

# Microfinance Institutions: The Effect of Outreach to Rural Borrowers on the Sustainability of Microfinance Institutions?

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**Abstract.** Financial inclusion is one of the most important objectives of socio-economic development policymaking. Microfinance institutions (MFIs) have become a major role in promoting a wide range of financial inclusion which benefits low-income societies. However, outreach in rural areas, where poverty is more widespread, is considered low. Many things are often associated with slower growth of financial inclusion in rural areas such as the character of the borrowers and also difficult accesses to the poor. These obstacles lead to assumptions that MFIs in rural areas face more difficult challenges to maintain their sustainability than in urban areas. In this study, data collected during 10 years period, between 2009 to 2019, from 942 MFIs that reported their data to the MIX Market, 7560 observational data were being used. Using Panel Data model, this study investigated whether rural outreach will hinder the sustainability of the MFIs. Our baseline regression test informed that outreach in rural borrowers positively affected sustainability. In General, this study indicated that MFIs can consider penetrating more rural borrowers to continue carrying out one of their social missions in providing financial access to poor people in rural areas.

**Keywords:** Microfinance Institutions (MFIs); Sustainability; Rural Borrowers; Depth of Outreach; Operational self-sufficiency (OSS)

## I. Introduction

Providing financial services for the poor is one of the most important objectives of socio-economic development policy-making (Bharti & Malik, 2022; Weiss et al., 2011). However, Asian Development Bank (ADB, 2000) mentioned that most formal financial institutions are reluctant to serve the poor as it causes high risk, relatively low profits and the inability of the poor to provide guarantees that are usually required by these institutions. Nevertheless, access to financial service provider give a very effective impact on improving the welfare of the underprivileged. Hence, financial inclusion that reaches more underprivileged communities is needed to increase the distribution of community welfare (Weiss, Montgomery & Kurmanalieva, 2005).

Financial inclusion provides financial services to people who were previously unfamiliar with the financial services provided by formal institutions such as banks (Lopez & Winkler, 2018). Along with financial inclusion, the number of unbanked people decreased substantially from 2011 to 2014 (Allen et al., 2016; Cull et al., 2018). Then, Microfinance Institutions (MFIs) emerged as major players in responding to the needs for financial inclusion that cannot be met by formal banks, especially in developing countries. The financial sector appears to develop more in urban areas than in remote areas (Allen et al., 2016; Lopez & Winkler, 2018).

Microfinance is not just banking but also includes financial and social intermediation (Ledgerwood, 1999). MFIs defines as microfinance institutions that provide financial services to low-income individuals or communities who are usually excluded from traditional banking (Morduch, 1999) including entrepreneurs (ADB, 2000; Ledgerwood, 1999). In addition, according to the Indonesian Financial Services Authority (OJK, 2013), MFIs are financial institutions that specifically established for services in business and community empowerment by providing loans or financing for micro-enterprises and the community.

The role of MFIs in promoting financial inclusion has been widely recognized and discussed in many studies and literature (Bharti & Malik, 2022). It is proven that it has an important role as it can reduce poverty (Parikh, 2006) and raise the living standards of the underprivileged. Providing credit services in the form of small loans can be used by small rural households or rural business because they can respond to the need of the poor which banks, in general, cannot meet (Postelnicu & Hermes, 2018). Rural financial services such as micro-loans or micro-credits have important role for farmers, small entrepreneurs and individuals in doing productive activities which can help them to generate additional income (Quayes, 2015). Furthermore, by having small loans, poor people especially in rural areas, can access health services better (Hilton et al., 2015; Mahmud et al., 2019). With such important roles, MFIs must be sustainable so that their benefits can continue to be felt by them (Adu et al., 2014).

Finding the relationship between the outreach to the poor and their sustainability performance has been carried out through many studies. Research conducted by (Quayes, 2012) initially showed that the sustainability of the MFI had no impact on the depth of the MFI outreach when the samples were complete and not separated into certain categories. However, when the past study divided the sample based on the

level of disclosure (openness of information from each MFI), the study succeeded in revealing evidence of a trade-off between financial performance and sustainability for MFIs with low levels of disclosure. Evidence that outreach to the poor is negatively related to the efficiency of microfinance institutions is found in research conducted by (Hermes et al., 2011). Then, the research conducted by (Nyanzu et al., 2019) shows that good regulation will contribute both to the range of financial services provided as well as to the sustainability of the MFI itself. The existence of a trade-off between the increasing number of underprivileged people served and the sustainability of MFIs, especially in rural communities, has also been shown by several studies (Cull et al., 2009; Hermes et al., 2011). On the other hand, (Lopez & Winkler, 2018) conducted a study that showed the outreach indicated by the percentage of rural borrowers did not have a direct effect on the sustainability of a microfinance institution. By considering the novelty of outreach to the poor in the form of the percentage of rural borrowers, this study examines whether the percentage of rural borrowers in MFIs has a relationship with its sustainability. This research is the development of previous study with newer phenomena, information and data.

## **II. Literature Review**

### **Financial Inclusion and Microfinance Institutions (MFIs).**

The microfinance movement as a part of financial inclusion has experienced significant growth in recent years (Bharti & Malik, 2022; Morduch, 1999). According to the world bank, financial inclusion itself means access to useful and affordable financial products and services for individuals and businesses that meets their need. By promoting financial inclusion to the poor, particularly in rural areas, the number of unbanked people decreased substantially in 2011–2014 (Allen et al., 2016). Meanwhile, microfinance can be defined as the provision of small-scale financial services for the poor (Morduch, 1999). With the existence of microloans and microcredits, the living standards of the poor have proven to be improved (Quayes, 2015).

Microfinance institutions (MFIs) have become major players in promoting financial inclusion in recent decades (Espallier et al., 2017; Lopez & Winkler, 2018). Recent advances in financial inclusion reflect how the expansion of microfinance institutions has progressed (Lopez & Winkler, 2018). MFIs have become major players in their role of promoting financial inclusion in recent decades (Lopez & Winkler, 2018) by responding to financial service needs that banks cannot meet. It happened particularly in developing countries through the provision of microfinance services that are not provided by banks. The development of these microfinance institutions contribute to the development goals of poverty reduction, food security in relation to agricultural production, women's economic empowerment, and health protection (Mahmud et al., 2019).

The definition of an MFI is an institution that provides financial services to its low-income customers, including the self-employed (ADB, 2000; Ledgerwood, 1999). It indicates that the definition of microfinance itself is not just banking but also includes financial intermediation and social intermediation (Joanna Ledgerwood, 1999; OJK, 2013). In addition, the international MFI FINCA defines microfinance institutions as institutions that provide financial services to low-income individuals or groups who are usually excluded from traditional banking (FINCA, 2022). Morduch (1999) also inferred that MFI is defined as an institution that provides small-scale financial services to poor people.

Microfinance institutions are committed to serving customers who are not well served by commercial banks (Cull et al., 2018). These microfinance institutions (MFIs) also aim to increase the access of the poor to financial services while at the same time paying attention to financial sustainability (Postelnicu & Hermes, 2018). The initial goal of microfinance institutions are increasing public access to financial services for the poor (Mersland & Strøm, 2010; Morduch, 1999; Postelnicu & Hermes, 2018) and low income societies. MFIs offer financial services in the form of loans in relatively small amounts to people who have not been able to access conventional banking facilities. MFIs aim to help those in need of funds improve their quality of life or develop their small businesses. Microfinance institutions have proven to have an important role in reducing poverty (Parikh, 2006) and raise the living standards of the underprivileged (Quayes, 2015) by providing microcredit. Even with small loans, poor people especially in rural areas can access health services better (Hilton et al., 2015; Mahmud et al., 2019). With those important roles, MFIs must be sustainable so that their benefits can continue to be felt by poor people, especially people in rural areas (Adu et al., 2014).

### **Microfinance Institutions and Rural Areas**

To make poor people able to access financial services, financial inclusion must spread to villages where these unfortunate people are more easily to found. It also can help to distribute the development evenly to rural areas (Lopez & Winkler, 2018). The depth of the MFI's reach is also measured by the number

of poor rural people being provided with services (Paxton, 2002). However, the presence of financial inclusion in rural areas is still lower when compared to its presence in urban areas (Lopez & Winkler, 2018).

There are many challenges that must be faced by MFIs in their social mission of reaching out to underprivileged communities, especially in rural areas (Kauffman & Riggins, 2012; Parikh, 2006). Many challenges faced are remote location of rural market that is difficult to reach with financial services, low population density and relatively small transaction size. In addition, financial institutions must pay more to provide credit for the outreach that spreads to remote rural areas (Bandiera et al., 2022; Lengkap, 2016; Postelnicu & Hermes, 2018). Another one that could be a hinder in providing credit to rural communities is a high probability of default when an economic shock occurs (Lopez & Winkler, 2018).

Generally aiming to provide financial intermediation so that the poor could improve the living standards, especially in rural areas, MFIs are faced with institutional sustainability challenges (Lopez & Winkler, 2018; Parikh, 2006). As a result, many assumptions have emerged that MFIs have been experiencing mission drift; MFIs have been becoming more commercial profit-oriented so that the MFI will be more focused on customers who have better financial conditions (Bharti & Malik, 2022; Copestake, 2007; Cull et al., 2009).

The emergence of MFIs as important players in the financial system, the majority of the poor are still underserved. Most of them are people in poor rural communities (Adu et al., 2014). The debate is still going on whether providing more rural people will effect MFI sustainability or not. Quayes (2012) found a trade-off between outreach and financial sustainability for MFIs with low levels of disclosure. Study conducted by Hermes et al. (2011) found that the efficiency of microfinance institutions have inverse relationship with their outreach to the poor. A trade-off was also found between the sustainability of MFIs and increasing outreach to the poor in rural areas, as shown by several studies (Cull et al., 2009; Hermes et al., 2011; Olivares-Polanco, 2005). Meanwhile, Lopez and Winkler (2018) found that outreach of MFIs in poor rural communities as indicated by the percentage of rural borrowers did not have a direct relationship with sustainability. With these considerations and assumptions, MFIs must pay attention to their performance in accordance with their social goals and the sustainability of their organization in an effort to face the challenges faced in serving the poor in rural areas. This study attempts to explore whether MFIs serving a higher percentage of rural borrowers will experience sustainability challenge. Therefore, the hypothesis is defined as sustainability of MFIs is influenced by the percentage of rural borrowers from the total borrowers as follows

Research Hypothesis:

$H_0$  = Outreach to rural borrowers has a significant negative effect on MFI sustainability.

### III. Research Method

#### Research Design, Sample and Data

This study uses panel data which is a combination of time series and cross-section data and this type of data has the same cross-sectional unit from time to time (Gujarati & Porter, 2008). The panel data period used in this study is 10 years, from 2009-2019. The data sample used in this study is secondary data regarding microfinance institutions reported to MIX Market during the 2009–2019 period. In addition, this study also uses macroeconomic indicators obtained in the form of secondary data.

MIX Market is financial service data provider (FSP) that supports the growth of financial inclusion and financial services worldwide. Microfinance Information Exchange (the MIX) is a non-profit organization that aims to promote the exchange of information in the microfinance industry and collect data on microfinance institutions (Cull et al., 2009).

#### Methodology, Models and Variables

OSS (operational self-sufficiency) variable, in this research, is commonly used in previous models to measure sustainability in MFIs conducted by previous researchers (Ahlin et al., 2011; Lopez & Winkler, 2018; Quayes, 2012). In this study, OSS (operating self-sufficiency) measures the level of sustainability by excluding non-operating income. If the measured value is greater than 1, it indicates that each MFI has operating income that can cover operating expenses and impairment losses (Ahlin et al., 2011; Lopez & Winkler, 2018; Quayes, 2012).

$$OSS = \frac{\text{Financial Revenue (FR)}}{\text{Financial Expense (FE) + impairment Loss (IL) + Operating Expense (OE)}}$$

Based on previous research, conducted by Lopez and Winkler (2018), the hypotheses in this study were tested for hypothesis validity using the Panel Data model. This study was conducted to analyze the effect of the high percentage of in relation to sustainability. The following is the research model that:

$$OSS_{i,j,t} = \alpha + \beta_1RURAL_{i,j,t} + \beta_2Z_{i,j,t} + \beta_3Y_{i,t} + u_{i,j,t}$$

OSS<sub>i,j,t</sub> measures the level of sustainability for each MFI *i* located in country *j* where *t* is the year the MFI operates. As previously described, OSS is considered to be the most common indicator in the microfinance literatures (Ahlin et al., 2011; Lopez & Winkler, 2018), which explains an MFI's financial performance or sustainability through measurement of income earned by the MFI. If the measured value is greater than 1, the MFI is considered to have sufficient income for the MFI's operating expenses. RURAL is an independent variable that explains the social outreach of an MFI by measuring the percentage of rural borrowers served by the MFI, namely the number of rural borrowers to the number of active borrowers. *Z* represents the MFI-specific control variables, *Y* represents the macroeconomic control variables.

Table 1. List of Variables

<b>Variables</b>		
<b>Dependent Variables</b>		
<b>Performance</b>	<b>Variable Description</b>	<b>Source</b>
OSS (Operating)	<i>Financial revenue/(financial expense + impairment loss + operating expense) ; if the value is OSS &gt; 1, the MFI is considered to have income greater than the MFI's operating expenses.</i>	MIX Market and Own Calculation
ROA	<i>(Net Operating Income – Tax Expense) / Average Assets</i>	MIX Market and Own Calculation
<b>Explanatory Variables</b>		
RURAL	<i>Number of Rural Borrowers / Number of Active Borrowers ; (in percentage form)</i>	MIX Market
<b>Independent Variables (MFI Data)</b>		
SIZE	<i>Natural Logarithm of Assets</i>	MIX Market
PRODUCTIVITY	<i>Number of Loans Outstanding / Loan Officers</i>	MIX Market
GLP	<i>Gross Loan Portfolio/ Assets</i>	MIX Market
LOANSIZE	<i>Average Loan Balance per Borrowers</i>	MIX Market
AGE	<i>Age of MFI</i>	MIX Market
<b>Macroeconomic Variables (Indicators)</b>		
GROWTH	<i>GNI per capita growth (annual %) ; Annual percentage growth rate of GNI per capita based on constant local currency.</i>	World Bank
PRIVL	<i>Domestic Credit to Private Sector</i>	World Bank
FDI	<i>Foreign direct investment, net inflows</i>	World Bank
GDPCAP	<i>GDP per Capita</i>	World Bank
INDS	<i>Industry including Construction, value added (% of GDP)</i>	World Bank
RURPOP	<i>Rural Population Growth (annual %)</i>	World Bank
SPREAD	<i>Interest rate spread (lending rate minus deposit rate, %)</i>	World Bank
AGRI	<i>Agriculture, forestry, and fishing, value added (% of GDP)</i>	World Bank
RURALTOT	<i>Rural population (% of total population)</i>	World Bank

Source: Author's Compilation (2022)

This study also uses several control variables which are classified into MFI-specific indicators, macroeconomic indicators, and rural-specific indicators. Specific indicators related to MFIs consist of several variables such as: the number of years the MFI has been operating (AGE), Gross Loan Portfolio (GLP) which is an indicator that measures the MFI's ability to generate income by utilizing its assets, as well as the average loan size given to borrowers for comparison. to GNP (LOANSIZE) which will explain how far an MFI reaches the poor, based on the distribution of national income. These control variables are needed to measure the performance of MFIs as research subjects which are also influenced by other internal factors (Lopez & Winkler, 2018; Quayes, 2012).

The macro context of a country where an MFI operates is an important factor that influences the MFI's sustainability (Ahlin et al., 2011). Several macroeconomic indicators consist of GROWTH which measures growth from gross national income, GNI (Gross National Income), PRIVL which is domestic credit to the private sector to GDP, FDI which is investment by foreign parties, GDP per capita based on purchasing power parity (GDPCAP), RURPOP which is the annual growth of rural population, INDS which is the contribution of the private sector to GDP, AGRI which is the contribution of agriculture to total GDP, and RURALTOT which is the percentage of rural population to the total population. This group of variables is needed because macroeconomic indicators act as external factors that affect MFI performance (Ahlin et al., 2011).

This study follows the previous research by Lopez and Winkler (2018), which used the Pooled Ordinary Least Square. In this study, a methodological-change and proxy-change tests were carried out to examine the result against the assumptions in this study. The study also checks whether the results are robust for those changes or not (Lopez & Winkler, 2018). This study also performs a Pagan Lagrangian Multiplier Test before conducting methodological change (Gujarati & Porter, 2008).

#### IV. Results and Discussion

##### Descriptive Statistics

Table 2. Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
MFIID	7,560	109245.3	17862.67	100001	176694
OSS	6,296	1.13	0.3469307	-1.662008	7.826667
ROA	5,903	0.0162182	0.0841085	-1.093353	1.422787
RURAL	4,950	0.5357277	0.3282003	0	1
SIZE	7,236	16.61982	2.045224	4.29046	28.99582
PRODUCTIVITY	6,449	952.041	46166.7	0	3706761
GLP	7,187	0.820462	1.061929	0.0006857	76.98527
LOANSIZE	6,773	0.6315523	1.367003	0	22.362
MAC_GROWTH	7,067	2.851142	3.318659	-22.09562	20.2432
MAC_PRIVL	7,417	36.23626	19.2526	0.4976022	133.136
MAC_FDI	7,554	1.01E+10	1.65E+10	-1.02E+10	1.02E+11
MAC_GDPCAP	7,560	8156.414	5453.78	644.1052	31784.31
MAC_INDS	7,524	27.68638	7.48968	4.555926	62.54803
MAC_RURPOP	7,503	0.6028832	1.18638	-3.801545	5.305762
MAC_SPREAD	5,389	8.255157	7.44113	-8.516073	49.04583
MAC_AGRI	7,524	14.07241	8.453437	1.926849	60.61109
MAC_RURALTOT	7,503	49.19464	20.84986	4.955	89.624
Age	7,560	8.396032	4.592802	0	19
FiscalYear	7,560	2013.275	2.780853	2009	2019

Source: Author's Compilation (2022)

Table 2 shows the results of descriptive statistics from research data. There were 7560 observational data, from 742 MFIs, with the average age of MFIs being 8.4 years. In the 2009-2019 period,

the average OSS value was 1.33 with a standard deviation of 0.35. This result indicates that most MFIs that report their data to MIX market can be said to have a good level of sustainability so that they can cover their operational and financial expenses.

Meanwhile, the average ROA from the observations is 1.6% with a high standard deviation of 8.4%. This result shows that MFIs tend to be less constant in recording their profitability. Then, the variable RURAL, which shows the percentage of rural borrowers compared to the number of active borrowers, has an average value of 0.5357 with a standard deviation of 0.3282. This indicates that the observed MFIs serve slightly larger rural communities than urban communities.

### Baseline Regression Result

Table 2. PLS Regression Result

OSS	Coef.	P>t
<b>RURAL</b>	<b>0.0458553**</b>	<b>0.04</b>
Age	-0.0009818	0.594
<b>SIZE</b>	<b>0.0154187***</b>	<b>0.00</b>
LOANSIZE	0.00724	0.159
<b>GLP</b>	<b>0.1544142***</b>	<b>0.00</b>
PRODUCTIVITY	0.0000120	0.773
<b>MAC_GROWTH</b>	<b>0.0058509***</b>	<b>0.004</b>
<b>MAC_PRIVL</b>	<b>0.0009696***</b>	<b>0.008</b>
MAC_FDI	4.05E-13	0.481
MAC_GDPCAP	2.61E-06	0.324
<b>MAC_INDS</b>	<b>0.00574***</b>	<b>0.00</b>
MAC_RURPOP	0.0093528	0.163
MAC_SPREAD	0.0017151	0.121
MAC_AGRI	-0.0006004	0.744
<b>MAC_RURALTOT</b>	<b>0.0014031**</b>	<b>0.031</b>
_cons	0.2362291	0.127
Source	SS	
Model	16.2700413	
Residual	252.126428	
Total	268.396469	
F(31, 2496) =	7.35	
Prob > F =	<b>0.00</b>	
R-squared =	0.0606	
Adj R-squared =	<b>0.0524</b>	
Root MSE =	0.31725	

Source: Author's Compilation (2022)

Table 3 shows the results of PLS data regression. Based on the regression data, the overall model can be said to be significant with a confidence level of 1% (Prob > F value = 0.000) with Adj. R-Square of 5.24%.

Hypothesis of this study assumes that MFIs with a higher percentage of rural borrowers have a lower sustainability rate rather than those with a higher percentage of urban borrowers. With this hypothesis, we expect the RURAL variable coefficient to be negative. However, the results of this study actually say the opposite where hypothesis 1 is completely rejected. The evidence in this study shows that every one unit increase in the Rural percentage in the MFI will be followed by 4.586% increase in OSS with a confidence level of 5% ( $\alpha=5\%$ ). This result is considered in line with previous studies, where the percentage of rural borrowers does not cause a trade-off with the sustainability level of the MFI.

In addition to the RURAL variable which has a fairly high level of significance, there are several independent variables that are also significant. Some of them are SIZE (the size of the MFI's assets), GLP

(the large value of the MFI's loan portfolio). In addition, macroeconomic variables include MAC\_GROWTH (GDP growth in a country), MAC\_PRIVL (domestic credit to the private sector in a country), MAC\_INDS (private sector contribution to GDP), MAC\_RURALTOT (percentage of rural population to total population in a country).

### Robustness Check

Regression using another Testing Methods

Table 3. FEM Panel Data Regression Result

OSS	Coef.	P>t
RURAL	0.0158654	0.677
Age	0.0085373	0.12
<b>SIZE</b>	<b>0.0484735***</b>	<b>0.000</b>
LOANSIZE	0.0064115	0.432
<b>GLP</b>	<b>0.0592254**</b>	<b>0.022</b>
PRODUCTIVITY	(0.00000068)	0.833
<b>MAC_GROWTH</b>	<b>0.0059819***</b>	<b>0.001</b>
<b>MAC_PRIVL</b>	<b>-0.0047111***</b>	<b>0.001</b>
MAC_FDI	1.85E-12	0.091
MAC_GDPCAP	3.05E-07	0.969
<b>MAC_INDS</b>	<b>0.0073833**</b>	<b>0.036</b>
<b>MAC_RURPOP</b>	<b>-0.0402067**</b>	<b>0.03</b>
MAC_SPREAD	0.0042392	0.23
MAC_AGRI	-0.0027806	0.547
MAC_RURALTOT	-0.0000356	0.997
_cons	0.1085594	0.823
R-sq:		
within	0.0457	
between	0.008	
overall	0.0077	
F(21,1939)	= 4.42	
corr(u_i, Xb)	= -0.4836	Prob > F = 0.000

Source: Author's Compilation (2022)

Table 3 shows the results of the regression of the OSS independent variable using the Fixed Effect Model (FEM). The overall model can be said to be significant with a confidence level of 99% (Prob > F value = 0.000). Then, the variables in this research model predict about 0.77% of MFI sustainability (OSS). In contrast to the results carried out using PLS, the results using FEM do not show no significance to the RURAL coefficient. This is possible because of the effect or characteristics of the MFI captured by the dummy fixed effect, where the effect produced by rural is similar to the unique effect of each existing MFI cross section variable. Variables other than RURAL, which are individual characteristics of MFIs, which have significance are SIZE and GLP. The coefficients on the SIZE and GLP variables were 0.048 and 0.059, respectively, with 99% confidence levels for SIZE and 95% for GLP. As in the test using the PLS estimation method, several macroeconomic variables also show significant values which are quite high. Some of them are MAC\_GROWTH (GNI per capita growth in a country), MAC\_PRIVL (domestic credit to the private sector in a country), MAC\_INDS (private sector contribution to GDP). Meanwhile, MAC\_RURALTOT (percentage of rural population to the total population in a country) and also MAC\_SPREAD (the difference between loan interest and deposit interest in %) in the FEM method test is not significant in influencing the sustainability of MFIs. Therefore, in this test, variables that significantly affect the sustainability of MFIs are SIZE, GLP, MAC\_GROWTH, MAC\_PRIVL (domestic credit to the private sector in a country), MAC\_INDS (private sector contribution to a country's GDP) and MAC\_RURTOT (the percentage of the rural population to the total population in a country).

### Regression using ROA as Sustainability Proxy

Table 4. ROA Proxy Regression Result

ROA	Coef.	P>t
RURAL	0.004371	0.411
Age	-0.000218	0.66
<b>SIZE</b>	<b>0.0045781***</b>	<b>0.000</b>
LOANSIZE	-0.0007884	0.525
<b>GLP</b>	<b>0.0480561***</b>	<b>0.000</b>
PRODUCTIVITY	(0.00000004)	0.964
MAC_GROWTH	0.0006424	0.206
MAC_PRIVL	0.0000749	0.389
<b>MAC_FDI</b>	<b>0.394***</b>	<b>0.004</b>
MAC_GDPCAP	-9.61E-07	0.139
<b>MAC_INDS</b>	<b>0.0004476*</b>	<b>0.085</b>
<b>MAC_RURPOP</b>	<b>0.0033565**</b>	<b>0.037</b>
MAC_SPREAD	0.0000592	0.819
<b>MAC_AGRI</b>	<b>-0.001784***</b>	<b>0.000</b>
MAC_RURALTOT	0.000232**	0.037
<b>_cons</b>	<b>-0.1144384***</b>	<b>0.002</b>
Source	SS	
Model	1.06525297	
Residual	12.155605	
Total	13.220858	
F(31, 2309) =	6.53	
<b>Prob &gt; F =</b>	<b>0.000</b>	
R-squared =	0.0806	
<b>Adj R-squared =</b>	<b>0.0682</b>	

Source: Author's Compilation (2022)

The results of the regression in table 4 show that the overall model can be said to be significant with a confidence level of 1% (Prob > F value = 0.000). This research model using ROA predicts about 6.8% of MFI sustainability (ROA proxy) as seen from Adj. The R-Square. Not much different from the results tested through the previous estimation method, the RURAL variable in this ROA proxy test did not show significant results. In the robustness check that examines ROA, SIZE and GLP show significant effects. The size of the MFI's managed assets and loan portfolio affect the MFI's sustainability and profitability. The coefficients on the SIZE and GLP variables are 0.0046 and 0.048, respectively, with a 99% confidence level for SIZE and GLP. The macroeconomic variables which are significant affecting MFI sustainability are MAC\_RURPOP (growth of a country's rural population), MAC\_FDI (Foreign Direct Investment), MAC\_INDS and MAC\_AGRI. Significant value is also shown on the coefficient of the constant or intercept in this ROA model. A negative sign indicates that if activities in the model are considered non-existent, MFI will produce a negative return value in general.

## V. Conclusion

This study tried to explain empirically the effect of outreach to rural borrowers on the sustainability of microfinance institutions. Using data from the 2009-2019 MIX Market, on the baseline regression, reaching more rural borrowers actually has a positive effect on MFI sustainability. Although some of the results show ambiguous results, there is none of the tests show a trade-off between outreach to rural borrowers on MFI sustainability. Therefore, this study rejects the notion that providing more loans to rural communities will have a negative effect on the sustainability of the MFI.



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