Geoeconomics: Tadulako Journal of Economic and Regional Analysis

Volume 1, Issue 1, February 2026, Page 1-11
https://jurnal-iesp.feb.untad.ac.id/index.php/Geoeconomics

The Effect of Lending Interest Rates and Non-Performing Loans on Credit Demand of Micro, Small, And Medium Enterprises (MSMEs) in Central Sulawesi Province

Nur Aini Astuty Sultan[1*], Mohamad Ahlis[2], Rita Yunus[3]

[1,2,3]Department of Economics and Development Studies, Tadulako University, Indonesia
*e-mail: nurainiastutysultan@gmail.com[1]

*(**Received:** November 20, 2025; **Revised:** January 03, 2026; **Accepted:** February 01, 2026)*

ABSTRACT

The development of the Micro, Small, and Medium Enterprises (MSMEs) sector in Central Sulawesi Province is strategic in supporting regional economic growth. However, MSME credit demand in this region still faces significant challenges, particularly regarding access to financing, which is influenced by lending interest rates and the level of non-performing loans. This study aims to analyze the effect of MSME lending interest rates and MSME non-performing loans on MSME credit demand in Central Sulawesi Province, both simultaneously and partially, during the period from the first quarter of 2016 to the fourth quarter of 2023. The data used are quantitative secondary data in the form of quarterly time series sourced from Bank Indonesia Central Sulawesi Province, analyzed using multiple linear regression with a semi-log model. The results show that MSME lending interest rates and MSME non-performing loans simultaneously have a significant effect on MSME credit demand. Partially, the MSME lending interest rate has a negative and significant effect on MSME credit demand, as does MSME non-performing loans on MSME credit demand. These findings emphasize the importance of affordable interest rate adjustments and appropriate credit risk management to expand MSME financing access.

Keywords: *Credit demand, Lending interest rate, MSMEs, Non-performing loan*

INTRODUCTION

Credit growth is an important economic indicator that reflects the dynamics of financial activity and the level of public trust in banking institutions. An increase in credit growth generally reflects optimism and the expansion of the real sector, since credit is used for working capital, investment, and consumption. However, credit growth that is not accompanied by risk management can increase the risk of non-performing loans, which ultimately has a negative impact on financial stability. Therefore, a balance between credit expansion and credit quality becomes an essential prerequisite for financing sustainability, particularly for the small business segment that is vulnerable to changes in borrowing costs.

Micro, Small, and Medium Enterprises (MSMEs) play a significant role in the economy. Law Number 20 of 2008 defines MSMEs as productive enterprises owned and managed by individuals or small groups with assets and income within certain limits (Krisna & Nuratama, 2021). MSMEs play an important social and economic role through their wide distribution, their capacity to absorb labor, entrepreneurship development, and as a source of business opportunities (Farisi, Fasa, & Suharto, 2022). In 2023, MSMEs contributed approximately 61 percent to GDP and absorbed 97 percent of the national workforce (MPR, 2024), making this sector a key pillar of income distribution and job creation across various regions.

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Central Sulawesi Province continues to optimize the potential of MSMEs as a driver of regional economic growth. The number of MSMEs increased from 25,185 units in 2021 to 29,706 units in 2022 (UKMIndonesia.id, 2023). Nevertheless, compared to other provinces in Indonesia, Central Sulawesi still lags relatively behind in MSME development, so that credit distribution becomes an important instrument to drive this sector (Teruna & Ardiansyah, 2024). MSME credit is a financing service specifically designed by financial institutions to help business actors overcome capital difficulties, both for working capital and for investment.

MSME credit demand reflects the financing needs submitted by business actors to financial institutions for working capital, investment, and business development. In Central Sulawesi Province, total MSME credit demand shows a consistent upward trend, from IDR 10,225,163 million in 2019 to IDR 15,753,248 million in 2023. This trend indicates a continuously growing financing need in line with the business expansion of MSME actors, while also affirming the strategic role of banking in supporting regional economic activity.

The lending interest rate is one of the factors that influence MSME credit demand. A high interest rate limits the ability of MSMEs to obtain the working capital that is essential for operations and expansion, whereas a lower interest rate reduces borrowing costs so that access to capital becomes more affordable and enables investment in productive assets (Eton et al., 2021). The magnitude of the lending interest rate is influenced by the deposit interest rate and reflects the compensation for lending funds (Kasmir, 2013a). In Central Sulawesi, the lending interest rate fluctuated in the range of 9.48 to 10.40 percent throughout 2021-2023 and was recorded at 10.05 percent in the fourth quarter of 2023, reflecting the adjustment of banking credit policy to economic conditions.

Non-Performing Loans (NPLs) describe the level of credit risk arising from lending activities and the investment of funds across various portfolios. A high NPL indicates an increase in problem loans, including non-performing loans, which can hinder the distribution of new credit, particularly for the MSME sector, which is often regarded as having higher risk. NPLs in Central Sulawesi show a downward trend, from a peak of 2.64 percent in the third quarter of 2021 to 1.64 percent in the fourth quarter of 2023. Although under control, an NPL level that is still above 1 percent needs to be monitored because it can encourage banks to be more selective in distributing new credit.

The dynamics of MSME credit development in Central Sulawesi show a close relationship among financial indicators. The high Loan to Deposit Ratio (LDR), which reached 153.66 percent in the fourth quarter of 2023, indicates aggressiveness in credit distribution, but at the same time demands prudence from the side of liquidity and credit quality. This condition is compounded by an NPL that is still above 1 percent and by fluctuations in the interest rate, which together influence the financing decisions of MSME actors. Given the number of MSMEs that still lags behind other provinces, an in-depth study is needed regarding financing barriers in order to formulate a sustainable strategy for improving credit access.

Based on this description, this study aims to analyze the effect of MSME lending interest rates and MSME non-performing loans on MSME credit demand in Central Sulawesi Province, both simultaneously and partially, during the period from the first quarter of 2016 to the fourth quarter of 2023. Understanding the factors that influence financing access is expected to serve as a basis for formulating appropriate policies for financial institutions and stakeholders.

LITERATURE REVIEW

The framework of this study is built on credit theory and credit rationing theory. Credit theory according to Kent (1972) explains that credit is the right to receive payment or the obligation to make payment at a future time for the delivery of goods in the present, thus emphasizing the concept of credit as an exchange of economic value between parties. Credit not only functions as a source of capital but also as a mechanism that allows business actors to utilize resources in the present with an obligation to pay in the future.

The credit rationing model of Stiglitz and Weiss (1981) is one of the most influential theoretical works on the credit market. This model explains that under conditions of asymmetric information, an increase in the interest rate can trigger adverse selection and moral hazard, because high-risk borrowers tend to be willing to pay higher interest. As a result, banks choose to limit the amount of credit distributed (credit rationing) rather than raising interest rates without limit, in order to keep safe projects within their credit portfolio (Cassar & Wydick, 2012). An increase in the interest rate encourages banks to raise the risk premium due to concerns about the declining capacity of debtors to repay their debts, which leads to a reduction in the supply of credit (Kjenstad, Su, & Zhang, 2012). Because of information limitations, banks often set the same interest rate and collateral for all debtors, so that the interest rate fails to act as a balancer of credit supply and demand; banks then maximize profit through credit rationing (Marta & Satria, 2015).

The lending interest rate is the percentage of the loan amount charged to the borrower by the lender. Interest is charged to preserve the value of money, to provide compensation for risk, and to generate profit (Alafif, 2023). The determination of the interest rate is generally influenced by market mechanisms, namely the interaction between the demand for and the supply of credit, as well as the equilibrium outcome between the lender and the party requiring credit (Sudirman, 2013). Another important factor is the projection of the future value of money and the development of inflation, so that the calculation of the lending interest rate also anticipates changes in the value of money due to inflation (Fahmi, 2014).

Non-performing loans represent the final stage of problem loans, namely when the debtor is unable to fulfill their obligations over a significant period. The NPL is a financial measure that describes the level of credit risk from lending activities (Rusnaini, Hamirul, & Ariyanto, 2019). Non-performing loans can be caused by internal bank factors, such as limitations in analysis and supervision, as well as by external factors, such as declining market demand, supply chain disruptions, and natural disasters (Ismail, 2010). A high NPL level lowers the quality of bank assets, so that banks become more cautious in distributing credit.

Credit demand is the process of submitting a financing application by an individual or a company to a financial institution. MSME credit demand is influenced by various demand-side factors, such as the characteristics of the owner and the company, the availability of collateral, managerial skills, and the risk of default; while on the supply side, regulatory requirements, operational costs, and other factors also play a role (Parida & Pradhan, 2020). Credit demand is directly influenced by the interest rate; the higher the expected future interest rate, the lower the credit demand (Mishkin, 2009).

The relationship between the lending interest rate and MSME credit demand is negative. The higher the interest rate, the lower the amount of funds distributed tends to be; conversely, a decrease in the interest rate increases credit realization because MSME actors judge the profit from the turnover of their business funds to be greater than the obligation to repay the loan

(Sitanggang, Rotinsulu, & Maramis, 2021). Similarly, non-performing loans have a negative relationship with MSME credit demand. When non-performing loans increase, banks apply stricter credit-granting policies, so that many MSME actors refrain from applying for credit for fear of not passing the selection; conversely, when the NPL is low, the application process becomes easier and credit demand tends to increase (Khotimah & Atiningsih, 2018; Nurjanah & Arida, 2021).

Empirical Review

Several previous studies serve as references in this research. Boateng et al. (2024) examined the impact of interest rates on loan repayment and loan demand at Atiwa Rural Bank in Ghana, and found that higher interest rates were associated with lower loan repayment rates, so that interest rates have a significant impact on loan repayment behavior. Anwar et al. (2023) analyzed the impact of monetary policy and credit risk on bank credit behavior on the Indonesia Stock Exchange using Panel Ordinary Least Squares, and found that non-performing loans (NPLs) have a negative and significant effect on investment credit, working capital credit, and consumption credit.

Arintoko (2021) analyzed the effect of CAR, LDR, inflation, and GDP on bank credit distribution by type of use using the Autoregressive Distributed Lag method, and found that the lending interest rate has a negative effect on consumption credit. Maiti, Esson, and Vukovic (2020) examined the impact of interest rate liberalization on credit demand in Ghana using multiple linear regression, and found that inflation has a negative and significant effect on short-term credit demand. Purnamasari and Achyani (2022) found that operational efficiency (BOPO), the previous period NPL, and CAR have a significant effect on non-performing loans, while Yuliastanti et al. (2020) found that lending interest rates, inflation, and investment have a positive but insignificant effect on the economic growth of Southeast Asian countries. These various findings show that the direction and significance of the effect of interest rates and non-performing loans can vary according to the regional context and period.

Although many studies have examined the effect of interest rates and non-performing loans on credit distribution and demand, most focus on the national level or on other regions with inconsistent results. Research that specifically positions MSME credit demand as the dependent variable in the context of Central Sulawesi Province, with an observation period covering before, during, and after the Covid-19 pandemic, is still limited. This study seeks to fill this gap by utilizing quarterly time-series data for the 2016-2023 period, so that it can capture the dynamics of MSME credit demand more comprehensively and contribute to the formulation of financing policy at the regional level.

Hypotheses

Based on the theoretical and empirical review, the research hypotheses are formulated as follows. Ha_1: MSME lending interest rates and MSME non-performing loans simultaneously have a significant effect on MSME credit demand. Ha_2: the MSME lending interest rate partially has a negative and significant effect on MSME credit demand. Ha_3: MSME non-performing loans partially have a negative and significant effect on MSME credit demand.

METHOD

This study uses a descriptive quantitative research type, which aims to describe, investigate, and explain actual conditions and to draw conclusions from the observed phenomena using numerical data. The research location is Central Sulawesi Province, with the object being the MSME sector during the period from the first quarter of 2016 to the fourth quarter of 2023. The selection of the location is based on the strategic role of the province in the regional economy as well as the availability of reliable and comprehensive data on MSMEs in the region.

The type of data used is quantitative secondary data in the form of quarterly time series sourced from Bank Indonesia Central Sulawesi Province, comprising MSME lending interest rates, MSME non-performing loans, and MSME credit demand. Data collection was carried out through library research on books, literature, and economic reports published by Bank Indonesia and the Financial Services Authority, and through documentation of written materials published by related institutions.

The research variables consist of two independent variables, namely the MSME lending interest rate (X_1, percent) and MSME non-performing loans measured through the NPL ratio (X_2, percent), and one dependent variable, namely MSME credit demand (Y, million rupiah). The operational definition of each variable is presented in Table 1.

Table 1. Operational Definition of Variables

Variable	Operational Definition	Scale	Unit
MSME Credit Demand (Y)	Total MSME credit by bank group in Central Sulawesi Province, transformed into semi-log form	Ratio	Million Rupiah
MSME Lending Interest Rate (X_1)	The interest rate applied by financial institutions on loans granted to MSMEs	Ratio	Percent
MSME Non-Performing Loan (X_2)	Total value of MSME credit experiencing late payment or default (NPL ratio)	Ratio	Percent

Source: Processed data (2024)

The analysis method used is multiple linear regression with the help of EViews 13 software. The dependent variable is transformed into a semi-log form for three reasons: to address data that are not normally distributed, to reduce the potential for heteroscedasticity, and to facilitate the interpretation of coefficients in terms of percentage change. The estimated model is:

$$LogY = a + \beta_1 X_1 + \beta_2 X_2 + e$$

where LogY is MSME credit demand, α is the constant, β_1 and β_2 are the regression coefficients, X_1 is the MSME lending interest rate, X_2 is MSME non-performing loans, and e is the error term.

Before estimation, classical assumption tests were conducted to ensure that the model meets the criteria of the Best Linear Unbiased Estimator (BLUE). The normality test used Jarque-Bera, with the criterion that data are normally distributed if the probability is greater than 0.05. The multicollinearity test used the Variance Inflation Factor (VIF) value, with the criterion of being free from multicollinearity if the VIF value is smaller than 10. The heteroscedasticity test used Breusch-Pagan Godfrey, with the criterion of being free from heteroscedasticity if the probability of Obs*R-squared is greater than 0.05.

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Hypothesis testing was carried out through the simultaneous test (F-test), the partial test (t-test), and the coefficient of determination test (R^2). The F-test assesses the effect of all independent variables together on the dependent variable, with the criterion that H0 is rejected if the probability value is smaller than 0.05. The t-test assesses the effect of each independent variable partially with the same criterion. The coefficient of determination test assesses the proportion of variation in the dependent variable that can be explained by the independent variables, using the adjusted R-squared to avoid bias due to the addition of variables.

RESULTS AND DISCUSSION

Research Results

MSME credit demand in Central Sulawesi Province shows a consistent increase throughout 2016-2023, from IDR 8,065,911 million in 2016 to IDR 15,753,248 million in 2023, or nearly doubling. A slowdown occurred in 2020 due to the Covid-19 pandemic, with a total of IDR 10,411,855 million, while the sharp increase in 2021-2023 reflects economic recovery and the increasing confidence of business actors in the post-pandemic period.

The MSME lending interest rate tended to decline from 12.63 percent in 2016 to its lowest point of 9.82 percent in 2022, in line with the economic recovery stimulus policy, then increased to 11.14 percent in 2023 in response to global inflationary pressures and the normalization of monetary policy. Meanwhile, the non-performing loan (NPL) ratio improved from 4.42 percent in 2016 to 3.30 percent in 2023, even though the nominal value of non-performing loans increased, in line with greater total credit growth. The lowest NPL point occurred in 2020 at 2.71 percent, supported by the credit restructuring policy under POJK No. 11/POJK.03/2020.

The results of the classical assumption tests show that the model meets the BLUE criteria. The normality test produced a Jarque-Bera probability of 0.286897 (> 0.05), so that the residuals are normally distributed. The multicollinearity test produced a tolerance value of 0.617 and a Variance Inflation Factor (VIF) value of 1.620101 for both independent variables, namely the MSME lending interest rate and MSME non-performing loans. Because this VIF value is smaller than 10, there is no multicollinearity among the independent variables in the regression model. The Breusch-Pagan Godfrey heteroscedasticity test produced an F-statistic value of 1.889039 with a probability of 0.1700, an Obs*R-squared of 3.685573 with a probability of 0.1584, and a Scaled explained SS of 1.813846 with a probability of 0.4038. Because the Obs*R-squared probability of 0.1584 is greater than 0.05, the regression model does not have a heteroscedasticity problem or is homoscedastic. With all classical assumption tests fulfilled, the model is suitable for multiple linear regression analysis, the results of which are presented in Table 2.

Table 2. Multiple Linear Regression Results

Variable	Coefficient	Std. Error	t-Statistic	Probability
C (Constant)	17.48476	0.222020	78.75305	0.0000
MSME Lending Interest Rate (X_1)	-0.072122	0.025308	-2.849821	0.0080
MSME Non-Performing Loan (X_2)	-0.129654	0.040339	-3.214145	0.0032
R-Squared = 0.624626		Adjusted R-Squared = 0.598738		
F-Statistic = 24.12812		Prob (F-Statistic) = 0.000001		

*Source: Processed secondary data with EViews 13 (2024). *** significant at a 1 percent p-value.*

Based on Table 2, the regression equation obtained is $LogY = 17.48476 - 0.072122X_1 - 0.129654X_2 + e$. The constant value of 17.48476 indicates that if both independent variables are zero, MSME credit demand is at that level in logarithmic form. The MSME lending interest rate coefficient of −0.072122 indicates that every 1 percent increase in the interest rate decreases MSME credit demand, ceteris paribus. The MSME non-performing loan coefficient of −0.129654 indicates that every 1 percent increase in non-performing loans also decreases MSME credit demand, ceteris paribus. Both independent variables have a negative relationship with MSME credit demand.

The simultaneous test (F-test) produced an F-statistic value of 24.12812 with a probability of 0.000001 (< 0.05), so that MSME lending interest rates and MSME non-performing loans simultaneously have a significant effect on MSME credit demand; the first hypothesis is accepted.

The partial test (t-test) shows that the MSME lending interest rate variable has a t-statistic value of −2.849821 with a probability of 0.0080, while the MSME non-performing loan variable has a t-statistic value of −3.214145 with a probability of 0.0032. Because both probability values are smaller than 0.05, each variable has a negative and significant effect partially on MSME credit demand, so that the second and third hypotheses are accepted.

The coefficient of determination test produced an R-squared value of 0.624626 and an adjusted R-squared of 0.598738. This adjusted R-squared value means that both variables explain 59.87 percent of the variation in MSME credit demand, while the remaining 40.13 percent is explained by other variables outside the model. This value is considered sufficient but not yet optimal, so that there is room for future research to enrich the model with additional variables.

Discussion

The significant simultaneous effect indicates that MSME lending interest rates and MSME non-performing loans together have the power to explain the variation in MSME credit demand. The high F-statistic value and the very low probability provide strong evidence that the regression model is valid and reliable for explaining the phenomenon of MSME credit demand in Central Sulawesi Province. This finding is consistent with Kaunang (2013) and Desya, Laut, and Rusmijati (2019), who found that both variables simultaneously have a real impact on MSME credit distribution.

The two factors reinforce each other. Banks tend to raise interest rates in response to increasing non-performing loans in order to cover the risk of losses, while MSME actors become more hesitant to apply for credit due to higher borrowing costs. The combination of the two creates a double pressure that reduces MSME credit demand. An increase in the interest rate also has the potential to burden debtors further, thereby increasing the risk of non-performing loans, which reinforces the combined effect of the two (Hanif & Widawati, 2024). In addition to these technical factors, MSME financing constraints are also related to weak regional planning, including a limited understanding of the Money Follow Program approach, so that credit distribution is not yet fully in line with the needs of MSME actors (Djirimu et al., 2024).

Partially, the MSME lending interest rate has a negative and significant effect on MSME credit demand. This finding is consistent with Zulkarnain et al. (2022), Effendi (2016), and Boediono (2010), who state that an increase in the interest rate raises borrowing costs, thereby reducing the interest of MSME actors in applying for credit. This is in line with the law of demand in classical economic theory, namely that an increase in price in this case the cost of interest reduces the quantity demanded, where the loan demand curve has a negative slope (Mishkin, 2008). The interest rate setting policy of financial institutions therefore has a direct impact on financing access for the MSME sector.

However, the 2023 data show a phenomenon that differs from the general tendency. MSME credit demand actually increased from IDR 14,276,805 million in the first quarter of 2023 to IDR 15,753,248 million in the fourth quarter of 2023, even though the interest rate rose from 10.48 percent to 11.14 percent. This condition shows that during the post-pandemic recovery period, the drive of urgent financing needs can be more dominant than the barrier of rising interest rates. The sensitivity of MSMEs to changes in the interest rate tends to decline when capital needs are at a very high level, so that the negative relationship between the interest rate and credit demand does not always hold in periods with great financing-need pressure (Sukarnasih & Bhegawati, 2024; Yahya, Suharto, & Mattunruang, 2023).

MSME non-performing loans also have a negative and significant effect on MSME credit demand. High non-performing loans reduce the availability of funds that can be distributed, so that banks become more selective; stricter requirements and a longer approval process cause many MSME actors to postpone or cancel their credit applications (Kustina et al., 2018; Hidayat, 2016). Credit distribution is the main source of banking income, so that high non-performing loans hamper the turnover of working capital and encourage banks to temporarily limit credit distribution in order to minimize risk (Khotimah & Atiningsih, 2018).

Conversely, a low NPL indicates good repayment ability of customers, so that banks have more funds to distribute, which encourages an increase in credit demand due to the ease of financing access (Isnurhadi, Kartika, & Umrie, 2015). This finding affirms the connection between the condition of credit supply by banks and the formation of demand behavior from the MSME sector. Nevertheless, data in several periods show that an increase in non-performing loans is not always followed by a decrease in credit demand, because external factors such as regional economic growth and the financing needs of the real sector are able to offset that negative effect.

The coefficient of determination of 59.87 percent indicates that there are still other factors that influence MSME credit demand. Macroeconomic factors such as inflation and GDP, as well as internal banking factors such as the Capital Adequacy Ratio, Loan to Deposit Ratio, and operational efficiency (BOPO), potentially also play a role (Arintoko, 2021; Purnamasari & Achyani, 2022). In addition, credit availability, income level, financing structure, the characteristics of business actors, and the availability of non-bank financing alternatives can also influence MSME credit demand (Maiti, Esson, & Vukovic, 2020; Manyanga et al., 2023), so that these variables can be considered in future research.

Overall, the findings of this study are aligned with the credit rationing theory of Stiglitz and Weiss (1981), which explains that under conditions of asymmetric information, an increase in the interest rate and a deterioration in credit quality encourage banks to limit credit distribution even though there is demand willing to pay higher interest. The negative direction of the effect of both independent variables on MSME credit demand affirms that the demand behavior of MSME actors cannot be separated from the credit supply conditions shaped by the risk perceptions of banks. Practically, this finding implies that efforts to expand MSME financing access in Central Sulawesi need to address two sides simultaneously, namely maintaining the interest rate at an affordable level and reducing the risk of non-performing loans through risk management and business assistance.

CONCLUSION AND SUGGESTIONS

MSME lending interest rates and MSME non-performing loans simultaneously have a significant effect on MSME credit demand in Central Sulawesi Province. Partially, the MSME lending interest rate has a negative and significant effect on MSME credit demand in Central Sulawesi Province, and MSME non-performing loans have a negative and significant effect on MSME credit demand in Central Sulawesi Province. Thus, the affordability of borrowing costs and credit quality are two important determinants of MSME financing access in this region.

Based on these findings, banks and financial institutions are advised to consider adjusting MSME lending interest rates to a more affordable level in order to encourage the growth of the MSME sector through the expansion of formal financing access. Financial institutions also need to develop a better risk management approach to handle non-performing loans without applying overly strict credit restrictions, accompanied by mentoring and financial education for MSME actors to reduce the risk of default. Future researchers can expand the research variables, such as inflation, regional economic growth, and banking regulations, or broaden the coverage area and analysis methods to obtain a more comprehensive perspective on MSME sector financing.

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