded that credit risk consisting of the credit variable has a significant effect on the profit before tax variable of insurance companies.

Based on the results of the t-test, the author concludes that the credit relaxation policy during the Covid-19 pandemic has an effect on the profit before tax of insurance companies. However, only the credit variable will affect the profit generated by insurance companies. Meanwhile, NPL and monetary indicators of interest rates and inflation do not affect the profit before tax of insurance companies. This indicates that the credit relaxation policy helps companies increase the profits generated by insurance companies but in an insignificant amount. Insurance company profits helped by banking credit intermediation during the Covid-19 pandemic.

## DISCUSSION

Overall, during the period of bank credit restructuring policy, the results of the regression estimation of this study indicate that banking risk proxied by credit, NPL, and credit interest rates have a significant effect on the performance of the insurance industry proxied by premiums, claims, and profits before tax of insurance companies. The relationship between banks and insurance companies has important implications for financial stability.

Since the Covid-19 restructuring policy was stopped, there has been a rapid increase in the value of banking NPLs, especially for MSMEs. Data released by the Financial Services Authority (OJK) shows that the gross NPL value that occurred in MSMEs in April 2024 was 4.2%, this value is higher than the gross NPL in March, which was 3.98%.

According to OJK's insurance data, after the banking credit restructuring policy ended the insurance industry was no longer able to hold a significant decline in performance. This can be seen from the amount of underwriting expenses and premium reserves that have increased drastically, resulting in a decrease in profit before tax, even becoming negative as in the following table:

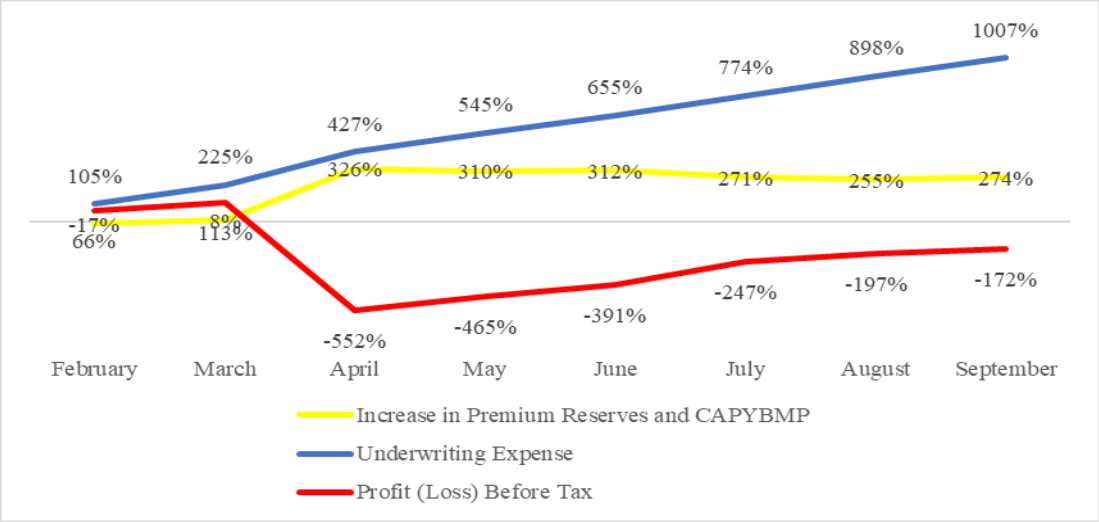
**Table 6. of General Insurance Performance Development (in Billion Rupiah)**

| Account | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sept |
|---|---|---|---|---|---|---|---|---|---|
| Amount of Increase in Premium Reserves and CAPYBMP | -1.914 | -1.595 | -2.067 | -8.150 | -7.856 | -7.881 | -7.102 | -6.794 | -7.158 |
| Underwriting Expense Amount | 2.947 | 6.027 | 9.565 | 15.523 | 18.997 | 22.251 | 25.749 | 29.424 | 32.612 |
| Profit (Loss) Before Tax | 1.221 | 2.028 | 2.599 | -5.515 | -4.463 | -3.556 | -1.796 | -1.190 | -874 |

**Source: OJK, 2025**

If we look at the direction of the insurance industry's performance, it can be seen that the health indicators of the insurance industry have declined since the end of the credit restructuring policy. One month after the policy ended, there was a significant increase in premium reserves and unearned premium reserves (CAPYBM) by 326%, until September it increased by 274%. The increase in underwriting expenses was also significant by 427% in April 2024, until September it was 1,007%. As a result of this increase, the insurance net profit experienced a deep decline of 552% a month after the end of the banking credit relaxation. This can be seen from the following graph:

**Figure 2. The Development of General Insurance Performance (in %)**




**Source: OJK, 2025**

The results of this study are in line with research (Allen & Carletti, 2006) that credit risk transfer between banking and insurance sectors is beneficial. Research by Guan-Chun & Chien-Chiang, (2019) shows that the relationship between banking and insurance can be a complementary or substitution, depending on how important risk transfer and capital allocation in the insurance market. The risk protection provided by insurance will protect debtors, thereby banking performance and profits can be guaranteed. This factor triggers a complementary relationship between banking and insurance, where banking will transfer risk into insurance market. Credit risk protection offered by insurance companies will also encourage increased bank lending by reducing the cost of capital. Furthermore, the substitution relationship between banking and insurance occurs because of the same function towards capital allocation. The market share of banking in savings intermediation can be negatively affected by insurance products (saving substitution effect). Insurance market activities, both as risk transfer, indemnification, and financial intermediation, will encourage the accumulation of new capital and will mobilize excess household income (savings) into productive investment portfolio options.

The results of this study provide useful insights into achieving co-evolution of banking and insurance based on empirical evidence. Excessive credit in banking can also be a signal of financial instability or financial crisis (Borio and Lowe, 2004). Banks will find it easier to offer credit if insurance is available, such as providing housing credit or purchasing a new car requires insurance as collateral for banks to give the credit. Furthermore, the development of banking sector will also provide liquidity facilities to insurance

companies and can be used to pay claims from customers.

Some previous research results are also in line with this research, Outreville (1990) found that insurance market demand is positively related to GDP per capita and financial development. Ward & Zurbruegg (2000) found a causal relationship between insurance market activity as measured by premiums and economic growth as measured by GDP. Research by Anindita Nazhifa, (2022) shows a significant positive relationship between growth in national income per capita and growth in net premium income generated by insurance companies. Shiu, (2004) found that liquidity, inflation, interest rates, and underwriting profits are statistically significant determinants of general insurance performance in the United Kingdom. Research by Beck & Webb, (2003) shows that economic indicators such as inflation, income per capita, and banking development are the most robust factors to use as predictors of insurance ownership. They underline the importance of price stability and the development of the banking industry in realizing the investment and savings functions for insurance. However, the positive impact of the development of the financial sector, both banking and insurance, is determined by macro policies, regulations, financial infrastructure, and enforcement of norms implemented by a country at a certain time.

Insurance activities contribute to economic growth through the function of the financial system both as a provider of risk transfer, indemnification, and as an institutional investor in several ways (Skipper, H., 1997):

a. providing financial stability;
b. facilitating trade in insurance activities;
c. mobilizing excess householding income (savings);
d. managing risk efficiently through the accumulation of new capital;
e. helping to reduce losses.

## CONCLUSION

Based on the results of the analysis and tests that have been conducted, the author concludes that banking credit risk has a significant effect on the performance of general insurance companies during the credit restructuring policy. Bank transfers credit risk to the insurance company that will accept the risk of default during the coverage period. Banking performance during the Covid-19 pandemic period tends to remain good and stable, as can be seen from the ongoing banking credit intermediation function even though the NPL has increased but can be suppressed. The stability of the banking industry's performance and functioning of insurance are influenced by the banking credit restructuring policy.

After the banking credit restructuring policy period ended, the insurance industry was no longer able to hold a significant decline in performance, as can be seen from the underwriting expense and the premium reserves increased drastically. The increase in underwriting expenses and insurance premium reserves resulted in a decrease in the insurance industry's profit before tax.

The relationship between banks and insurance sector has important implications for the stability of the financial system. The results of this study provide useful insights to achieve co-evolution of banking and insurance based on empirical evidence. The relationship between banks and insurance can be a complementary or substitution, depending on how important risk transfer and capital allocation. Considering the large credit claim to the insurance companies during the pandemic covid-19, and also un-balanced of the increase in premium income or net profit, a mix of prudential and monetary policies is needed to encourage the increase in premium income and net profit of insurance companies.

This study has several practical implications. First, the insurance companies must be able to anticipate the increase in claims from credit risk transfer. It’s aim to ensure the roles and functions as bank risk

transfer, indemnification, and financial intermediation can be exercised by insurance companies. Insurance companies are expected to be able to create business plans that can increase premium income and net profit.

This study also provides implications for policy makers to provide policy solutions and actions that can address the impact of banking policies on the performance of the insurance industry, especially in supporting improvements to the performance of the insurance industry after the Covid-19 pandemic. Financial Services Authority (OJK) can implement a series of policies to achieve co-evolution between banking and insurance, thus strengthening the stability both sectors. Central Bank needs to formulate monetary policies related to interest rates and inflation to encourage performance of the banking and insurance industries in order to carrying out their functions and roles in the financial system. The government also needs to create programs and policies that increase household income, in order to meet their credit obligations and to generate excess income (savings) which can balance the allocation of banking and insurance capital.

This study has several limitations, first, the time period used only during the credit restructuring policy from March 2020 to March 2024. This makes the analysis conducted only reflect the influence during the banking credit restructuring policy. In order to get a better picture of the relationship between banking credit risk and the general insurance industry, the author suggests that further research can extend the research period by adding periods before and after the banking credit restructuring period.

The data used in this study is aggregate time series of the banking and general insurance industry sourced from Financial Services Authority (OJK), Central Bank (BI), and Central Bureau of Statistics (BPS). Researchers use interpolation techniques for GDP and unemployment data. Central Bureau of Statistics (BPS) expected to be able to present macroeconomic indicator data on a monthly basis to facilitate more researchers. Further research is expected to be enriched with panel data sources in order to obtain a comprehensive and more specific picture. Additional variables and other methods can also be added to enrich the relationship between the banking and insurance industries in Indonesia.

## *Declaration by Authors*

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