

The dynamics of micro and small industries and poverty: A geographical perspective with panel data



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ABSTRACT

Poverty is the persistence problem in developing countries, including in Indonesia, although there are several government's social assistance programs, such as cash transfer programmes, food assistance schemes, and the existence of micro, small, and medium enterprises (MSMEs) which can be used to reduce poverty. Several evidence from previous studies showed that the MSMEs have a role in poverty alleviation. This research aims to examine the effects of micro and small-scale industries on poverty levels in Indonesia that accommodate the regional disparities between Java and non-Java provinces, as well as between Western and Eastern regions of Indonesia. Panel data regression model is used to address the objective of this study, which includes data from 34 provinces from 2017-2023. The results from this study reveals that growth in output and employment within small and micro industries is linked to higher poverty levels. Research in the region shows that the negative consequence is more apparent in Java and Western Indonesia. Unemployment has a significant impact on increasing poverty level. The economic growth has a negative effect the poverty level. There is no significant effect from Human Development Index (HDI). The results of the study show that micro and small enterprises have not shown effectiveness in reducing poverty in Indonesia.

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1. Introduction

As a developing country, Indonesia has pledged to realize the Sustainable Development Goals (SDGs) by 2030. At the core of the SDGs is the concept of integration and balance between social, economic and environmental aspects of development as outlined in 17 goals and 169 targets. At the core of this agenda is Goal 1, which seeks to end poverty in all its forms and also highlights the urgency for tackling these challenges globally (Haida & Wahyuningsih, 2018). Poverty is one of Indonesia's most stubborn impediments. In reaction, the government has introduced several policies to reduce poverty, especially through social safety net programs that focus on poor families. The programs offer forms of support ranging from cash transfers to food assistance to other basics. At national level, notable poverty reduction programmes include Family Hope Programme (*Program Keluarga Harapan*/PKH), Staple Food Programme, Government Food Reserve Assistance as well as MSMEs assistance. These programmes are aimed to help the vulnerable communities to survive and mitigate the effects of poverty (Rahmatika et al, 2024). Moreover, other more integrated anti-poverty schemes have focused on enhancing human capital based on better education and health systems along with both consumptive and productive assistance (Arsani, 2020). Nonetheless, their impact on reducing the incidence of poverty in Indonesia has been limited. In 2024, around 8.57%

of the population was below the poverty line with poverty depth index being 1.41 and poverty severity index being 0.32. Indonesia Gini coefficient in the same year was 0.385, which means a fair degree of income distribution and that income distribution is not getting more equitable (Badan Pusat Statistik, 2024).

Promotion of micro, small and medium enterprises (MSMEs) is recognized as one of the strategic options for poverty reduction. MSME Integrated Data System (Sistem Informasi Data Terpadu UMKM/SIDT-UMKM) published by the Ministry of MSMEs (2024) indicate that the number of MSMEs in Indonesia reached 30.1 million business units in 2024. Further analysis indicates that, this all amounts to about 30 million micro enterprises (99.71%); roughly 73-thousand small enterprises (0.24%), and some 15 thousand medium-size enterprises (0.05%). This distribution illustrates the prevalence of micro businesses in Indonesia's MSME industry. Wholesale and retail trade, and accommodation and food service activities are the sectors that host most MSMEs. In employment, 4526 million workers were absorbed by MSMEs in 2024 approximately 82 percent of these workers are concentrated in Java and Sumatera islands. On the other hand, the number of micro and small industries which are included in micro and small businesses has grown quite rapidly from 3.4 million units to 4.5 million units in Indonesia by 2023. This is a 31% increase. Concurrently, the workforce in this sector increased from 9.7 million people to 9.8 million, while the economic output tripled (25.5%) (Badan Pusat Statistik, 2023).

Micro and small industries, as an integral part of micro, small, and medium enterprises (MSMEs), confront diverse structural challenges. These can be comprised on low endowment of human capital, poor access to finance, lack of availability of raw materials, immature marketing network, undeveloped partnership and low technology absorption (Badan Pusat Statistik, 2025b), the data shows around 46.49% of micro and small industry owners have attained an educational level of elementary school or below in 2024. Furthermore, the most entrepreneurs (approximately 52.92%) are in ages of 45 to 64 years old (Badan Pusat Statistik, 2025b). The expansion of MSMEs leads to more job absorption, income generation and economic development, which is can lead to reductions in poverty rates and improve the socioeconomic conditions (Isa et al., 2023). Previous studies suggest that MSMEs have direct and indirect links with poverty reduction in Indonesia. Small and medium enterprises contribute to poverty reduction in addition to income inequality reduction through the variation of the Gini coefficient and poverty severity index (Nursini, 2020). Furthermore, MSMEs have a significant influence on decreasing poverty through the development of new jobs and increasing the capacity of low-income society (Indika & Marliza, 2019; Jauhari & Periansya, 2021). The expansion of the MSME sector provides income-generating opportunities for workers who are not integrated into the formal economy (Lamaile & Trihadmini, 2022). Additionally, the MSMEs negatively and significantly impact on poverty rates (Anugerah & Nuraini, 2021). Previous studies suggest that there is a significant negative correlation between productivity of MSMEs and poverty, where higher level of output leads to low rate of poverty (Layyinaturrobaniyah et al., 2020).

According to Tambunan (2023) MSMEs are considered as an essential sector in poverty reduction in Indonesia, due that the income becomes generated from it. This is proven by the fact that they do have a huge potential of absorbing works and creating economic opportunities for lower strata. These findings are consistent with the study by Azhari et al (2025) revealed that MSME-related variables, namely the number of MSMEs, MSME employment, and MSME investment, collectively have a combined effect that accounts for variations poverty rates in Indonesia. Taken together, however, these studies present convincing empirical evidence that MSMEs have a direct effect on country poverty levels in both the short run (as employment generators) and long run (as investment lead growth). Contrarery the number of studies have indicated that MSMEs are unable to bring about a significant change in the economic status of the poor due to multiple obstacles and barriers. The challenges hindering the contribution of MSMEs to poverty reduction include poor infrastructure, weak linkages to market (Geremewe, 2018), limited access to financial services (Ferdousi, 2015), and inadequate business-related information (Abdullahi & Sulaiman, 2015). Other empirical studies indicate that the growth of SMEs has a positive effect on poverty reduction (Manzoor et al., 2019).

However, small industry output and number of micro industry employment are found to have an insignificant effect on poverty. Businesses with a small or micro-scale are facing difficulties in generating substantial value where the growth in production and job creation in this sector are not adequately reducing poverty rates (Ramadhan & Anas, 2025). Furthermore, there is a positive relationship between labour, small scale industry and poverty rates in 34 Indonesian provinces with

many of them operating at low levels of technology and capital and hence are not particularly productive (Hodijah & Mustika, 2020). Other studies have focused on the determinants of poverty in Indonesia. Agussalim et al (2024) stated that economic growth and government expenditure on education and healthcare have a significant impact in reducing poverty rates. In line with this result, Jauhari & Periansya (2021) stated that MSMEs to economic growth causality in the case of poverty in Indonesia occurred unidirectional. Economic growth can promote job creation, raise incomes, and enable the government to fund social programs, which contributes in poverty alleviation. A study by Lamaile & Trihadmini (2022) found that improvement of HDI, per capita income, and MSMEs greatly reduce poverty levels. A higher HDI makes it easier for people to come out of poverty due to better access to education and healthcare. Meanwhile, high Human Development Index value is associated with lower poverty (Syiafullah & Malik, 2017).

Unemployment is a factor that leads to poverty acceleration, as the unemployment rate goes up, more people are unemployed leading them without recurrent income and increase of their vulnerability to poverty (Munarni et al., 2024; Ilyasa et al., 2025). Syamsuddin et al (2023) assessed the influence of Human Development Index (HDI) and unemployment on poverty in Indonesia through qualitative and quantitative methods. The findings reveal that the HDI has a negative but non-significant influence on poverty, whereas unemployment has a positive and significant one. It is an established fact that unemployment drives poverty because a lack of income leaves households to strive for survival. Many studies have been made to explore the determinants of poverty in Indonesia. However, the findings remain inconclusive. Although poverty profiles differ greatly between regions, many studies did not sufficiently take into consideration Indonesia's unique spatial heterogeneity. Accordingly, this research is intended to examine the role of micro, small and medium enterprises (MSMEs) on poverty reduction in Indonesia. This study also adds to the literature by taking into account regional classifications, Java and non-Java regions, as well as western and eastern Indonesia differences. By doing so, the study is expected to provide policy-relevant insights to support more targeted and region-specific poverty reduction strategies.

2. Literature Review

Poverty alleviation is fundamental to the Sustainable Development Goals (SDGs), which Indonesia has committed to achieve by 2030. This accomplishment can only be realized through the establishment of appropriate and successful strategies, particularly in the case of uncertainties in global economic dynamics. Poverty is a situation where basic human needs, such as food, clothing and shelter are unfulfilled (Manzoor et al., 2019). More broadly, more widely still, it occurs when people do not have the means to satisfy their most fundamental food and non-food needs (Sagala et al., 2024). BPS uses the basic needs or expenditure approach in determining whether someone is poor if its average monthly consumption expenditure per capita is lower than poverty line. Importantly, poverty is not just about lack of income, but it incorporates lack of access to services such as health care, education and economic opportunities.

Low productivity within households is a prime driver of poverty, which is perpetuated by restricted access to financial services and insufficient entrepreneurial incentives (de Bruijn & Antonides, 2022). Economic stability has been sustained across countries due to the robust performance of MSMEs, despite the ongoing global uncertainty. MSMEs are considered as one of the key development strategies and also contribute significantly in poverty reduction (Nursini, 2020). Their development is an effective measure for reducing poverty (Hussain et al., 2017). MSMEs play crucial role in poverty reduction due to the fact that they are employment generating and economic empowerment for poor household (Indika & Marliza, 2019). Furthermore, MSMEs have a direct contribution to poverty reduction by creating employment and income opportunities, which contributes to poverty reduction by 67% (Ferdiana et al., 2023). These enterprises accelerate economic growth and provide stability during the bad times of recession. It is widely recognized internationally that MSME are of paramount importance for the economic development of a country. They are especially important in the case of Indonesia, where they make up over 60 per cent of total national employment and about 57 per cent of gross domestic product (GDP). The expansion of MSME outputs has benefited the low income in a positive way, by means of additional job opportunity created and the increase of income (Layyinaturrobaniyah et al., 2020). Indirectly, MSMEs are an indirect intermediary to the relationship between unemployment and poverty. The existence of MSMEs opens new employment opportunities that lead to decreasing unemployment rate. As unemployment falls, MSMEs play a role in generating income for individuals who were

previously unemployed, enabling them to meet their daily needs and lowering poverty levels. MSMEs, moreover, also serve the function of dampening the negative shocks generated by unemployment. Thus, they make poverty less impactful (Ferdiana et al., 2023).

Previous study conducted by Blattman et al (2016) in Uganda show that delivering a stimulus for poor households enhances business ownership and income. The intervention was a cash transfer with training and mentoring component. This is in line with the observations of Duflo et al. (2022), who show that holistic interventions which consist of capital provision, savings mechanisms, training and health services are successful at enhancing welfare outcomes for the poor. On the other hand, empirical research has found that low human resources quality was also one of the determining factors in increasing poverty (Lamaile & Trihadmini, 2022; Sinurat, 2023; Suripto & Subayil, 2020; Syaifullah & Malik, 2017). The Human Development Index (HDI) is one of such popular tools that reflects it. Increases in the HDI, indicating the quality of life based on health, education and standard of living also have been proven to decrease to poverty (Rahmawati et al., 2024). Empirically, the HDI significantly and negatively correlates with poverty (Lamaile & Trihadmini, 2022; Sinurat, 2023; Suripto & Subayil, 2020). However, this relationship is complex because high unemployment can compound poverty, and growth in GDP that does not lead to improvements of HDI may exacerbate rather than mitigate poverty (Wuranti, 2022).

Unemployment in Indonesia is a drag on economic development, since the unemployed are a nonproductive sector but yet also need to fulfil some basic requirements such as food, housing, and health care (Feriyanto et al., 2020). Unemployment is defined as a condition in which individuals of working age, who are willing to work, have not obtained employment (Frisnoiry et al., 2024). It is considered one of the main causes of poverty (Akinmulegun, 2014). A greater number of individuals out of work is associated with a higher poverty (Munarni et al., 2024; Syamsuddin et al., 2023). It also causes an individual to be not able to improve their quality of life (Resmana & Gunawan, 2025). Empirically, several research have found that the development of MSME reduces poverty via unemployment and economic growth (Manzoor et al., 2019). There is a strong correlation between entrepreneurship and economic development, because entrepreneurship contributes to the building of infrastructure based on which can provide goods and services that in turn generate substantial job opportunities. Hence, income, generation of employment and productivity are put under some pressure which are significant variables in economic development (Abdullahi & Sulaiman, 2015). A causal relationship could be made between the MSMEs and economic growth, poverty level since the MSMEs absorb labour force and can improve local economy (Jauhari & Periansya, 2021). The economic growth will also contribute to national competitiveness and increase the welfare in the society (Isa et al., 2023). This is consistent with Agussalim et al (2024) and Feriyanto et al (2020) finds that the higher economic growth has both direct and significant effects on reduction of poverty by increasing productivity and income.

Geographically, there are significant contrast of poverty level between regencies of Indonesian territories, especially Java and non-Java. According to Badan Pusat Statistik (2025a) data shows Java has the highest number of poor populations among other regions. In March 2025 the number of poor people in Java amounted to 12.56 million people, which contributing for approximately 52.66% of Indonesia's total poor population. This indicates that poverty is still highly concentrated on Java, in part due to the fact that it is the most populated region in Indonesia. The remaining 47.34% of the poor population is distributed across Sumatra, Bali and Nusa Tenggara, Sulawesi, Maluku and Papua, and Kalimantan. When examined in terms of poverty incidence, BPS data indicate that Java's poverty is around 7.9% in March 2025. Other areas have different rates of poverty, namely Sumatra (8.22%), Bali and Nusa Tenggara (11.93%), Maluku and Papua (18.90%), Sulawesi (8.96%), and Kalimantan (5.15%).

According to BPS data, the distribution of the poor population tends to be geographically uneven. The largest number of poor people is concentrated on the island of Java. This is evidence that Java continues to draw away immigrants from other island in their search for a more prosperous life. However, upon moving to Java, they do not necessarily obtain decent jobs, which can ultimately trap them in poverty. Meanwhile, in terms of percentage, the rate of poverty is low in Java compared with Sumatra, Bali and Nusa Tenggara, Maluku and Papua, and Sulawesi. Java's development attributes have great influence on the level of poverty. With more developed infrastructure, wider market access and greater degree of industrialization in comparison to other provinces, Java is considered the center of the Indonesian economy. This result is consistent with the study of Muta'ali et al (2024), which shows found that if economic growth and industrial concentration occur in Java consider

having a higher multiplier effects in reducing poverty than non-Java. Meanwhile, outside Java, nations are confronted by long term challenges such as low levels of economic participation and a lack of access to good education that would hold back the social mobility and slow down poverty reduction (Rattekarua et al., 2025).

3. Method

This study used a quantitative data to analyze the effects of micro and small scale enterprises on poverty rates in Indonesia. This analysis utilizes BPS administrative data from 34 provinces in Indonesia from 2017 to 2023. The sample excludes four newly established provinces, namely Papua Barat, Papua Tengah, Papua Selatan, and Papua Pegunungan, due to a lack of available data.

3.1. Research Variables

In this study, poverty is the variable being measured. The main independent variable of interest is the micro and small industries sector, and the analysis includes several control variables.

A. Poverty

Various indicators can be used to measure poverty. One commonly used measure is the headcount index, which represents the fraction of the population living below the poverty line (Agussalim et al., 2024; Imantria, 2024; Nursini, 2020; Sitorus & Ashar, 2025). the average of the difference between per capita expenditure and the poverty line, indicating how far, on an average, these units are from a desirable standard of living (Manzoor et al., 2019; Syifa & Helma, 2023; Nursini, 2020). The squared poverty gap index calculates the average of the squared expenditure deficits, placing greater importance on the most disadvantaged individuals and therefore showing the degree of poverty inequality (Wuranti, 2022; Nursini, 2020). The specific indicator used in this study to measure poverty is the growth rate of the poor population, estimated by the following formula:

$$\Delta num_{poor} = \frac{num_{poor_{yt}}}{num_{poor_{yt-1}}} - 1 \quad (1)$$

Where Δnum_{poor} is the difference in population growth of the number of poor or poverty; $num_{poor_{yt}}$ is the growth of the poor population in year t and $num_{poor_{yt-1}}$ is the growth of the poor population in year t-1.

B. Micro and Small Industries

Previous studies have engaged numerous indicators to measure the role of micro, small and medium enterprises (MSMEs) including employment capacity (Heripson & Hendrayani, 2021; Irsyada & Dhewanto, 2024; Nursini, 2020; Raharto et al., 2024), the quantity of business establishments (Heripson & Hendrayani, 2021; Hodijah & Mustika, 2020), and MSME production (Nursini, 2020). However, due to data availability, the present study utilises the growth of employment and the output of micro and small industries as proxies for measuring their role. It is important to note that medium industries are excluded from this analysis. The growth of employment in micro and small industries is calculated as follows:

$$\Delta tk_{imk} = \frac{tk_{imk_{yt}}}{tk_{imk_{yt-1}}} - 1 \quad (2)$$

Where Δtk_{imk} is the difference in the number of micro and small industries; $tk_{imk_{yt}}$ is the number of micro and small industries in year t; and $tk_{imk_{yt-1}}$ is the number of micro and small industries in year t-1. The expansion of output in micro and small industries is calculated as follows:

$$\Delta output_{imk} = \frac{output_{imk_{yt}}}{output_{imk_{yt-1}}} - 1 \quad (3)$$

Where $\Delta output_{imk}$ is the difference of output from micro and small industries; $output_{imk_{yt}}$ is the output from micro and small industries in year t; and $output_{imk_{yt-1}}$ is the output from micro and small industries in year t-1.

C. Control Variables

In addition to examining the role of micro and small industries in poverty reduction in Indonesia, it is essential to incorporate control variables to ensure a more comprehensive and robust

analysis. Research carried out by Nahor and Anggraini (2025) discovered that economic growth, the open unemployment rate, inflation, and the Human Development Index (HDI) all have a considerable effect on poverty levels in Indonesia. Table 1 shows the definition of variables used in the study.

Table 1. The Definition of Variables

Category	Variables	Indicator	Measurement
Dependent variables	Poverty	Poverty population growth	Percent
	Micro and small industries	Micro and small industry output growth	Percent
Independent variable		Growth of micro and small industry employment	Percent
		Human Development Index (HDI)	Index=100
Control Variables	Education	Unemployment rate	Percent
	Growth	Economic growth	Percent
Dummy Variables	Java/Non-Java	1 = provinces in Java Island 0 = provinces outside Java Island	
	Western Indonesia/Eastern Indonesia	1 = provinces in Western Indonesia 0 = provinces in Eastern Indonesia	

Source: Badan Pusat Statistik

Regional variations in poverty have also been explained using the HDI and unemployment rate as control variables (Ali et al., 2014). Therefore, this study includes unemployment, economic growth, and the Human Development Index as control variables. Additionally, dummy variables are used to enable a more in-depth geographical examination of the effects of micro and small industries on poverty.

3.2. Model Specification

Panel data is used in this study because it offers several advantages, including the combining time-series and cross-sectional dimensions for more complete and diverse information as well as a large number of degrees of freedom. This procedure allows for more efficient estimation of parameters and alleviates the problem of multicollinearity. In addition, panel data enable to control for unobserved individual heterogeneity and study dynamics of behaviors over time. The regression model employed in this study also incorporates lagged independent variables from the previous period ($t-1$), which are assumed to influence poverty levels in the current period (t). This study used three panel data regression models. The first model examines the impact of micro and small-scale industries on poverty levels in Indonesia and the equation as follows:

$$Pov_{it} = \alpha + \beta_1 output_{it} + \beta_2 output_{it-1} + \beta_3 TK_{it} + \beta_4 TK_{it-1} + \beta_5 HDI_{it} + \beta_6 HDI_{it-1} + \beta_7 growth_{it} + \beta_8 growth_{it-1} + \beta_9 unem_{it} + \beta_{10} unem_{it-1} + \varepsilon_{it} \quad (5)$$

The second model includes a Java/Non-Java dummy variable in order to further analyse the impact of micro and small industries on poverty between provinces inside and outside Java. The second model's specifications are as follows:

$$Pov_{it} = \alpha + \beta_1 output_{it} + \beta_2 output_{it-1} + \beta_3 TK_{it} + \beta_4 TK_{it-1} + \beta_5 HDI_{it} + \beta_6 HDI_{it-1} + \beta_7 growth_{it} + \beta_8 growth_{it-1} + \beta_9 unem_{it} + \beta_{10} unem_{it-1} + \beta_{11} output_{it} * dummy_java + \beta_{12} output_{it-1} * dummy_java + \beta_{13} TK_{it} * dummy_java + \beta_{14} TK_{it-1} * dummy_java + \varepsilon_{it} \quad (6)$$

The third model examines the impact of micro and small industries on poverty by using interactions between regional dummies and main explanatory variables. This specification allows for the

identification of potential regional heterogeneity in the effects of micro and small industries on poverty. The third model is specified as follows:

$$\begin{aligned}
 Pov_{it} = & \alpha + \beta_1 output_{it} + \beta_2 output_{it-1} + \beta_3 TK_{it} + \beta_4 TK_{it-1} + \beta_5 HDI_{it} + & (7) \\
 & \beta_6 HDI_{it-1} + \beta_7 growth_{it} + \beta_8 growth_{it-1} + \beta_9 unem_{it} + \beta_{10} unem_{it-1} + \\
 & \beta_{11} output_{it} * dummy_location + \beta_{12} output_{it-1} * dummy_location + \beta_{13} TK_{it} * \\
 & dummy_location + \beta_{14} TK_{it-1} * dummy_location + \varepsilon_{it}
 \end{aligned}$$

Where *Pov* is the growth of poverty population; *output* is the growth of output from micro and small industries; *TK* is the growth of labor from micro and small industries; *HDI* is the human development index; *growth* is the economic growth; *unem* is the unemployment; *dummy_java* is the dummy for java and non-java; *dummy_location* is the dummy for western Indonesia and Eastern Indonesia; $\beta_1 - \beta_{14}$ is the coefficient of independent variables; α is the constant; *i* is the cross-section; *t* is the time-series and ε_{it} is the error term for panel data. A panel data regression is used to estimate the data in this research. In the panel data regression, there are three models: 1) The Pooled Effect Model (CEM), 2) the Fixed Effect Model (FEM), and 3) the Random Effect Model (REM). To select the most appropriate model, the Chow test, Hausman test and Lagrange Multiplier (LM) test can be used to examine the model (Gujarati & Porter, 2010).

4. Results and Discussion

This study aims to explore the impact of Micro and Small Industries on poverty in Indonesia. The dependent variable is the growth rate of the poor population, while the main independent variables are the growth of output and the growth of employment in micro and small industries. Additionally, the model includes several control variables that could affect the poverty level. Table 2 shows socioeconomic conditions vary substantially across Indonesia's 34 provinces. The Human Development Index (HDI) reveals relatively good circumstances throughout all provinces in the sample as their economies grow. Across the entire sample, the growth rates of both output and employment in micro and small industries are declining throughout the sample.

Table 2. Descriptive Statistics

Variables	Mean	Median	Max	Min	Std. Dev	Obs
Pov	-0.0005	-0.008	0.316	-0.202	0.057	268
Output	-0.012	-0.022	1.707	-1.510	0.367	268
TK	-0.058	-0.039	0.494	-0.800	0.218	268
HDI	70.689	70.910	82.460	56.750	4.162	268
Growth	4.486	5.025	22.940	-15.740	3.914	268
Unem	5.232	4.915	10.950	1.400	1.840	268
Dummy_java	0.179	0.000	1.000	0.000	0.384	268
Dummy_location	0.642	1.000	1.000	0.000	0.480	268

Source: data processed

A panel data regression model is used to analyse the effect of micro and small-scale industries on poverty in Indonesia. Three three-panel regression models are estimated. The estimation process commences with pooled effect and fixed effect models for each equation. The estimation begins with pooled and fixed effect models on each equation. The Chow test is then undertaken to test the chosen model. The pooled effects model has been used for all three equations as suggested by the Chow test. The study adopts an approach from a general to a specific model by pooling the pooled effect as the preferred model to obtain a parsimonious model. The aim of this approach is to obtain an accurate, efficient and informative model. Table 3 shows the estimation results indicate that growth in output and employment in micro and small industries significantly affects poverty, as measured by the growth rate of the poor population. However, contrary to most previous studies, the coefficients for both output growth and employment growth exhibit a positive sign. Notably, the only statistically significant coefficient for output growth is the lagged output growth ($t-1$), which is consistently positive across all three model specifications. This finding suggests that output growth in micro and small industries in the previous year has a significant effect on increasing the number of poor people in the subsequent year (t). Specifically, a one percent increase in output growth in micro and small industries is associated with an increase of approximately 0.01–0.02 percent in the growth rate of the poor population.

The growth of employment in micro and small industries also has a positive and significant effect on the growth of the poor population in year t , with a coefficient of 0.0362 (Equation 1). This indicates that a one percent increase in employment growth in micro and small industries is associated with a 0.036 percent increase in the growth rate of the poor population. Based on this finding, it can be seen that employment growth in micro and small industries has a direct effect on increasing the growth of the poor population in the same period. The findings of this study in contrast from the previous literature, which shows that micro, small, and medium enterprises (MSMEs) contribute to poverty reduction (Nursini, 2020). On the contrary, this study finds that growth in output and employment in micro and small industries is correlated with an increase in the growth rate of the poor population. This outcome may be explained by the fact that the expansion of micro and small industries often arises as a response to job losses in the formal sector. Many of these industries are established primarily as survival strategies rather than as productivity-driven businesses.

Table 3. Result of Panel Data

Variables	Model 1	Model 2	Model 3
	Coef	Coef	Coef
C	-0.022* (0.012)	-0.023** (0.012)	-0.022* (0.012)
Output _t	0.015 (0.011)	-	0.014 (0.011)
Output _{t-1}	0.021* (0.012)	0.018* (0.010)	0.019* (0.011)
TK	0.036* (0.020)	-	-
TK*dummy_Java	-	0.092** (0.040)	-
TK*dummy_Java _{t-1}	-	0.111** (0.046)	-
TK*dummy_location	-	-	0.071*** (0.027)
Unem _t	0.034*** (0.004)	0.032*** (0.004)	0.035*** (0.004)
Unem _{t-1}	-0.028*** (0.004)	-0.026*** (0.004)	-0.028*** (0.004)
Growth _t	-0.003*** (0.001)	-0.003*** (0.001)	-0.003*** (0.001)
Diagnostic Tools			
Adjusted R-Squared	0.426	0.433	0.436
Durbin-Watson	1.771	1.834	1.717
Obs	268	268	268

Noted: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$, data processed

Small and micro enterprises operate with limited financial resources and are often managed by individuals from low-income households. As a result, the labour force in this sector is largely unskilled. This finding is supported by data from BPS in 2024, which indicate that the majority of micro and small industry entrepreneurs have attained only an elementary school level of education. In addition, individuals who have lost formal employment often begin operating micro and small-scale businesses in order to support themselves. These structural constraints can lead to a paradox, where the growth of such businesses actually signifies a rise in poverty, due to the fact that the income they produce regularly fails to meet basic living expenses of the workers, thereby confining workers in poverty. Furthermore, the positive and significant lagged ($t-1$) growth in micro and small industry output indicates that changes in does not instantaneously affect growth of poor. The reason is that these processes of entry and exit for the micro and small industries take times, therefore the impact can be observed only in the following period.

Prior research conducted by Blattman et al (2016) and Duflo et al. (2022) highlight the necessity of comprehensive stimulus interventions that cause people to start businesses and earn sufficient income. Those incentives consist of access to capital, savings mechanisms, training, mentoring, and health services. These findings suggest that micro and small industries that have low levels of

productivity can obtain benefit from comprehensive support, which are capital provision, training, and mentoring, to achieve sustainable and adequate income levels. Moreover, the finding that growth in output and employment in micro and small industries is associated with an increase in the number of poor people. This finding is consistent with the results of the study by [Fafchamps et al \(2014\)](#) who found that capital assistance provided to microenterprises does not lead to sustained income or poverty reduction. Moreover, the ongoing structural problems of micro and small enterprises still limit their role to reduce poverty. The [World Bank \(2022\)](#) report emphasize that poverty reduction requires the creation of quality jobs, access to markets, and appropriate financing. This implies that if the micro and small industries want to contribute effectively towards reduction of poverty, they must have access into markets both in terms of finance as well as employment that brings decent wage. Moreover, according to a [United Nations \(2024\)](#) report, inadequate access to finance and digital infrastructure constrains the potential positive impact of MSMEs on employment creation and poverty reduction.

Geographical comparisons across provinces, with a focus on Java versus non-Java regions, indicate that the growth of micro and small industries in Java provinces has a substantially stronger effect on reducing poverty than in provinces outside Java, both in the current and lagged periods. High minimum wages can adversely affect micro and small industries when they are not supported by sufficient productivity gains and adequate job creation. Therefore, this condition limits their capacity to absorb potential labor. In addition, wages in Java are mostly higher than those in non-Java regions, leading to labor movement from other regions. If migrants cannot obtain jobs in large-scale industries, they drift to the informal sector and that may have slightly raised the figure of working poor. This situation could lead to an increase in unemployment and subsequently poverty levels ([Belantika et al., 2023](#)). Furthermore, the micro and small industry sector is known for its low productivity and income levels, which means that this sector's workers are generally low wage earners. It is possible that labour movement from Java to non-Java regions is based on the informal or microenterprise sector opportunities, which may result in the spread of poverty between such areas ([Dhiyaa'ulhaq et al., 2023](#)).

From the wider regional level (Western Indonesia and Eastern Indonesia), the results are not very different from the Java/non-Java interaction model. Employment growth in micro and small industries in Western Indonesian provinces tends to have a more significant impact on the rise in the number of poor people than in Eastern Indonesian provinces. This may in part be due to the unequal population distribution between Western and Eastern Indonesia, since much more of the national population is located in the western region. There are demographic differences which affect the pattern of labour absorption in micro and small industries. The bigger population in Western Indonesia magnifies the impact of employment generation in this sector on poor people. In eastern Indonesia, where the number of people is smaller, unemployment pressure has been reduced. Employment expansion in the micro and small industry sector does not significantly contribute to the growth of the number of poor people as it does in Western Indonesia. This finding is relevant with the study from [Tambunan \(2012\)](#).

Additional estimates indicate that the poverty dynamics are not affected by level of HDI. The finding implies that differences in the HDI, representing aspects of education, health, and living standards, do not always lead directly to decreases in poverty rates. Studies by [Arifin & Hendriyani \(2022\)](#) and [Sipahutar et al \(2023\)](#) verify these results and the present study suggests that its effect on poverty at the provincial level in Indonesia is close to zero. [Table 3](#) shows that the relation between unemployment and change in poverty levels is statistically significant and positive, suggesting that an increase in unemployment pulls more people into poverty. Lagged unemployment rates are negatively and significantly related to the percentage change in poverty. This finding is consistent with [Manihuruk & Suharianto \(2024\)](#) found a significant impact of the unemployment on poverty levels in Indonesia. High rates of unemployment lead to a loss of household income, resulting in a higher number of people falling into poverty. From the estimation results, economic growth has a negative and significant effect on poverty growth. It shows that faster economic growth leads slower growth in the poor population ([Susanto & Pangesti, 2020](#)).

5. Conclusion

This study examines the role of micro and small industries in reducing poverty in Indonesia by analyzing panel data from 34 provinces for the period 2017 to 2023. The study finds that expansion in the production and employment of micro and small enterprises has a strong positive effect on the

overall economy. Yet, it also concludes that this growth is accompanied by a rising number of poor people. These findings, in contrast to what has already been found by literature, suggest that micro and small industries do not reduce poverty in this context. This is mainly due to the fact that most of these enterprises are small scale, subsistence-oriented and lack capital, have limited skill levels and little access to markets. The finding shows that unemployment immensely worsens poverty and economic growth greatly reduces it. In comparison, the Human Development Index (HDI) does not have an explicit effect on poverty. When viewed from the region, the contribution of micro and small industries to overcoming poverty that is felt in Java and Western Indonesia is not as strong compared with other regions outside Java and Eastern Indonesia. In conclusion, the potential role of micro and small industries in poverty reduction is very significant. However, their current impact is weak and if left unattended would rather exacerbate than mitigate issues of poverty unless they receive supports to increase productivity, innovation and equal access to resources. Hence, specific efforts to empower micro and small industries must be made so that they can significantly reduce poverty in Indonesia.

These empirical evidences suggest the relevance of efforts to enhance the human resources quality in micro and small industry sector. High-quality human capital might serve as a main factor in increasing employment productivity among micro and small industrial sectors, and enabling optimum use of IT to improve firm's performance. Enhancement of human capital and productivity can provide sufficient levels of income, allowing micro enterprisers and small industry entrepreneurs to break out of poverty. Improving the quality of human resources can be done through provision of education, training and skill competence in information technology. Furthermore, in order to expand markets for micro and small industries, policies can be framed aiming at promoting cooperative relations between medium and large industries on the one hand and micro and small industry on the other so that the latter can create a stable employment with modest pay. The study is constrained by the fact that it only concentrates on micro and small industries, hence a full assessment of MSME sector contribution to poverty alleviation may not be feasible. Future studies could be developed for medium-sized industries that generally have larger production capacity, better access to capital and a wider market network.

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Declarations

- Author contribution** : DMH was responsible for the conceptualisation of the study, project administration and made significant contributions to the manuscript review and editing. FFS made significant contributions to the methodology development, data collection, and data analysis procedures. The MSM group developed the conceptual framework, authored the initial draft, and oversaw the research methodology. PP participated in data collection and helped with data analysis. AFD played a key role in developing the methodology and data analysis.
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