

Determinant of Net Interest Margin Banking in Indonesia During The Period 2009 - 2018

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ABSTRACT: The purpose of this study is to examine the effect of Loan Growth, Unemployment, BOPO, CAR, Inflation, and Exchange Rate in relationship with Net Interest Margin. The research object used is banking data BUKU I to BUKU IV 2009-2018 published by Financial Service Authority, known as OJK. The analysis technique used is panel data regression analysis with Eviews 9.0 analysis tool. The results showed that the variables which consist of Loan Growth, and Unemployment had significant positive effect on Net Interest Margin. Other independent variables, which consist of BOPO, and Exchange Rate had significant negative effect on Net Interest Margin. While CAR and Inflation do not show significant impact to Net Interest Margin.

Keywords: Loan Growth, Unemployment, BOPO, CAR, Inflation, Exchange Rate, Net Interest Margin



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INTRODUCTION

Banking is one of the main bases for economic growth and financial stability in a country. The banking function as a financial institution is expected to become a driver of the economy for Indonesia. In carrying out its function as an intermediary, banking business activities, namely receiving and safeguarding funds owned by individuals and other entities, and then lending these funds to conduct economic activities. When carrying out its intermediary function, banks have a correlation with economic growth. When increasing the amount of credit affects the increase in economic growth in a country and vice versa. With the activity of channeling funds, the net interest margin, which is the ratio in banks, is so important that it needs to be considered in order to realize quality bank management ([Adam et al., 2021](#); [Mara et al., 2021](#)).

NIM is a tool that has the function of knowing banking profits and lending activities for a certain period of time. The NIM ratio is a measure in analyzing the difference in net interest income or interest margin compared to earning assets or interest profitability ([Blöchlinger, 2021](#); [Saksonova, 2014](#)). Bank profitability provides an indication of health and stability for banking institutions ([Sanderson, 2018](#)). The increasing net interest margin ratio means that bank management is getting better and reflects that the bank is well managed. A high NIM value means that high-interest income from productive assets in the company, then high-interest income can increase the company's profitability so that it can be better in corporate governance ([Junttila et al., 2021](#); [Nguyen et al., 2020](#)).

When NIMs have high numbers, it doesn't always reflect good meaning for the company. Interpretation of high Net Interest Margin can have two different facets of meaning. From a positive aspect, a high NIM is related to the degree of efficiency. Furthermore, from a negative perspective, high NIMs are associated with a banking environment that is not conducive. *NIM*, namely, the comparison used to determine the capacity of a bank when using productive activities to obtain income or net interest income ([Pandia, 2012](#)). Net Interest Margin (NIM) "net interest margin" is the difference between the interest income generated by banks from lending activities or investments with interest paid to lenders (for example, deposits). The high value of NIM shows that there is an increase in interest margin on productive assets run by banks, thus minimizing the problems that will be faced by banks ([Nihayati et al., 2014](#)). Net Interest Margin is very important in assessing banks' capability to manage their risk on interest rates ([Manurung et al., 2020](#); [Raharjo et al., 2014](#)).

The net interest margin ratio is so high that the Financial Services Authority issues a regulation with OJK Circular letter No. 14 / SEOJK.03 / 2016 for setting intensive rewards to banks that conduct efficient banking activities ([Otoritas Jasa Keuangan, 2018](#)). The regulation has a goal in limiting high NIM. Because of this, it is necessary to look at indicators that can affect NIM ([Bank Indonesia, 2013](#)). Several studies have been conducted to determine the effect of indicators from outside and inside on NIM, that macroeconomic variables influence the determination of NIM by banks significantly ([Saunders & Schumacher, 2000](#)).

Indicators that come from outside (*external*) namely from the macro side, including exchange rates, inflation, and unemployment. High inflation rates can affect a country's economy. Inflation has a causal principal relationship with investment credit. An increase in inflation can have an impact on the decline in credit in investment as well as a decline in economic growth. On the other hand, a decrease in inflation will have an impact on increasing investment credit. The credit sector is also sensitive to the effects of exchange rate fluctuations, an increase in the exchange rate of the US dollar to the Rupiah causes the population to own the US dollar, thereby reducing the amount of Rupiah and impacting the amount of bank lending ([Databoks, 2018](#)).

Unemployment is someone who is trying to get a decent job for his life. Increasing the volume of credit in the banking sector, it can encourage increased investment and consumption expenditure, hence the ratio of people who have jobs will increase. There are relationship between bank credit and the unemployment ratio and also conclude that a decrease in credit volume can increase the unemployment ratio at the same time ([Bernanke & Blinder, 1992](#)). There is an efficient interaction of credit volume with employment ([Ordine & Rose, 2008](#)). There was a correlation between unemployment and difficulties in accessing credit ([Benmelech & Dlugosz, 2009](#)). Besides, indicators from internal banks include bank size, efficiency ratios, capital, and credit risk. Credit risk is influenced by indicators, namely credit growth. Unemployment is a term that refers to individuals who can be employed and look for work but cannot find work. There are three types of unemployment include: (1) Disguised unemployment; (2) Under unemployment; and (3) Open unemployment ([Mankiw, 2012](#)).

Credit growth is an increase in loans to the private sector, individuals and public organizations. When credit increases, consumers can borrow and spend more, and businesses can borrow and invest. Regarding credit growth, bank profits are valued from net interest margins ([Igan & Pinheiro, 2009](#)). The net interest margin is a significant driver of private sector credit expansion. The findings show that NIMs are related to bank specific factors (internal banks), banks that provide more loans by maintaining lower financial leverage tend to have higher NIMs ([Iwanicz-Drozowska & Witkowski, 2021](#)).

There are theoretical model by considering operational costs as determining factors in Net Interest Margin (Maudos & de Guevara, 2004). Then, operational efficiency can drive the performance of a bank. High operational efficiency will drive profitability, in other words, a bank that reduces operating costs will optimize its operational performance, thereby increasing profitability. Operational Cost to Operating Income (BOPO) is a ratio that describes the activities of banks carried out efficiently According to a study conducted by Kosmidou (2008) found that the efficiency of the BOPO ratio is a parameter of the bank's ability to control expenses. The lower the operating expenses, the higher the net interest margin (NIM) that will be obtained (Badunenko et al., 2021) .

Capital Adequacy Ratio is a measure used in dealing with the risk of loss that will be faced by the bank. A high CAR value will encourage increased profitability. Increased Capital Adequacy Ratio can increase security to encourage customer confidence, which can then have a positive impact on increasing bank profitability. CAR (Capital Adequacy Ratio) is a capital adequacy ratio that explains banks' capabilities in the provision of funds and serves to minimize losses that will arise. Indicators that affect capital are capital adequacy. This CAR ratio ensures that banks have sufficient capital to cover potential losses and protect banks from bankruptcy. The higher the ratio, the more stable and efficient the bank is, and the less likely it is to go bankrupt. A high CAR value means that a bank is in good condition. At present, BI decides the banking CAR value, which is a minimum of 8%.

Inflation can be interpreted as a continuous and substantial increase in the general price level associated with an increase in the volume of money and resulting loss of currency (as opposed to deflation). Inflation can have a positive or negative side on the Indonesian economy depending on the high and low. With inflation, which is a prolonged increase in prices, the impact will be scarcity on supplies and services, furthermore, people will spend more to get goods/services.

International trade will encourage the exchange of two or more different currencies. This transaction will cause demand and supply for a certain currency, the exchange rate is the ratio of values between two different currencies (Nopirin, 2012). In other words, shows how many units of foreign currency consumers can pay with their local currency units.

METHOD

The study was conducted to identify how much credit growth, BOPO, CAR, unemployment, inflation have an influence on NIM in Indonesia. The study was also conducted to gain an understanding of the relations between variables including independent variables, namely credit growth and unemployment followed by control variables consisting of BOPO, CAR, inflation, while the dependent variable is Net Interest Margin. The independent variable is a variable that helps influence the dependent variable (Sugiyono, 2019). Then the dependent variable is a variable that is affected by an independent variable.

Table 1. Variables and Measurements

No	Name Variable	Type Variable	Measurement	Scale
1	Credit Growth	Independent	$\frac{\text{LOANS}_{i,t} - \text{LOANS}_{i,t-1}}{\text{LOANS}_{i,t-1}}$	Ratio
2	Unemployment	Independent & Intervening	$\frac{\text{Unemployed Persons}}{\text{Labor force}}$	Ratio
3	BOPO	Control	$\frac{\text{Operating Expenses}}{\text{Operating Income}}$	Ratio
4	CAR	Control	$\frac{\text{Capital}}{\text{ATMR}}$	Ratio
5	Inflation	Control	$\frac{\text{CPI}_t - \text{CPI}_{t-1}}{\text{CPI}_{t-1}}$	Ratio

		CPI t-1		
6	Exchange rate	Control	$\frac{\text{Buy Rate} + \text{Sell Rate}}{2}$	Ratio
7	Net Interest Margin (NIM)	Dependent	$\frac{\text{Interest income}}{\text{Productive Assets}}$	Ratio

The data analysis method in this study uses panel data analysis and regression and uses Eviews 9.0 for data processing. Panel data regression is a regression technique with a combination of time series data and cross section data (Basuki & Prawoto, 2019). Data analysis in this study used multiple regression analysis (multiple regression analysis). Equation formulas used to evaluate hypotheses in research are:

$$Y_{nim} = a + \beta_1 X_{LOANTA} + \beta_2 X_{UNEMP} + \beta_3 X_{BOPO} + \beta_4 X_{CAR} + \beta_5 X_{INF} + \beta_6 X_{LOG(USD)} + \dots$$

Information

Y_{nim} = Net Interest Margin

X_{LOANTA} = Credit Growth

X_{BOPO} = BOPO

X_{UNEMP} = Unemployment

X_{INF} = Inflation

$X_{LOG(USD)}$ = Exchange rates

T test is a partial test in which to find out whether there is a correlation between the independent variables as each (partial) with the dependent variable (dependent variable).

The hypotheses in this test include:

$$H_0 : \beta_1 = \beta_2 = \beta_3 = 0$$

(no significant effect)

$$H_a : \beta_1 \neq \beta_2 \neq \beta_3 \neq 0$$

(there is a significant effect)

If the significance is less than alpha 0.10, then reject H_0 . If the significance is more than 0.10, then accept H_0 .

RESULTS AND DISCUSSION

This study uses secondary data in the form of banking data in Indonesia taken from banking data statistics in 2009 – 2018 (Otoritas Jasa Keuangan, 2018). The sample used in this study is the sample that has met the specified criteria. There are 109 banks that have met the specified criteria. The type of data used in this study is panel data, which is a combination of time series data and cross section data. Time series data are used from 2009 to 2018. In addition, cross section data covers all banks included in the category of banks BUKU I to BUKU IV. The data used in this study are 1090 data so that the data is considered to be representative. Below is a description of the data used in this study that has been processed using EViews 9.0.

Table 2. Statistical Descriptive Analysis

	NIM	LOANTA	UNEMP	BOPO	CAR	INF	NT
The mean	5,510	0.594	6.245	83,928	28,514	4.7860	9,352
Maximum	18,040	0880	7,900	290.70	2529.42	8.4000	9,596
Minimum	-37,740	0,000	5,340	28,020	8020	2.8000	9,104
Std Dev.	3,468	0.161	0743	20,364	79,632	2.1303	0.1850
Observations	1090	1090	1090	1090	1090	1090	1090

Source: EViews 9.0 panel data output results

Panel data linear regression analysis in this study using the random effects method. The selection of the random effects method as a panel data analysis method in this study was previously tested through the Chow test and the Hausman test first. So the regression equation becomes:

$$\text{NIM} = 25.31644 + 4.859466\text{LOANTA} + 0.294381\text{UNEMP} - 0,045732\text{BOPO} + 0,000846\text{CAR} + 0.037386\text{INF} - 2,234450\text{NT}$$

T test was conducted to determine whether the independent variable partially influences the dependent variable. This test is done by looking at the results of the probability or significance obtained, namely:

- If the probability is > 0.10 then Ho is accepted and H1 is rejected
- If the probability is < 0.10 then Ho is rejected and H1 is accepted

Table 4. Relationship of Independent Variables to Net Interest Margin

Variable	Coefficient	Prob.	Relationship which was found	Significance
Credit Growth	4.859466	0.0000	Positive (+)	Significant
Unemployment	0.294381	0.0621	Positive (+)	Significant
BOPO	-0.045732	0.0000	Negative (-)	Significant
CAR	0.000846	0.3968	Positive (+)	Not significant
Inflation	0.037386	0.2731	Positive (+)	Not significant
Exchange rate	-2.234450	0.0005	Negative (-)	Significant

Effect of Credit Growth on Banking Net Interest Margin in Indonesia for the period 2009-2018.

The results of this study are consistent with research conducted by (Silalahi et al., 2015) which found that there was an influence between credit growth and Net Interest Margin (NIM). Credit is the main business of a bank and the main source of income for banks, but also carries the greatest risk. With the improvement of loan / credit conditions, banks can ignore the risk exposures that banks face and also banks reduce credit requirements so that credit growth also increases. The credit growth is indicated by the increase in the optimal banking intermediation function. The task of banking is to channel credit funds.

The Effect of Unemployment on the Net Interest Margin of Banking in Indonesia for the period 2009-2018.

The results of this study are consistent with research conducted by (Rolianah, 2018) states that there is a significant influence between unemployment and the financial performance of banks. Bank profitability is measured by Net Interest Margin which is a significant driver of credit expansion. An increase in the unemployment rate is a signal in reducing interest rates. The government reduced interest rates to activate the economy, so that people's interest in credit increased. With the increase in the number of loans extended by banks, it is expected to increase bank income or net interest margins (Boyd et al., 2006).

The Effect of BOPO on Banking Net Interest Margin in Indonesia 2009-2018.

The results of this study differ from the results of previous studies conducted by (Tarus et al., 2012) who found that operating costs to operating income (BOPO) had a positive effect on net interest margin (NIM). The findings of this study are that BOPO has a negative and significant influence on NIM. BOPO is used to assess the management capabilities of the bank in controlling operational costs to revenue operational. More and more, the lower the BOPO ratio, the more efficient the bank is in managing its business, and vice versa. The decline in the value of the BOPO ratio is due to banks' good ability to reduce operating costs and increase operating income, thus increasing the NIM ratio. Vice versa, there is an increase in the value of the BOPO

ratio because banks are unable to reduce operating costs and increase operating income, resulting in a decrease in the NIM ratio. ([T. Hidayat et al., 2012](#)) concluded that BOPO has a negative and significant effect on NIM.

Effect of CAR on Banking Net Interest Margin in Indonesia 2009-2018.

The results of the study are different from the results of previous studies conducted by Ram & Mesfin (2019) found that CAR has a significant effect on net interest margins (NIM). In this study, the CAR variable on net interest margins (NIM) has a positive effect, and this shows that banks are averse to risk (risk-averse) and require higher margins to cover higher costs of equity financing compared to external financing. This study found that CAR has a positive and not significant effect. This indicates that the volatility of the CAR ratio has no effect on NIM.

Influence of Inflation on Net Interest Margin of Banking in Indonesia in 2009-2018.

The results of this study are consistent with research conducted by ([Fahruri, 2017](#)) found that inflation has no influence on NIM. The higher level of inflation will reduce the ability of debtors to repay debt obligations and interest on loans so that non-performing loans to banks will increase. Increased non-performing loans will cause banks to raise loan interest rates as a reserve fund to overcome losses suffered by banks due to defaulted debtors. This study found that inflation has no significant positive effect on Net Interest Margin (NIM). Non-sharp fluctuation in NIM indicates that banks can anticipate inflation fluctuations and are ready if there is a sharp increase or decrease in the future. Banking readiness in the face of the possibility of inflation causes inflation, not a statistically significant effect on NIM. This is consistent with ([W. Y. Hidayat et al., 2012](#)) research, which states that inflation has a positive and not significant effect on NIM.

Effects of Exchange Rates on Banking Net Interest Margin in Indonesia for the period 2009-2018.

The results of this study are consistent with research conducted by ([Abiodun, 2012](#); [Alemu & Aweke, 2017](#)) states that foreign exchange rates significantly influence the NIM ratio. The exchange rate (exchange rate) as the last macroeconomic variable in this study affects the bank's NIM ratio performance negatively and significantly. The increase in the rupiah's exchange rate against the US dollar has an impact on the lower NIM ratio. This means that when the exchange rate rises, there will also be an increase in losses, and this situation causes the net interest margin (NIM) to decrease. This finding can be explained by the fact that if the domestic currency depreciates, the quality of loans may deteriorate, and bank margins will decline .

CONCLUSION

In closing this thesis, a conclusion will be drawn from the results of the previous research and discussion. Based on the analysis conducted in the previous chapter, this research intends to find out the factors that influence Net Interest Margin in banks in Indonesia. Net Interest Margin is the ratio used in analyzing how much income compared to its productive assets. The results showed that partially independent variables that significantly affected Net Interest Margin include credit growth, unemployment, BOPO, Exchange Rates. While the Independent variables that have no significant effect on Net Interest Margin are CAR, and Inflation.

Based on the conclusions above, the results of this study should be used by banks in carrying out their business activities. It is expected that banks will be wiser in determining a reduction strategy Net interest margin (*NIM*) by taking into account the level of credit growth, the level of efficiency, the amount of capital adequacy, and taking into account macroeconomic variables namely unemployment and the exchange rate. Furthermore, banks can realize the Financial Services Authority policy, namely with a NIM of less than 4.5%.

Banks in providing credit can apply the principles used in analyzing lending to prospective customers so that it will reduce the risk of default. With analyze the suitability and / or suitability of the loan application with all available information. This analysis is strived to determine the ability of the borrower and his intention to return the credit received. The next researcher is expected to be able to use other internal and external factors outside this research model such as the size of bank transactions, liquidity levels, interest rates and market competition to improve the ability of the regression model in explaining the variation in NIMs and adding company samples which will be used as a research sample. In addition, the government can also participate in the supervision of credit granting in banks.

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