Research Article

THE IMPACT OF REGIONAL DEVELOPMENT BANK PERFORMANCE ON MSME CREDIT IN INDONESIA (2014 – 2023)

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ABSTRACT

Background: Micro, Small, and Medium Enterprises (MSMEs) are a major pillar of Indonesia's economy, yet their access to formal financing remains limited. Regional Development Banks (BPDs) are expected to strengthen MSME financing because of their regional mandate and proximity to local economic actors, but their contribution to national MSME credit is still relatively small.
Purpose: This study aims to analyze the effect of BPD on MSME credit in Indonesia and to examine whether the number of micro and small industries moderates this relationship.
Design/methodology/approach: This study applies descriptive analysis and panel data regression to 15 conventional BPDs operating in single provinces during 2014–2023. MSME credit distribution at the provincial level is analyzed using bank performance indicators, regional macroeconomic variables, a COVID-19 dummy, and the interaction between net interest margin and the number of micro and small industries.
Findings/Results: Capital adequacy, net interest margin, and loan-to-deposit ratio positively affect MSME credit, while return on assets has a negative effect. Gross regional domestic product (GRDP) and the number of micro and small industries increase MSME credit, but the micro prime lending rate reduces it, and the moderating effect of micro and small industries weakens the role of net interest margin.
Conclusion: MSME credit distribution is shaped not only by internal bank performance but also by regional economic conditions and the affordability of credit. Strengthening MSME financing requires sound bank performance, efficient intermediation, and more accessible lending costs.
Originality/value (State of the art): This study specifically focuses on Regional Development Banks (BPDs), covers the 2014–2023 period, combines internal bank and external regional variables, and introduces the number of micro and small industries as a moderating variable in explaining MSME credit distribution.

ARTICLE INFO

Keywords:
regional development banks, msme credit, BPD, panel data, Indonesia

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INTRODUCTION

Micro, Small, and Medium Enterprises (MSMEs) are a vital foundation of the Indonesian economy. Between 2015 and 2019, the number of MSMEs in Indonesia exceeded 60 million, representing approximately 99% of all business units, a higher share than in several ASEAN countries, such as Thailand, Singapore, and Brunei Darussalam. During the same period, the contribution of MSMEs to Gross Domestic Product (GDP) also exceeded 60%. This fact demonstrates that MSMEs are a pillar of production, innovation, and national economic growth (ADB, 2021; Jee Sinha et al., 2024).

The strategic role of MSMEs is also reflected in their function as instruments of inclusive development. Various studies show that MSMEs contribute to

expanding employment opportunities, reducing poverty, strengthening regional economies, and reducing inter-regional disparities. Arifin et al. (2021), Tambunan (2019), and Jee Sinha et al. (2024) emphasize that this sector not only plays a role in generating economic output but also serves as a means for more equitable distribution of development benefits. Therefore, strengthening MSMEs is inseparable from the agenda of welfare, regional economic transformation, and sustainable development.

One of the most serious obstacles faced by MSMEs is limited access to financing. In addition to barriers to marketing, innovation, technology, management, human resources, and regulations, financing remains the most crucial factor in determining MSMEs' ability to grow. Figure 1 shows the percentage of MSME loans to total loans disbursed by commercial banks. In 2019 and 2020, MSME loans accounted for only around 19%, below the minimum required level. Subsequently, this figure increased to 21% in 2021 and 2022 but fell again to 20.55% in 2023.

ILO (2019) and Santoso (2020) emphasize that formal financing plays a crucial role in increasing productivity, expanding business scale, and strengthening the resilience of MSMEs to economic shocks. Without adequate funding support, MSMEs tend to remain small-scale with limited expansion capacity. Under such conditions, MSMEs' potential as drivers of the national economy cannot develop optimally.

The MSME financing gap is influenced by both supply and demand factors. From the banking perspective, MSMEs are often perceived as high-risk borrowers due to their business track record, income stability, and limited financial documentation. This exacerbates the problem of asymmetric information, leading banks to be more cautious in disbursing credit. The World Bank (2022) and the Financial Services Authority (OJK) (2024a) emphasize that limited business information makes it difficult for financial institutions to objectively assess borrower risk. From the MSME perspective, there is still a perception that formal credit always requires heavy collateral, compounded by low financial literacy and limited access to formal services in remote areas. As a result, a financing gap emerges, related not only to credit availability but also to institutional capacity, service distribution, and business actors' perceptions of the formal financial system (ILO, 2019; OJK, 2024a; Santoso, 2020; World Bank, 2022).

The Indonesian government has attempted to expand access to financing for MSMEs through policies that encourage minimum credit disbursement to this sector. However, its implementation has not fully addressed the gap. In recent years, the share of MSME credit in total commercial bank credit has not fully met the established target, while formal financial institutions have also been unable to fully meet MSME financing needs. The Financial Services Authority (OJK) (2024a) indicates that demand for MSME financing still far exceeds available supply capacity. This situation indicates that the MSME financing problem is structural in the national financial intermediation system. Therefore, resolving it requires more than simply targeting distribution; it also requires institutional strengthening, reducing information asymmetry, and improving policy design to be more sensitive to the characteristics of MSMEs.

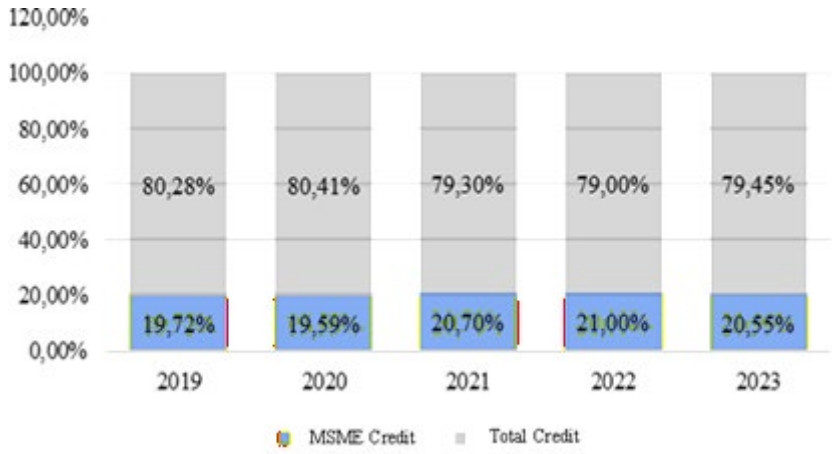

Figure 1. Proportion of MSME Credit to Total Commercial Bank Credit (OJK, 2020; OJK, 2023)

In this context, Regional Development Banks (BPD) are relevant institutions to study. As banks established to support regional development, BPDs have geographical and cultural proximity to local businesses. These characteristics give BPDs an advantage in reaching the local business sector, including MSMEs. Through its 2024–2027 Roadmap for Strengthening BPD, the Financial Services Authority (OJK) emphasizes the importance of strengthening BPD functions to be more effective in disbursing productive credit, particularly to MSMEs (OJK, 2024b). With its inherent development mandate, BPDs are expected to not only carry out commercial functions but also act as catalysts for inclusive regional economic growth.

Despite this, the contribution of regional banks (BPD) to national MSME credit remains relatively small. Compared to state-owned banks and national private banks, BPDs have not yet become major distributors of MSME credit. This situation indicates a gap between the BPD's institutional mandate and the realization of its role in financing the productive sector. In fact, BPDs theoretically have a strategic position to strengthen financial inclusion in the regions. This limited contribution raises important questions regarding the factors influencing BPD MSME credit distribution: whether it is primarily determined by internal bank factors, external regional economic factors, or an interaction between the two (Pinasthika, 2016). This question becomes even more important when linked to the need to strengthen productive financing at the regional level.

Theoretically, the relationship between bank performance and MSME credit distribution can be explained through the theory of financial intermediation. Financial institutions function to channel funds from those with surplus funds to those in need of financing, while simultaneously reducing transaction costs, implementing risk sharing, and mitigating asymmetric information through the process of selecting and monitoring borrowers (Mishkin & Eakins, 2012). In the context of MSMEs, this intermediation function is crucial because small business owners generally face limited information, business documentation, and collateral, making access to formal financing highly dependent on the bank's ability to manage credit risk. Furthermore, the theory of credit supply and demand also emphasizes that credit distribution is influenced by the price of funds, namely interest rates, as well as by the demand for financing from business actors (Shapiro et al., 2022). Thus, MSME credit is determined not only by the borrower's financing needs but also by the bank's intermediation capacity and risk appetite.

Previous research supports this argument, although the results are inconsistent. Hidayat (2016), Haryanto and Widyarti (2017), and Apgar (2023) show that banking financial ratios such as capital adequacy, asset quality, profitability, and liquidity are related to credit distribution. However, the direction and strength of this influence vary across studies. Furthermore, studies specifically focusing on BPD are still limited. Pinasthika (2016) suggests that the characteristics of BPDs require separate analysis because these banks have a regional development mandate that differs from national commercial banks. Therefore, utilizing theoretical foundations and previous research in this study is crucial to position MSME credit distribution not solely as a matter of financing demand but also as a result of the interaction between the intermediation function, the bank's internal conditions, and regional economic characteristics.

Previous empirical studies have also shown that credit distribution is influenced not only by debtor characteristics but also by bank health and performance. Financial ratios such as capital adequacy, asset quality, profitability, and liquidity are used to explain a bank's ability to disburse financing. Hidayat (2016), Haryanto and Widyarti (2017), and Apgar (2023) show that these indicators are related to credit distribution. However, their research results have not shown complete consistency, as the direction and significance of each ratio's influence can vary depending on the type of bank, the study period, and the analytical method used. Furthermore, most research focuses on commercial banks in aggregate, rather than on BPD specifically. BPDs have different institutional characteristics, regional orientations, and development mandates, so the results of studies on commercial banks cannot always be generalized to explain BPD credit behavior (Apgar, 2023; Haryanto & Widyarti, 2017; Hidayat, 2016; Pinasthika, 2016).

The urgency of research has increased since the COVID-19 pandemic depressed MSME revenues, increased business uncertainty, and altered financing patterns. Gunadi et al. (2021) showed a decline in MSME profits across Indonesia, while Nufus et al. (2021) found that the pandemic's impact was felt

more severely by medium-sized businesses. In such a situation, formal financing becomes increasingly important, but at the same time, banks also face increased risk pressures. Therefore, the pandemic presents a crucial opportunity to assess the resilience of the MSME financing system, including the role of BPD in responding to regional economic pressures.

Based on these conditions, this study is novel in several aspects. First, the study focuses specifically on BPD, not commercial banks in general. Second, the 2014–2023 period allows the analysis to capture dynamics before the pandemic, during the pandemic, and in the early recovery phase. Third, the study incorporates both internal bank variables and external regional variables simultaneously. Fourth, the study adds the number of Micro and Small Industries (IMK) as a moderating variable to assess whether the number of business actors strengthens or weakens the influence of BPD performance on MSME credit distribution. With this design, the study aims to explain MSME financing more comprehensively as a result of the interaction between bank institutional performance, regional economic conditions, and the structure of small business demand (Apgar, 2023; Hidayat, 2016; Pinasthika, 2016).

The research problem is approached through a combination of descriptive analysis and panel data regression. This approach was chosen because the relationship between BPD financial performance indicators and MSME credit distribution does not always appear linear and consistent visually, requiring statistical testing capable of capturing the simultaneous influence of various variables. This study aims to describe the condition of MSME credit distribution in Indonesia for the period 2014–2023, identify the influence of Regional Development Bank performance on MSME credit distribution, and analyze the role of the number of MSMEs in moderating this relationship. Substantively, this objective is directed at explaining why MSME financing is still suboptimal and how the position of BPDs can be strengthened in addressing this problem (Apgar, 2023; Pinasthika, 2016).

METHODS

This study uses a quantitative approach with panel data regression, as this method allows for simultaneous analysis across time and between observation units. Panel data combines time series and cross-sectional observations, making it more adequate for explaining variations in MSME credit distribution between provinces and between periods compared to using time series and cross-sectional data separately (Hill et al., 2018; Juanda, 2009). The study period covers 2014–2023, with the observation units consisting of 15 conventional BPDs operating in one province. BPDs serving more than one province were excluded to maintain consistency of analysis units at the provincial level. Sharia BPDs were also excluded due to differences in operational principles and financial performance measurement.

The dependent variable in this study is the total volume of MSME credit at the provincial level. The main independent variables representing BPD performance include the Minimum Capital Adequacy Requirement (KPMM), Non-Performing Loans (NPL), Return on Assets (ROA), Net Interest Margin (NIM), and Loan-to-Deposit Ratio (LDR). Furthermore, the study includes control variables in the form of Gross Regional Domestic Product (GRDP) based on current prices, inflation, and the Microcredit Prime Interest Rate (SBDK), as well as a COVID-19 pandemic dummy to distinguish between pandemic and non-pandemic periods. This study also uses the number of Micro and Small Industries (IMK) as a moderating variable interacted with NIM to test whether business density in a region influences the relationship between BPD performance and MSME credit distribution (Apgar, 2023). Table 1 shows the data sources used in this study.

The analysis was conducted in two stages: descriptive analysis and econometric analysis. Descriptive analysis was used to describe trends in MSME credit distribution, while econometric analysis (panel regression) was used to statistically test the influence of the research variables. In panel estimation, three approaches were considered: Pooled Least Squares (PLS), Fixed Effect Model (FEM), and Random Effect Model (REM) (Juanda, 2009). The best model was selected through the Chow test, the Hausman test, and the Lagrange Multiplier test. In analyzing the influence of BPD performance on MSME credit distribution, the equation used in this study was formulated using an equation adopted from Apgar's (2023) study. The regression equation model in this study is shown in the model below. Because the equation does not entirely use the natural logarithm form, adjustments in the interpretation and elasticity approach are necessary (Wooldridge, 2019 and Juanda, 2009).

Table 1. Data Sources and Variables Used

Variables	Unit	Source
MSME Credit	Billion Rupiah	Statistics Banking Indonesia by OJK
KPMM	Percent	BPD Financial Reports
NPL Gross	Percent	BPD Financial Reports
ROA	Percent	BPD Financial Reports
NIM	Percent	BPD Financial Reports
LDR	Percent	BPD Financial Reports
IMK	Unit Business	Profile of Micro and Small Industries, BPS
GRDP	Billion Rupiah	BPS
Inflation	Percent	BPS
SBDK	Percent	OJK
Dummy	COVID -19 pandemic dummy	

$$\ln MSMECredit_{it} = \beta_0 + \beta_1 KPMM_{it} + \beta_2 NPLGross_{it} + \beta_3 ROA_{it} + \beta_4 NIM_{it} + \beta_5 LDR_{it} + \beta 6 \ln IMK_{it} + \beta_7 \ln GRDP_{it} + \beta_8 Inflation_{it} + \beta_9 SBDK_{it} + \beta_{10} Covid_{it} + \beta_{11} (\ln IMK_{it} \times NIM_{it}) + \varepsilon_{it}$$

where: β_0 (Constant); $\beta_1,\ldots,\beta_{11}$ (Regression parameter coefficient); i (Province (15 Provinces)); t (Time series (2014 - 2023)); $\ln MSMECredit_{it}$: Natural logarithm of the amount of MSME credit in province i and in year t $KPMM_{it}$ (Minimum Capital Requirement at BPD i t-th year (%)); $NPLGross_{it}$ (Gross Non Performing Loan at BPD i in year t (%)); ROA_{it} (Return On Assets at BPD i t-th year (%)); NIM_{it} (Net Interest Margin at BPD i in year t (%)); LDR_{it} (Loan to Deposit Ratio at BPD i in year t (%)); $\ln IMK_{it}$ (Natural logarithm of the number of small and micro industries in province i and year t); $\ln GRDP_{it}$ (Natural logarithm of GRDP on the basis of prices valid in province i in year t); $Inflation_{it}$ (General inflation rate in province i in year t (%)); $SBDK_{it}$ (Basic interest rate for micro credit at BPD i in year t (%)); $Covid_{it}$ (Dummy variable of COVID-19 pandemic in BPD i in year t); $\ln IMK_{it} \times NIM_{it}$ (Interaction variable between lnIMK and NIM at BPD i in year t); ε_{it} (Error term).

RESULTS

Conditions of MSME Credit Financing in Indonesia for the Period 2014 – 2023

The growth of MSME credit financing in Indonesia from 2014 to 2023 fluctuated. Figure 2 shows that before the pandemic (2014–2019), MSME credit growth was relatively stable at around 8%–10%, peaking at 10.33% in 2014. The initial slowdown in 2019 indicated the impact of the COVID-19 pandemic, which placed significant pressure on MSME activity and the national financial system. This impact became even more pronounced in 2020, with credit growth slowing to 4.19%, the lowest level in the analysis period. This condition was closely related to the impact of social restrictions policies that suppressed economic activity, decreased market demand, and increased banking prudence in lending. However, in 2021, there was a significant surge, with MSME credit growth reaching 12.19%. This was driven by the National Economic Recovery (PEN) policy, credit restructuring, and MSME actors' adaptation to digitalization. However, growth began to decline to 10.47% in 2022 and 8.03% in 2023. Although showing a slowing trend, this figure still reflects better conditions compared to the pandemic period and indicates the ongoing process of economic normalization.

In line with this growth dynamic, the quality of MSME credit during the 2014-2023 period was relatively controlled. Based on Figure 3, the NPL level of MSME credit consistently remained below the 5% threshold. NPL increased from 3.75% in 2014 to 4.03% in 2015, then gradually decreased to reach its lowest point in 2018 at 3.34%. Entering 2019 and 2020, NPL increased again to 3.47% and 3.96%, respectively. During the pandemic (2020-2022), the NPL of MSME credit remained below 4%, reflecting the resilience of the banking sector in maintaining credit quality amid economic pressures. Although it decreased to 3.41% in 2022, the NPL rose again to 3.71% in 2023. Overall, the NPL condition of MSME credit remained controlled

within safe limits throughout the analysis period.

Geographically (Figure 4), the distribution of MSME credit during the study period remained concentrated on Java, which consistently absorbed more than 50% of total national MSME credit. MSME credit in Java continued to increase, peaking at 59.23% in 2019. Despite a decline during the pandemic, its dominance remained at 56.64% in 2023. Sumatra ranked second, with a stable distribution of 18%–19% and showing an upward trend. Kalimantan, Sulawesi, Bali, and Nusa Tenggara showed moderate and relatively stable shares. Maluku and Papua had the lowest proportions and experienced a decline at the start of the pandemic, although they gradually recovered in 2023. This disparity underscores the importance of equitable

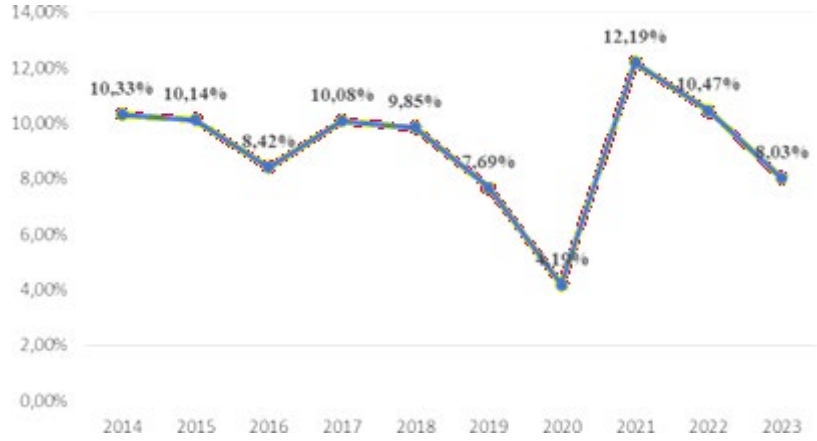

Figure 2. Year-on-year growth of MSME credit financing 2014 - 2023 (OJK, 2020; OJK, 2023)

Figure 3. NPL of MSME Credit 2014 - 2023 (OJK, 2020; OJK, 2023)

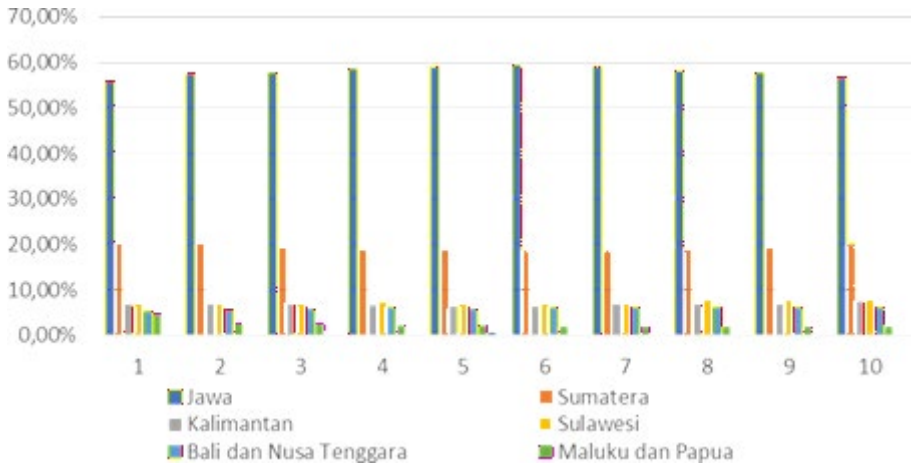

Figure 4. Distribution of MSME Credit by Location 2014 - 2023 (OJK, 2020; OJK, 2023)

access to financing across regions.

The Influence of Regional Development Bank (BPD) Performance on Credit Financing in Indonesia

Based on panel data regression, the model indicates that the Random Effect Model (REM) is the most appropriate specification. The Chow test yields a probability of 0.000, indicating that FEM is superior to PLS. However, the Hausman test yields a probability of 0.354, indicating that REM is more appropriate than FEM. The Lagrange Multiplier test also yields a probability of 0.000, indicating that REM is superior to PLS. Based on these three tests, the final estimation is performed using REM. In other words, variations between observation units are more appropriately treated as random effects rather than fixed effects in this study (Gujarati, 2004; Juanda, 2009). Detailed results can be seen in Table 1. Because REM is estimated using the Generalized Least Squares (GLS) method, heteroscedasticity and autocorrelation issues are considered procedurally addressed (Gujarati, 2004).

The estimation results are shown in Table 2. Based on this estimate, the R-squared value is 0.687, meaning that approximately 68.7% of the variation in MSME credit distribution can be explained by the variables in the model. Meanwhile, the remaining 31.3% is explained by other factors outside the model. The F-statistic probability of 0.000 indicates that the overall model is significant. This value indicates that there is at least one independent variable that statistically influences MSME credit distribution. However, the study emphasizes limitations because the dependent variable used is still the total MSME credit at the provincial level, not MSME credit specifically distributed by BPD. Therefore, the identified influence should be interpreted as the influence of BPD performance on MSME credit variations at the provincial level, rather than as a direct contribution of BPD alone.

Among the bank's internal variables, the CAR showed a positive and significant effect on MSME lending. The CAR coefficient of 0.011 with a probability of 0.035 indicates that a 1 percentage point increase in CAR correlates with an increase in MSME lending of approximately 1.10%, ceteris paribus. This finding underscores the importance of capital adequacy in expanding financing. Banks with stronger capital have a greater capacity to absorb risks and bear potential losses from credit expansion. This finding is consistent with studies by Apgar (2023) and Syukriyah et al. (2020), which also found that the capital ratio is positively related to lending. In the context of BPD, these results indicate that capital strengthening policies are not only related to institutional stability but also directly related to financing capacity for MSMEs.

In contrast, gross NPL did not show a statistically significant effect. The gross NPL coefficient is positive at 0.031, but its probability is 0.087, making it insignificant at the 5% level. This finding contradicts the initial hypothesis that assumed a negative relationship between non-performing loans and MSME lending. This is in line with the results of Apgar (2023) and Haryanto and Widyarti (2017), which also found no significant effect of NPL on lending. Empirically, the average gross NPL of BPDs during the study period was only around 2.18% (BPD Annual Reports, 2018 and 2023), so it is generally still at a safe level. Under relatively controlled credit risk conditions, variations in gross NPL are not a strong enough factor to explain changes in MSME lending.

A very interesting result emerged for the ROA variable. The ROA coefficient of -0.089 with a probability of 0.043 indicates that ROA has a negative and significant effect on MSME lending. This means that a 1 percentage point increase in ROA correlates with a decrease in MSME lending of approximately 8.90%, ceteris paribus. This finding suggests that high bank profitability does not automatically encourage credit expansion in the MSME sector. One proposed explanation is that highly profitable banks tend to be more selective and cautious towards segments perceived as higher risk, including MSMEs. This explanation is reinforced by the pattern of BPDs credit portfolios, which are still dominated by consumer loans compared to productive loans, at approximately 65% of total loans. This is further compounded by the relatively higher level of productive credit risk, with NPLs for working capital loans reaching 1.23% and NPLs for investment loans reaching 0.30% in 2023 (OJK 2020 and 2023). Consumer loans to regional civil servants (ASN) tend to be low risk because installment payments are deducted directly from their monthly income (Sugiarto et al., 2024). This finding aligns with Pinasthika (2016), Fadli (2019), Stefanus et al. (2023), and Nguyen and Le (2022), who emphasize that high profitability can go hand in hand with banks' tendency to maintain stability through more selective lending.

Table 1. Best Model Test Results

Test Model	Probability	Model Best
Test Chow	0.0000	FEM
Test Hausman	0.3538	REM
Test Lagrange Multiplier	0.0000	REM

Table 2. Panel Regression Estimation Results (REM)

Variables Dependent : lnMSME Credit	Coefficient	Probability
KPMM	0.011*	0.035
NPLgross	0.031	0.087
ROA	-0.089*	0.043
NIM	0.525*	0.003
LDR	0.005*	0.017
lnIMK	0.403*	0.004
lnGRDP	0.623*	0,000
Inflation	0.007	0.317
SBDK	- 0.032*	0,000
Covid	0.004	0.913
NIM*IMK	-0.050*	0.003
C	2,262	0.149
R- Square		0.6870
Prob (F- statistics)		0.0000

Note: *) Significant at α : 5%

Unlike ROA, NIM has a positive and significant effect. The NIM coefficient of 0.525 with a probability of 0.003 indicates that a 1 percentage point increase in NIM is associated with an increase in MSME credit of approximately 52.50%, ceteris paribus. This finding confirms that bank efficiency in generating net interest income from productive assets plays a significant role in driving MSME credit expansion. A high NIM reflects a bank's ability to profitably manage its productive asset portfolio, thereby increasing its credit disbursement capacity. These results align with Haryanto and Widyarti (2017) and Asmara and Supardi (2019), which emphasize that higher interest margins are positively correlated with credit disbursement.

The LDR variable also has a positive and significant effect. The LDR coefficient of 0.005 with a probability of 0.017 indicates that a 1 percentage point increase in LDR is associated with an increase in MSME credit distribution of approximately 0.50%, ceteris paribus. This finding reflects that the more effectively BPDs channel third-party funds into credit, the greater the financing flowing to MSMEs. In the context of financial intermediation theory, a higher LDR indicates that the bank's function as a fund distributor is working more actively (Mishkin & Eakins, 2012). This finding is also in line with Apgar (2023), who found a positive relationship between LDR and MSME credit. Therefore, LDR can be understood as an important indicator of the effectiveness of BPD's intermediation function in supporting the productive sector.

In the external variable group, GRDP has a positive and significant effect. The GRDP coefficient of 0.623 with a probability of 0.000 indicates a strong correlation between regional economic growth and MSME credit distribution. A 1% increase in GRDP is associated with an increase in MSME credit of approximately 0.62%, ceteris paribus. This finding suggests that regions with higher economic activity tend to have greater credit demand and better business prospects, thus encouraging banks to disburse financing. These results are consistent with those of Hidayat (2016) and Sari (2023), who both assert that economic growth strengthens the expansion of MSME financing.

In contrast, inflation did not show a significant effect. The inflation coefficient of 0.007 with a probability of 0.317 indicates that inflation variation during the study period was not strong enough to explain changes in MSME credit distribution. This finding aligns with Darmawan

(2018) and Sihombing and Sihombing (2023), which also showed that inflation had no significant effect on MSME financing. These results suggest that as long as inflation remains within a relatively manageable range, banks' decisions to disburse credit are largely determined by internal factors, regional economic conditions, and credit prices.

The micro prime lending rate variable shows a negative and significant effect. A coefficient of -0.032 with a probability of 0.000 indicates that a 1 percentage point increase in prime lending rates is correlated with a decrease in MSME credit of approximately 3.20%, ceteris paribus. This finding demonstrates that MSMEs are highly sensitive to borrowing costs. Higher interest rates increase installment payments and reduce financing affordability, thereby suppressing credit demand. This finding is consistent with the theory of credit demand in loanable funds markets (Shapiro et al., 2022) and also aligns with Hidayat (2016) and Sihombing and Sihombing (2023). Policy-wise, this finding confirms that access to MSME financing is determined not only by credit availability but also by its affordability.

Interestingly, the COVID-19 pandemic dummy is not statistically significant. Its coefficient is 0.004 with a probability of 0.913. This finding contrasts with descriptive evidence indicating a sharp slowdown in 2020. This can be explained by the extensive policy interventions during the pandemic, particularly the National Economic Recovery (PEN) program and the placement of government funds in banks (Regulation of the Minister of Finance of the Republic of Indonesia Number 104/PMK.05/2020 concerning the Placement of Funds in the Context of Implementing the National Economic Recovery Program). The study also refers to the OECD (2020) and Transparency International (2021), which show that government policy interventions successfully prevented a deeper contraction. Thus, the pandemic is important at the event level, but it does not stand out as a significant explanatory factor in the final model.

A key contribution of this study lies in the moderating analysis of the number of micro and small industries (IMK). First, the number of micro, small, and medium enterprises (SMEs) itself has a positive and significant effect on MSME credit. The lnIMK coefficient of 0.403 with a probability of 0.004 indicates that a 1% increase in the number of micro, small, and medium enterprises (SMEs) correlates with an increase in MSME credit of approximately 0.40%, ceteris paribus. This finding confirms that the larger the population of micro, and small enterprises in a province, the greater the potential for financing distribution in that region. This finding aligns with Yustini (2015), who asserted that growth in the number of companies is positively related to the distribution of working capital credit.

However, the interaction between NIM and MSMEs actually showed a negative and significant effect. The interaction coefficient of -0.050 with a probability of 0.003 indicates that in provinces with a high number of MSMEs, the positive effect of NIM on MSME credit distribution actually weakens. In other words, although NIM and MSMEs each have a positive effect individually, their combination does not strengthen, but rather reduces, the effectiveness of NIM in driving credit expansion. Research explains that this situation is related to operational complexity in regions with a large MSME population. MSMEs tend to apply for small loans, but each loan still requires intensive risk analysis, administration, and monitoring. As a result, the cost per unit of credit is high. Furthermore, many MSMEs also lack adequate business documentation and financial records, making the risk assessment process by banks more complex (Santoso, 2020; World Bank, 2022). Therefore, although banks have room for profitability through high NIM, their effectiveness in translating these profits into MSME credit expansion can be reduced when operational capacity is insufficiently efficient.

To assess elasticity, the results of the elasticity calculations are shown in Table 3. Among all variables, the NIM has the highest and positive elasticity, at 1.412, making it the most responsive factor in encouraging MSME credit expansion. The GRDP has an elasticity of 0.623 and the IMK is 0.404, which is also relatively high. Conversely, the LDR and KPMM have smaller elasticities, although they remain positive. This means that the ROA and SBDK variables have negative elasticities, indicating that increases in these variables tend to suppress MSME credit distribution. Thus, the results of these elasticity calculations provide additional insight into the strength of each variable's influence on MSME credit distribution and can serve as a basis for formulating more effective banking policy priorities to encourage financing to the MSME sector.

Table 3. Calculation Results of Elasticity

Variables	Elasticity
KPMM	0.113
NPLgross	0.732
ROA	-0.195
NIM	1,412
LDR	0.037
lnIMK	0.404
lnGRDP	0.623
Inflation	0.624
SBDK	-0.118
NIM*IMK	-0.012

CONCLUSION AND RECOMMENDATIONS

Conclusions

This study concludes that MSME credit distribution in Indonesia fluctuated between 2014 and 2023. The COVID-19 pandemic suppressed MSME credit growth in 2020, but economic recovery policies and business actors' adaptability drove a strong recovery in 2021, leading to a stabilization phase in the following years. Sectorally, MSME credit remains dominated by wholesale and retail trade, manufacturing, and agriculture, hunting, and forestry. Geographically, distribution remains concentrated on the island of Java. This situation indicates that the challenge of MSME financing lies not only in credit volume but also in equitable access across regions. Furthermore, strengthening the role of BPDs remains crucial for expanding MSME financial inclusion.

In terms of determinants, the study found that CAR, NIM, and LDR had a significant positive effect on MSME lending, while ROA had a significant negative effect. These results indicate that capital adequacy, interest income efficiency, and the intermediation function encourage credit expansion, while high profitability can make BPDs more selective. Outside of bank internal factors, GRDP and the number of micro and small industries (IMK) had a significant positive effect, while the prime lending rate (SBDK) for microfinance institutions had a significant negative effect. Gross non-performing loans (NPL), inflation, and the COVID-19 pandemic did not show a significant effect in the final model. The number of IMK was also shown to negatively moderate the effect of NIM, meaning that in provinces with a high number of IMK, the effectiveness of increasing NIM in encouraging MSME lending is actually weakened.

Recommendations

The implication is that regulators need to strengthen policies and supervision so that BPD can maintain healthy performance of KPMM, ROA, NIM, and LDR while increasing the portion of MSME loans. Furthermore, institutional capacity building, integrated information portals, and risk assessment efficiency are needed, especially in regions with large MSME populations. This study also has data limitations because MSME loans are still measured at the provincial level and the number of MSMEs is proxied by the MSME sector. Therefore, further research is recommended to use more specific data and develop other moderating variables.

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