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The Effect of Credit among Micro, Small, and Medium Enterprises on Income Inequality in Indonesia

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ABSTRACT

Income inequality has become a growing global concern during the last two decades. High income inequality can hinder economic growth, and in the case of Indonesia, the Gini coefficient continues to show an increasing trend. One of the factors that increase the level of income inequality is inequality in business opportunities and access to capital. To address this issue, the government created a credit program to benefit micro, small, and medium enterprises (MSMEs). MSME loans are basically designed to increase equality through the promotion of business opportunities. The authors seek to study the impact of MSME credit on income inequality in Indonesia using panel data with random effects in 33 provinces from 2005-2016. The results of this study are expected to provide an overview of whether the existing MSME credit program has been running effectively or not.

SARI PATI

Ketimpangan pendapatan telah menjadi masalah global yang terus berkembang selama dua dekade terakhir. Tingkat ketimpangan pendapatan yang tinggi dapat menghalangi pertumbuhan ekonomi dan menyebabkan keresahan sosial. Dalam kasus Indonesia, koefisien Gini terus menunjukkan tren yang meningkat. Salah satu faktor meningkatnya tingkat ketimpangan pendapatan adalah adanya ketimpangan terhadap peluang usaha dan akses modal. Untuk itu, pemerintah menciptakan program kredit untuk Usaha Mikro, Kecil dan Menengah (UMKM). Kredit UMKM pada dasarnya didesain untuk mempromosikan kesetaraan dalam pembentukan peluang usaha. Berdasarkan hal tersebut, peneliti ingin mempelajari dampak kredit UMKM terhadap ketimpangan pendapatan di Indonesia menggunakan data panel dengan random effects di 33 provinsi dari tahun 2005-2016. Hasil dari penelitian ini diharapkan dapat memberikan gambaran umum apakah program kredit UMKM yang ada sudah berjalan efektif atau tidak.

INTRODUCTION

In recent years, microcredit has emerged as a powerful tool to alleviate poverty and promote financial inclusion in developing countries. One of the key promises of microcredit is its potential to reduce income inequality by providing financial resources to those who are traditionally excluded from the formal banking sector. Indonesia, a country where a large proportion of the population lacks access to formal financial services, has seen a rapid expansion of microcredit programs in the past few decades.

One example of microcredit programs in Indonesia is the provision of credit to micro, small, and medium enterprises (MSMEs), which the Indonesian government has been actively expanding. This can be seen in the growth of MSME loans, which grew by 231 percent, from 388 billion in 2010 to around 898 billion in 2016 (Figure 1).

Research by Pitt and Khandker (1998) suggests that access to microcredit can lead to increased household income and asset accumulation among the poor, contributing to a more equitable distribution of wealth. However, the impact of microcredit on inequality is not uniform, and its effectiveness varies depending on factors such as program design, borrower characteristics, and local economic conditions (Navajas et al., 2000).

From the results of existing studies, microcredit can reduce the level of income inequality in a country (Morduch and Haley, 2002). In line with the above study, Bangoura et al. (2016) found that the intensity of microcredit activities has a significant effect on reducing income inequality. However, this effect depends on the targeting strategy used by each microcredit provider institution. Kasali et al. (2015) added that the application of microcredit would be more effective if the government created an environment in which microcredit could work inclusively.

Indonesia, as a result of its rapidly growing microcredit programs, is not included in the success stories of Southeast Asian countries in tackling income inequality. Indonesia experienced an increase in income inequality by 10 percent from 1990 to 2014 (Figure 2). Several factors may explain this increasing trend.

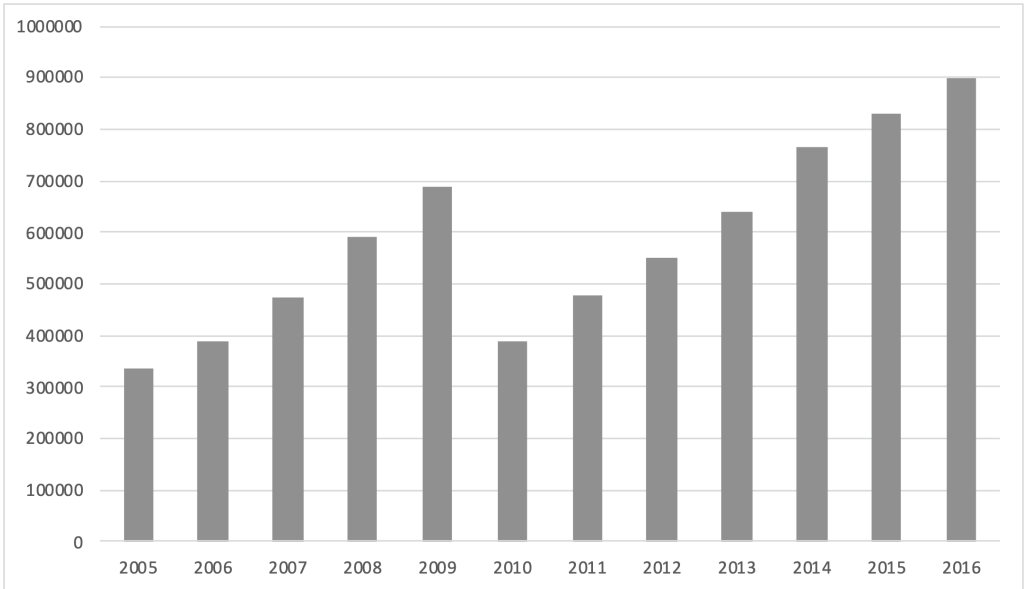

Figure 1. Growth of MSMEs' Outstanding Debt (in billion Rupiah), 2005-2016.
Source: MSME Credit Data (Bank Indonesia, 2018)

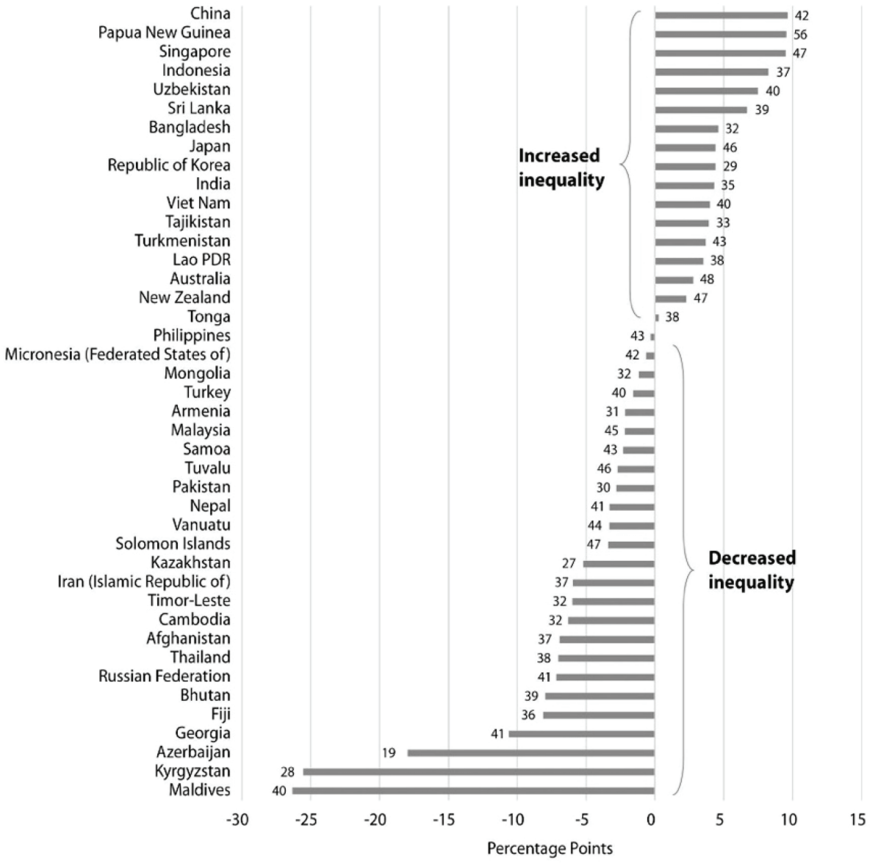

Figure 2. Changes in Global Income Inequality from 1990-2014
Source: Inequality in Asia and the Pacific in the Era of the 2030 Agenda for Sustainable Development (United Nations ESCAP, 2018)

According to Wicaksono et al. (2017), this increase has a negative effect on income inequality and the Gini coefficient. This finding is in line with the rapid growth in Indonesia's per capita income, which has also led to a significant reduction in the poverty rate in Indonesia since 1978.

In addition to growth in per capita income, various subsidy policies and regulations that are not on target and are more profitable for the middle- and upper-income distribution groups may increase income inequality (Rhee et al., 2014). For example, fertilizer subsidies are misdirected, as 65 percent of the total poor farmers enjoy only 3 percent of the total subsidies, while 90 percent of these subsidies go to the top 5 percent of farmers (Osorio et al., 2011).

The depth of the financial sector also plays a large role in determining the level of income inequality. However, expansion of the financial sector in developing countries must be carried out with caution, because it can have a negative impact on reducing income inequality. This is because the low development of an inclusive financial sector causes most of the funds to be misdirected and only benefit large companies or the upper class. In contrast, countries that have better access to credit funds can channel those funds to micro-, small-, and medium-scale companies (Dabla-Norris et al., 2015).

Knowing this, it is necessary to understand the impact of high income inequality. On a micro scale, income inequality can limit a person's opportunity and ability to achieve a better social

class, and income inequality on a macro scale is also often negatively associated with a country's macroeconomic growth and stability. One study from the IMF (Dabla-Norris et al., 2015) found that a high Gini coefficient can be associated with lower economic growth in the medium term. The same study also found that the addition of wealth gained by the top 20 percent has an inverse relationship with economic growth. Dabla-Norris et al. (2015) also stated that income inequality increases the risk of an economic crisis as well as conflict between social groups.

Based on the empirical studies discussed, the authors use the panel data regression method to test the proposed hypothesis: microcredit has a negative correlation with inequality in Indonesia. By generating empirical evidence on the impact of microcredit programs, this paper aims to inform policy making and program interventions that can increase the effectiveness of microfinance as a tool for relative poverty reduction and economic empowerment in the Indonesian context.

Literature Review

There is much debate about the sources of income inequality. Some argue that globalization is the main contributing factor to the increased inequality. From a political viewpoint, protectionist sentiments assert that, in OECD countries, most of the benefits from increased productivity due to globalization in the last two decades have been enjoyed by skilled and highly educated workers, thereby excluding low-skilled workers (OECD, 2011). From a conceptual point of view, globalization increases trade integration, which is associated with higher relative wage levels in affluent countries resulting in higher levels of income inequality in these countries (Kremer and Masking, 2006).

However, evidence shows that the impact of globalization on income inequality varies across countries. Lindert and Williamson (2001) argue that countries that can adapt their policies to take advantage of globalization can reduce their income inequality. China, for example, tends to experience large reductions in income inequality between cities and rural areas when cities have trade openness that adapts to globalization (Wei and Wu, 2001). Other studies show that trade integration has increased inequality in high- and low-wage countries (Milanovic and Squire, 2005).

Globalization is not the only determinant of increasing inequality; another possible explanation is the distribution of market incomes. Technological progress is also often mentioned as a distortion in the distribution of market income. Information systems and high technology are also often described as biased skilled industries, which are considered a factor in increasing income inequality (OECD, 2011). According to Harjes (2007), income inequality within countries is more adversely affected by technological advances than globalization.

One of the factors that influence the level of income inequality in a country is the deepening of the financial sector. Financial sector deepening is a process in which the efficiency, depth, breadth, and reach of financial markets increase (Ekberg et al., 2015). However, this occurs because efforts to deepen the financial sector are not followed by efforts to increase financial inclusion so that the benefits of the financial sector deepening are felt more acutely by the upper class. According to Ekberg et al. (2015), financial sector deepening is an important component to support sustainable economic growth. In addition, the deepening of the financial sector is also a key for Indonesia to achieve the 2030 target, which is to become one of the G7 economies.

In order to achieve this target, the Government of Indonesia has made various efforts, one of which is to empower the real economic sector through the development of MSMEs. MSMEs are an important part of the Indonesian economy in terms of employment. According to the Central Statistics Agency (BPS) in 2012, 97 percent of Indonesia's workforce has worked in the MSME

sector. Organizations in the MSME sector are also encouraged to be more involved in the Global Value Chain (GVC). Unfortunately, this has been hampered by capital problems. Therefore, a solution proposed by the government is the distribution of MSME credit.

MSME credit is a fiscal policy tool that is generally designed to promote equality in the formation of business opportunities. This tool can also be an instrument for deepening the financial sector in Indonesia. Several MSME credit schemes target actors from various types of MSMEs, especially those who do not have funding or the ability to obtain sufficient funds to run their businesses. The role of the Indonesian government in this regard is to subsidize interest payments from MSME credit schemes launched by the government. Meanwhile, the credit funds are provided by the commercial banks appointed by the government.

A study by Hermes (2014) also reveals that higher microfinance participation is associated with reduced income inequality. The results of other studies also show that the higher the number of institutions providing microcredit, the lower the level of income inequality in that country (Tchouassi, 2011). According to Bangoura et al. (2016), increasing access to microcredit, which can be measured by increasing the number of active borrowers, can increase the income of the poor and reduce inequality. However, these objectives cannot be achieved if the existing financial services are not inclusive.

According to the existing research results, even though microcredit expansion has been carried out, low-income households still have limited access to financial services such as savings products, transfer payment products, insurance, and pension programs (Bird et al., 2011). Therefore, access to inclusive financial services is one of the supporting factors for the success of microcredit in reducing income inequality.

Of course, microcredit and microfinancing are not without drawbacks. For example, research conducted by Phan et al. (2017) revealed that national pro-poor targeted programs (NTPs) had no effect or even had unintended results. NTPs represent several strategies, policies, and investments that are devoted to improving the welfare of the most economically vulnerable people. These programs include hunger elimination, training, and job creation. Using the econometric method, providers actually increase inequality within a province after implementing this program. Research offers several possible causes for this result, including bad governance and policy implementation and processes that are too complicated to make NTPs more complex and not transparent. Corruption also presents a problem.

According to a series of policies from the European Bank for Reconstruction and Development (EBRD) released in 2015, microcredit does not significantly increase household income and does not succeed in lifting poor households out of poverty. This is due to the distorted use of microcredit loans, only some of which are used for business and some for personal consumption. Another reason is that not all who receive loans are reliable entrepreneurs. Only a few of the borrowers experienced an increase in profit.

Government spending on education and school enrollment rates are used as control variables because education is a basic factor in measuring inequality of opportunity. According to Huber et al. (2019), government spending on education has succeeded in consistently reducing income inequality. This was confirmed by a policy experiment conducted by Yang and Qiu (2016), in which early education subsidies for poor families significantly reduced income inequality. In other words, these variables tend to have a negative correlation with income inequality.

Traditionally, educational expansion is considered important in supporting economic growth and is also considered effective in eliminating the transfer

of poverty between generations and reducing income inequality (Coady and Dizioli, 2017). The educational expansion referred to in this research is an increase in the level of participation at each level of education.

However, empirically, education and income inequality have a complex relationship. According to Wicaksono et al. (2017), unequal access to education leads to higher income inequality. Blanden and Macmillan (2016) found that the relationship between educational expansion and educational inequality has an inverted U-shaped relationship. This means that, in the early stages, educational inequality increases with the number of children at one level of education and decreases when the proportion of poor families reaches a certain number.

In addition, the direction of the relationship between education and income inequality can also be separated according to the school enrollment rate at each level. According to Keller (2010), elementary school participation has a positive relationship with income inequality, which means that the expansion of education at the elementary school level increases income inequality. Different results were obtained at the junior and senior secondary levels, at which expansion of education could significantly reduce income inequality.

At the higher education stage, a positive relationship was found again, and income inequality increased as school enrollment increased. This finding is in line with the findings of Blanden and Macmillan (2016), who stated that school enrollment rates at high levels of achievement are still below the level needed to reduce income inequality. This may be caused by differences in the participation of poor and rich families in higher education (Crawford et al., 2018). These researchers also revealed a relationship between financial ability, intergenerational mobility, and income inequality.

The data leads to the conclusion that the amount of school enrollment at a certain level determines the effect of the school enrollment rate on income inequality. This study does not include educational attainment to capture the quality of students because data at the provincial level is very limited.

Economic growth is also considered one of the determining factors in inequality. A study by Lyubimov (2017) compared two types of relationship between income inequality and economic growth. Lyubimov says that Kuznets (1955) sees economic growth as having an inverted U-shaped relationship with inequality, as inequality increases when poor countries develop and then inequality decreases when the country is more prosperous. However, this is difficult to prove during the period under study, due to the lack of available data. In 2013, Thomas Pikkety published a book stating that inequality did not decrease as the country became more affluent but also increased and formed an S curve rather than the U, as Kuznets proposed. A follow-up study by Yang and Greaney (2017) supported the S-curve proposed by Pikkety. However, this study also says that there is a positive relationship between economic growth and inequality in America, Japan, and China but that South Korea saw a negative relationship. This shows the complexity of the relationship between economic growth and inequality. Therefore, GDP per capita is used as a control variable.

For a developing country like Indonesia, the agricultural sector is still the backbone for the poor. According to a study conducted by Gordon Gonzales and Resosudarmo (2017), the agricultural sector has a negative correlation with income inequality. The results of their research suggest that an increase in the ratio of agricultural products to GDP is associated with an increase in spending for the bottom 20 percent of income. In this case, it is appropriate to use the ratio of agricultural products per GDP as a determinant of inequality.

According to a journal from the Journal of Economic Surveys (Anderson, Jalles D'Orey, Duvendack, and Esposito, 2017), government spending does affect

income inequality. However, the magnitude and direction of this relationship depend on the type of government spending and the method of measuring inequality used, such as the Gini coefficient or other methods. For example, government social spending has the most negative relationship with income inequality. To avoid collinearity, MSME credit subsidies and public education are excluded from the total government budget per capita.

According to Ulu (2018), government social spending also has a negative relationship with income inequality, in line with Anderson et al. (2016), who found a negative relationship between government social spending and income inequality. Therefore, social security is used as a control variable in the model.

Globalization, as discussed earlier, is considered a contributor to inequality. Therefore, the degree of trade openness is used as a control variable. Initially, the model to be used included exports plus imports relative to GDP as a measure of trade integration. However, import data at the provincial level is not available. Thus, the ratio of exports per GDP is used as a substitute.

The results of the study show that population growth generally has a positive correlation with inequality (Rougoor and Van Marrewijk, 2015). It is argued that the rapid increase in population can be attributed to a higher youth dependency ratio. As a result, the economic growth of countries with high populations tends to be slower than countries with low populations. The same study states that population size has a direct influence on several methods of measuring inequality, such as the Gini coefficient. For this reason, the population size is included as a control variable in the model

METHODS

This study uses a data set covering 33 provinces from 2005-2016 obtained from the Indonesian Central Bureau of Statistics (BPS), Bank Indonesia, and the Indonesian Ministry of Finance. This data set is then formed into a data panel to see the behavior of each province in the annual term. Using this data set, the study sets explanatory variables which are categorized into two groups, namely an independent variable and controlled variables.

The independent variable is MSME credit, which is represented by the ratio of net MSME credit expansion per GRDP. Other variables include social security per local government budget, government spending on education per total local government budget, school enrollment rate, GRDP growth, agricultural products per GRDP, total local government budget per capita, total exports per GRDP, and population. These are categorized as controlled variables. Then income inequality represented by the Gini coefficient will be treated as the dependent variable.

The logarithmic basic model to be used can be formulated as follows:

$$lgini_{it}=\alpha+\beta_1 lmcre_{it}+\beta_2 lsocs\_it+\beta_3 leduc\_it+\beta_4 lner_{it}+\beta_5 lgovt\_it+\beta_6 lpop_{it}+\beta_7 lagri_{it}+\beta_8 ltrade_{it}+\beta_9 lgdp_{it}+\mu_i+v_{it}$$

Where *lgini* is (ln) Gini coefficient, *lmcre* is the (ln) ratio of net MSME credit expansion per GRDP, *lsocs* is (ln) social security per total local government spending, *leduc* is (ln) government spending on education per total local government spending, *lner* is (ln) school enrollment rate, *lgovt* is (ln) total local government spending minus MSME credit subsidies and public education, *lpop* is the (ln) number of population, *lagri* is the (ln) ratio of agricultural products per GRDP, *ltrade* is (ln) total exports per GRDP, and *lgdp* is (ln) GRDP growth. The subscripts *i* and *t* represent each province and time of observation. The descriptive statistics for these variables can be seen in Table 1.

Before this model is regressed, several tests need to be done, namely the Levin-Lin-Chu (LLC) unit root test for stationary data, the Breusch-Pagan Lagrange multiplier (BP LM) test for random effects model versus OLS model, the Hausman test for fixed-effect

Table 1. Descriptive Statistics

Variable		Mean	Standard Deviation	Min	Max	Observation
province	overall	17	9.53395	1	33	N = 396
	between		9.66954	1	33	n = 33
	within		0	17	17	T = 12
year	overall	2010.5	3.456419	2005	2016	N = 396
	between		0	2010.5	2010.5	n = 33
	within		3.456419	2005	2016	T = 12
lgini	overall	-1.408167	.1175905	-1.808567	-1.045862	N = 396
	between		.083288	-1.621374	-1.220447	n = 33
	within		.0841654	-1.838174	-1.19144	T = 12
lmcre	overall	-2.090436	.7549878	-3.779243	.1084997	N = 352
	between		.3900238	-2.950505	-1.216591	n = 33
	within		.6581432	-3.666379	-.3987874	T-bar = 10.6667
lsocs	overall	-4.319694	.4813414	-6.088788	-2.728943	N = 382
	between		.2653157	-4.781699	-3.700621	n = 33
	within		.4064884	-6.026055	-2.700983	T-bar = 11.5758
leduc	overall	-2.729403	.7053838	-551146	-.1441204	N = 389
	between		.4561743	-3.683461	-161175	n = 33
	within		.5423377	-5.288233	-.4507576	T-bar = 11.7879
lner	overall	2.812226	.4101169	1.785071	3.911022	N = 393
	between		.2919051	2.241023	380071	n = 33
	within		.2923348	209687	3.395962	T-bar = 11.9091
lgovt	overall	-3.412316	.7837989	-7.980223	-.6869828	N = 394
	between		.5944215	-4.302391	-2.278879	n = 33
	within		.5195444	-7.618908	-1.723465	T-bar = 11.9394
lpop	overall	15.21322	1.000744	13.36609	17.6737	N = 396
	between		1.0124	13.54854	17.58614	n = 33
	within		.0712621	14.97763	15.3999	T = 12
lagri	overall	-1.561769	.5470462	-3.338223	-.597837	N = 384
	between		.5314012	-3.172838	-.7722077	n = 32
	within		.1580589	-210.063	-1.049855	T = 12
ltrade	overall	-.8199459	1.065455	-6.526645	.6666566	N = 363
	between		.7123573	-2.750387	.4717718	n = 33
	within		.8010995	-4.596204	.9032844	T = 11
lgdp	overall	-2.588.889	1.213427	-6.119813	1.550431	N = 384
	between		.2419751	-3.181686	-2.114245	n = 33
	within		1.191583	-5.829733	1.755528	T-bar = 11.6364

model versus random effects model, Variance Inflation Factor (VIF) test to detect multicollinearity, and Breusch-Pagan/Cook Weisberg (BP/CW) test for heteroscedasticity.

To ensure that the results of the regression are robust, this paper conducts sensitivity tests using the Fama-MacBeth two-step regression and weighted least squares regression. The logarithmic basic model is robust if the relationship between the dependent variable and the independent variable is consistent across regression models.

RESULTS AND DISCUSSION

According to the RE regression results, MSME loans affect income inequality negatively at a very significant level, where $\alpha = 0.1$ percent. This indicates that a one percent increase in MSME loans may reduce income inequality by 0.03 percent, holding other variables constant. These results are in line with the research hypothesis, under which MSME loans are believed to reduce income inequality. Moreover, Figure 3 shows that homoscedasticity is present in the model. This suggests that the variance of the *lgini* is the same for all of the data.

Table 2. Regression Results with the OLS, random effects, fixed effects

Variable	OLS	RE	FE1	FE2	FMB	WLS
lmcre	-.00280924	-.03524655***	-.04894791***	.02343402	.08406126	-.00136199
lsocs	.00790768	.00624072	.0079477	.00507818	.00576888	.007872
leduc	-.0221351*	-.00391414	.00467331	.00669809	-.01829838	-.02241461*
lner	.08599489***	.10650867***	.1271494***	.088579	.05512617	.08467058***
lgovt	.00079661	.01190388	.02274971	.00124555	-.01222164	.00017022
lpop	.00435676	.01143603	-.05756083	.56740471*	-.00648497	.0041182
lagri	-.06766262***	-.03686382	-.00966277	.01991	-.0676935	-.06953879***
ltrade	-.013282	.00152223	.00447757	.01817626*	.01588994	-.01415554
lgdp	.00810419	.00281304	.00173934	.01399848	.0432955	.00775229
year						
2006				.03900359*		
2007				.08603739**		
2008				.07257313*		
2009				.09059367*		
2010				.11697289		
2011				.2149939**		
2012				.2136925**		
2013				.20464073**		
2014				.21191607**		
2015				.16366771*		
constant	-1.8343413***	-1.9406622***	-.86221732	6.7986816	-1.3672832	-1.8316903***
N	290	290	290	290	290	290
R^2	.27177116	.3718	.37825136	.49672525	.47397237	.27392193
Adjusted R^2	.24836381	.0893	.35826659	.46130962	.18198721	.25058371
AIC	-533.96778	.	-757.4382	-798.74409	.4740	-531.62771
BIC	-497.26897	.	-724.40927	-729.01636	.1820	-494.92891

***: significant at 0.1 percent, **: significant at 1 percent, *: significant at 5 percent.

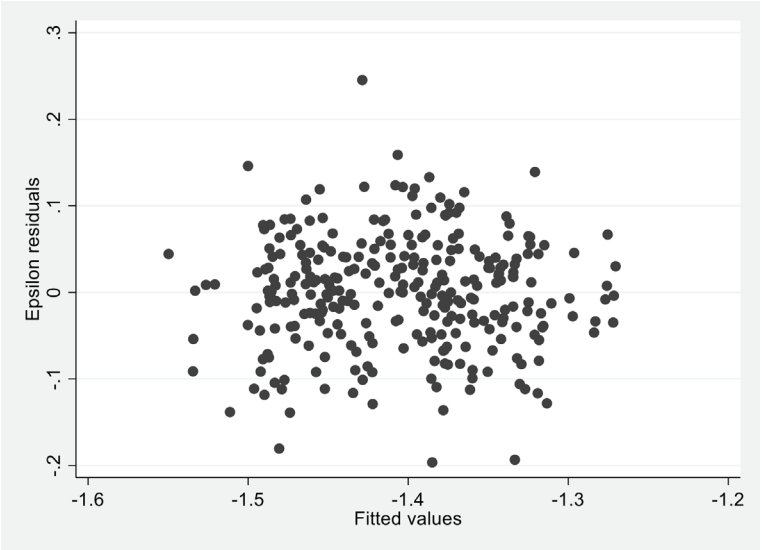

Figure 3. RE residuals versus fitted values
Source: Authors' regression results

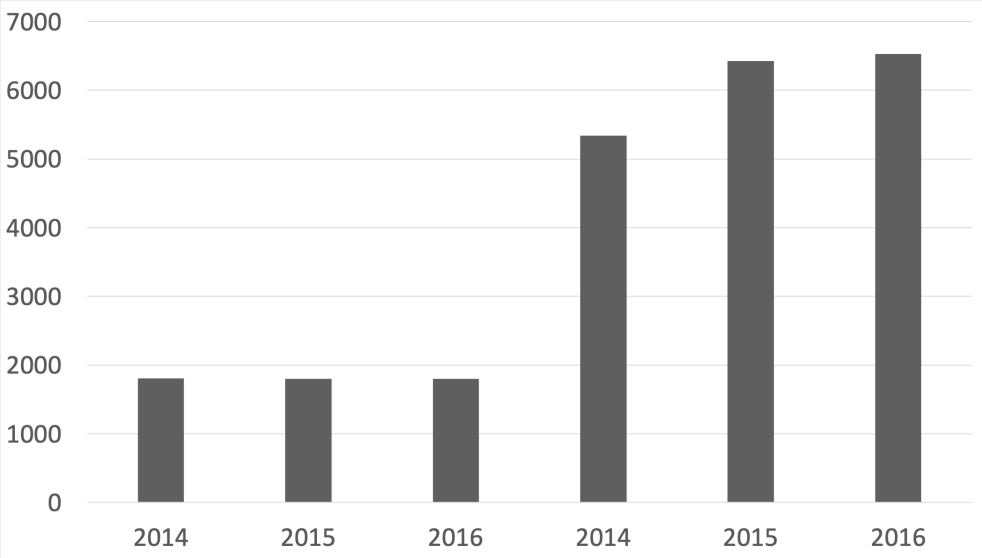

Figure 4. Number of banks providing microcredit in Indonesia, 2014 – 2016
Source: Number of Commercial Banks in Indonesia (BPS, 2017)

The relationship between *lgini* and *lmcre* is consistent with the previous studies. Pamungkas et al. (2015) found a specific negative relationship between MSME credit and income inequality in Indonesia. Moreover, Figure 4 shows that the increasing number of banks that are providing microcredit in Indonesia suggests that the authors' regression results are aligned with the findings from Bangoura et al. (2016). It shows that the intensity of microcredit activities towards income inequality reduction is relevant in Indonesia. In other words, higher accessibility leads to a higher reduction in income inequality.

A positive relationship was found between school enrollment rates and income inequality at a significance level of $\alpha = 1$ percent. This suggests that an increase in the net school enrollment rate may contribute to an increase in income inequality, ceteris paribus. This may be due to the greater number of school enrollment among those aged 7-12 years, 99.09 percent, compared to school participation among those aged 19-24 years, which only reached 23.39 percent (BPS, 2019). This is in line with the literature review, which states that low participation at the higher education level can lead to income inequality. This positive relationship was obtained despite an increase in enrollment of 12.55 percent from 2006-2016 at the higher education level (BPS, 2019). This finding implies that the participation of poor families in tertiary education is still low compared to rich families, causing income inequality

MANAGERIAL IMPLICATION

The results of this study serve as references for the Indonesian government to reduce the income gap by increasing access to MSME credits. Thus, more people with limited or inadequate capital could start or scale their MSMEs up and ultimately increase their livelihoods. However, it is important to note that commercial banks that serve as the providers conduct a proper background check on the recipients. Otherwise, it may increase the risk of Non-Performing Loans (NPL).

CONCLUSION

Based on the results of panel data regression using the random effects method in thirty-three provinces from 2005 – 2016, the authors find a negative correlation between MSME credit and income inequality in Indonesia. This result is in line with

the research hypothesis, where MSME loans are believed to reduce income inequality.

The authors hope that the results of this research can be used as a basis for the Indonesian government's policy to increase the coverage and budget of the MSME credit interest subsidy scheme. Thus, MSMEs in Indonesia can continue to grow and, in the end, can reduce the income gap.

However, in this study, the net credit expansion data uses the MSME credit net expansion as a whole. Thus, the specific relationship between credit per business scale (micro, small, and medium sized) and income inequality could not be seen in the model. In other words, the authors could not conclude whether the impact of microcredit across business scales caused variance in income inequality. Therefore, there is a need for further research that examines the impact of credit per business scale on income inequality in Indonesia, which can assist the government in formulating related policies. ■

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