



Assessing the Impact of Microfinance on Inequality: A Study of Major SAARC Nations Using Panel Causality Analysis

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INTRODUCTION

The origin of the term ‘Microfinance’ dates back to the 1970s when organizations like the Grameen Bank of Bangladesh defined a new facet of finance. Microfinance is particularly aimed at reducing global poverty and inequality by extending the access of credit to the poor. Microfinance is said to have a significant equalizing effect, which implies that it lowers inequality by increasing the income of poor and decreasing the income of rich. Hence, microfinance can be used as an effective redistribution tool which will prove to be an effective solution to the twin problem of poverty and inequality (Ahlin & Jiang, 2008; Kai, 2009). On the other hand, the link between microfinance, poverty and inequality is also highly influenced by the targeting strategies followed by the MFIs;

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hence, the link is country-specific (Bangoura et al., 2016). Even in presence of the literature on cross-country analysis of effects of microfinance, the results are mixed. Although the roots of microfinance are said to be in South Asia, surprisingly, no South Asian country, barring a few, was able to reduce its inequality in the years 1980–2015. Keeping these factors in mind, it is important to understand the efficacy of microfinance in a specific cluster of countries, in dealing with inequality, and to examine if the MFIs evidently contribute to the reduction in inequality.

The researchers observe that no region-specific study to evaluate impacts of microfinance has been conducted yet. The studies conducted till date consider only the economic similarities between the countries and hence consider groups like ‘developing countries’ for study purpose. Regional and other similarities based on problems faced by the countries are very seldom considered. There is no study done on the South Asian region as a whole, which leaves an open avenue for the researchers to explore the impact of microfinance in South Asia. The countries chosen from South Asia are similar in various aspects like the increasing inequality problems they have been facing for more than a decade; similar HDI, low health expenditure as a percentage of GDP and being a part of SAARC, these countries also share common macroeconomic interests.

This paper provides a detailed empirical cross-country analysis of 5 SAARC countries (viz. Sri Lanka, India, Pakistan, Bangladesh and Nepal) for the period 2000–2018. These nations portray a lot of commonalities in terms of both advantages and problems faced. All of these nations are struggling with problems of poverty, inequality and other macro-problems like inadequately developed infrastructure and corruption. India and Nepal have the highest rate of informal labour followed by Pakistan, Sri Lanka and Bangladesh. The increasing Quintile share ratios for all these countries over the last decade show that share of income of top 20% of population has been rising as compared to the bottom 20%.

The research objectives of this chapter are as follows:

First, to analyse the impact of microfinance and other macroeconomic variables on inequality for the group of 5 SAARC countries. This gives a clear picture of the effectivity of microfinance in these SAARC countries and also explores additional factors that significantly affect inequality in these countries.

Second, to use panel data analysis for the selected countries and to discuss the persistent inequality problems in the South Asian region. This is a significant improvement over most of the studies using cross-sectional or time series data. Also, the existing literature on panel data includes large number of countries and region-specific problems and solutions are merely discussed.

Third, to explore a causality analysis between microfinance, other control variables and inequality, using the Granger Causality Analysis. This analysis not only serves the purpose of checking the causal relationship between microfinance and inequality, but also indicates other variables which have significant causal relationships with inequality. Such variables should be considered along with microfinance and should be used as a combined tool to eradicate the problem of inequality.

Fourth, to provide policy recommendations to reduce inequality primarily through the microfinance channel and also through other macroeconomic channels, specific to the 5 SAARC countries. The policymakers can use this information in microfinance targeting strategies to reduce the rising inequality in these countries.

The main hypothesis of this study is that microfinance doesn't significantly impact inequality, and there exists no causal relationship between them. The econometric estimation is conducted with utmost precision, and necessary steps are taken to avoid any kind of biases. All variables are converted into the natural logarithms, and cross-section SUR weights are used to tackle possible issues in regression analysis.

The rest of the paper is organized as follows: sect. "[Literature Review](#)" deals with the literature part of the study and the research gap, sect. "[Data and Methodology](#)" deals with the data analysis and econometric methodology, sect. "[Results and Discussion](#)" discusses the results, and sect. "[Conclusion and Recommendations](#)" concludes the findings and includes recommendations.

LITERATURE REVIEW

Microfinance acts as an effective tool and a viable substitute to curb poverty and inequality. Various studies conducted on microfinance show that it has been successful in combating poverty as well as inequality.

Bangoura et al. (2016) in their study of 52 developing countries explore a significant negative relationship between microfinance intensities and poverty as well as inequality measures. This study portrays the effectivity of microfinance for the developing countries. One of the important points derived from the study is that the effectivity of microfinance is country-specific which opens avenues for contrary results. The effects of microfinance can also be seen on primary level as beneficiaries of microfinance are found to be better-off than their counterparts.

Studies of Khandker (2005) and Razzaqu (2010) empirically prove how microfinance raises per capita consumption for participants in microfinance programmes for multiple households surveyed in Bangladesh, which in turn raises the chances of participants to get out of poverty. Microfinance not only benefits the participants of microfinance programmes but also the non-participants as they have increased income levels. The studies also provide a robustness check as both are conducted for different time periods and for different villages, yet the similar results were found. Khandker (2005) finds that even small MFIs are successful in poverty eradication. This is a clear indication of how microfinance eradicates poverty and inequality, and the effect is well spread.

Microfinance contributes to the reduction of inequality through multiple ways, one of them being the equalizing effect. According to Kai (2009), microfinance has a significant equalizing effect, which implies that it increases the income of the poor and redistributes the income from the rich to the poor. Hence, microfinance can be a viable alternative to traditional finance channels to decrease inequality and poverty. The following is the additional literature presented in a tabular format in Table 13.1.

It is observed that microfinance has vast impact on poverty as well as inequality which is evident from the significant relationships found in different kinds of studies conducted. Microfinance decreases inequality through various modes and acts as an effective redistribution tool to tackle the inequality problem. The impact of microfinance is country-specific, and hence, different regions may yield different results, based on which the microfinance policies need to be adjusted.

DATA AND METHODOLOGY

The hypothesis to be tested is as follows: -

Table 13.1 Review of literature

<i>Authors</i>	<i>Dataset</i>	<i>Techniques</i>	<i>Variables</i>	<i>Results</i>
Giuseppina Malerba and Marta Spreafico (2014)	25 Countries Time Period- 1995–2010	GLS (Generalized Least Squares) Regression	Gini Index, decile ratios, GDP p.c. growth, public expenditure, housing loan, education level, (im)mobility, labour freedom	Inequality can be attacked through social public spending and the impact is greater when the extremes of the income distribution are involved
Eric S. Lin and Hamid E. Ali (2009)	58 Countries Time Period- 1987–1999	Panel Unit Root tests and Granger Causality Test	Bpme, Lbpme, Sbpme, Lspme, Theil, EHHI, Δ Theil, Δ EHII, etc. (all available inequality indices)	There is no Granger Causality in any direction between military spending and changes in economic inequality
S Mohapatra and Bimal Sahoo (2009)	Country—India 240 households, Year-2009	Binomial Probit Model, OLS Regression	Participation dummy, average household income per month, land owned, value of livestock, highest education level, dependency ratio, dummy variables for occupation, location	Mean household income is higher among the participants. Probability of participation in the microfinance programme increases with the rise in land holding
Syed Kalim Hyder, Qazi Masood Ahmed, and Haroon Jamal (2015)	Country—Pakistan Time Period-1979–2013	ARCH model, Wald Test, Log–Log Model	Poverty, GDP, Gini Index, per capita GDP, food prices, taxation, public investment, government spending, wage differential, terms of trade	Inflation, sectoral wage gap, and terms of trade in favour of manufacturing as the significant positive correlates of inequality

(continued)

Table 13.1 (continued)

<i>Authors</i>	<i>Dataset</i>	<i>Techniques</i>	<i>Variables</i>	<i>Results</i>
S. Saravanan and Devi Prasad Dash (2017)	Indian States Time Period-2007–2014	Instrumental Variable Method	Number of women SHGs, female population, female literacy and work force participation, bank loan, poverty rate, savings rate, agriculture growth rate and per capita income	MFIs have been quite successful in granting credit access to women. States with higher growth experience surge in number of women SHGs
G�erard Tchouassi (2011)	11 developing countries in Africa	Random Effects Model	GINI index, log (number of MFIs in the country), log (GDP per capita), square of the log of GDP per capita, inflation, poverty line	When the microfinance institutions in the country become dense, inequalities decrease
Ms. Sifat Adiya Chowdhury and Ms. Sarahat Salma Chowdhury (2011)	Country—Bangladesh Time Period-1991/1992 and 1998/1999	Fixed Effects Model	Outcome due to participation in programme, demand for credit for individual, village effects of the current and past obtained credit	Micro credit can only generate temporary empowerment effects on women in terms of income generation and asset accumulation

Saurce Authors' Compilation

H_0 = *Microfinance doesn't significantly impact inequality and there exists no causal relationship between them.*

The impact of microfinance is measured through 2 variables: weighted average number of active borrowers and weighted value of loans (Microfinance Intensities).

MF₁ = Average no. of active borrowers/total population of the country

MF₂ = Value of loans/GDP of the country (MF₁ and MF₂ are the major explanatory variables).

To assess the impact of microfinance on inequality, the following equation is analysed:

$$\log(\text{Gini}) = \beta_1 \log(\text{MF}_1) + \beta_2 \log(\text{MF}_2) + \beta_3 \log(Z) + \varepsilon \dots \dots \quad (14.1)$$

The major or focus variables are BOR (weighted average number of active borrowers) and VOL (weighted value of loans). Z is a set of control variables, which are as follows: AGVA (agricultural value added, in percentage of GDP), ARLA (arable land, in percentage of land area), INF (inflation, GDP deflator), YOU (youth population ages 0–14, (% of total)), OPN (openness, trade to GDP ratio), EDEXP (government expenditure on education (% of GDP)), HEXP (current health expenditure (% of GDP)), POL (Polity score), GDPPC (GDP per capita (current \$)), UNEMP (% of labour force) and RPOP (rural population (% of total population)). The dependent variable is GINI (Gini Index ((measure of income inequality)). ε is the error term of the Eq. (14.1).

Data on Gini Index was found to have significant missing observations. The missing observations were filled using a growth rate approach, whereby growth rate between two periods n and $n + m$ was calculated and it was assumed the growth is constant for 'm' periods. Data on Gini Index is collected from the World Bank (World Development Indicators: <http://datatopics.worldbank.org/world-development-indicators/>) and World Income Inequality Database (<https://www.wider.unu.edu/database/wiid>). Data on polity score is collected from Polity5 Project (<https://www.systemicpeace.org>). Data on all other control variables is taken from the World Bank (World Development Indicators) as well.

This Eq. (14.1) is estimated using the Panel EGLS model using cross-section SUR (seemingly unrelated regression) weights (which correct for heteroscedasticity and contemporaneous correlation) and standard errors. Further, a causality analysis is conducted between the microfinance variables (MF_1 and MF_2), the control variables and Gini Index. This analysis provides deeper understanding of how the microfinance variables and other variables are linked to inequality. For this purpose, the Granger Causality Analysis is conducted. Prior to causality analysis, all the variables are tested for unit root using the ADF-Fisher Chi-square test. The variables are further converted into stationary, and then, Granger Causality Test is conducted.

RESULTS AND DISCUSSION

To estimate the relationship between microfinance intensities and inequality, panel data for 19 years (2000–2018) is considered. Prior to any estimation, all variables are converted to natural logarithm. Firstly, an Estimated Generalized Least Squares (EGLS) regression is run between the microfinance intensities, control variables and Gini Index. The results of this regression are presented in the following table.

Table 13.2 shows that there is clear and highly significant negative relationship between MF_1 (weighted average number of active borrowers) and Gini Index. This indicates that with the increase in the number of borrowers the inequality tends to decrease. However, a positive relationship is observed between MF_2 (weighted value of loans) and Gini Index. This implies that with the increase in the value of loans the inequality increases. This unexpected result can be attributed to a number of factors like the changing and rapidly growing banking structure in the countries. Private Banks have started invading the space of MFIs in search for new avenues for profits. As a result of which, MFIs have to either get merged into a Private Bank or Private Banks are forming their subsidiary MFIs. Conversion to other bank types has become common in order to lend to greater majority and higher rates. Another important reason of this positive relationship is that only a handful of disbursed loans are used for income-generating activities. Higher values of loans also lead to debt-traps for the poor, thereby leading to higher inequality. A significant and negative relationship is observed between borrowers and inequality. As the number of borrowers increases, more people have the adequate funds

Table 13.2 EGLS regression with cross-section SUR weights and standard errors

<i>Dependent Variable—Gini Index</i>					
<i>Variable</i>	<i>Coefficient</i>	<i>t-Statistic</i>	<i>R²</i>	<i>Adjusted R²</i>	<i>F-Stat</i>
Agri. Value Added	-0.21216*	-4.41385	0.88433	0.84577	22.934*
Arable Land	-0.126077*	-3.30417			
Education exp	0.121518*	5.30564			
GDP per capita	-0.061952**	-2.2607			
Health exp	-0.100588***	-1.92496			
Inflation	-0.025435*	-4.69963			
Borrowers	-0.029439*	-3.45122			
Openness	0.1774*	4.879449			
Polity	-0.004604	-0.28338			
Rural Population	-0.031061	-0.19211			
Unemployment	0.042527*	2.859445			
Value of Loans	0.022533*	3.808087			
Youth	0.301429***	1.739914			

Source Author's own computation of results. All variables are converted into natural logarithm. (*), (**) and (***) denote the 1, 5 and 10% levels of significance, respectively

to run their small businesses or ventures, which help them to keep generating a steady income source resulting in narrowing of the rich-poor gap; hence, inequality decreases as borrowers increase.

The results also show a significant negative relation between agricultural value added, arable land and Gini Index. This means that agricultural activities actually contribute in inequality reduction. A higher agricultural produce implies that one of the most economically affected sections of the society, 'farmers' are well off, as they can sell their produce in markets or add value and supply raw materials to industries. Greater the amount of arable land, greater are the production and expansion opportunities for any farmer. The countries considered for the study are developing and focussing on manufacturing and services. Hence, these countries shouldn't neglect the importance of agriculture in inequality reduction. An insignificant relationship is observed between polity, rural population and inequality. The results also show that unemployment has a significant positive relationship with Gini Index. This indicates that if unemployment decreases inequality also tends to decrease. It is logically quite deducible that an increase in unemployment will lead to a downward shift in income and thereby consumption of the unemployed individuals and

also their families in case of economies with high dependency ratios. This creates a rift between the employed and unemployed and rises inequality. Hence, rise in unemployment leads to a rise in inequality and vice versa. Microfinance itself has an ulterior motive of promoting employment, by providing the necessary finance to small and emerging enterprises which would further reduce inequalities.

An interesting phenomenon is observed in case of education and health expenditure. While education expenditure has a negative relation with inequality, health expenditure has a positive relation with inequality. Education expenditure can actually increase inequality as the education expenditure is focussed only on external infrastructure of schooling or colleges. It's a commonly observed phenomenon in these nations that many people are not fit for jobs at all because the level and understanding are quite low. Thus, what education expenditure does is, just enables more students to be a part of the institutions, but the level of education is lacking. This just drives more and more unworthy candidates in the job markets, and when they fail to get a job, it adds to up to the unemployed population of the country, causing more inequality. Whereas, as health expenditure increases, the poor have higher chances of getting access to healthcare facilities, better health allows them to work more and hence earn more, driving the inequality downwards. Openness is seen to have a positive relationship with inequality. Ideally, as a measure of amount of total trade, openness would be expected to decrease inequality. But openness can also lead to higher regional disparities in the primary sector, i.e. agriculture. Since foreign trade to developed countries is governed by multiple regulations and quality checks, only well-equipped farmers are able to export their produce and get incentives to produce export-worthy crops. Another aspect is that import of machinery and new methods of production replace unskilled labour with machines and hence causes unemployment and thereby inequality.

Table 13.3 (a) shows the results of the ADF test which shows the level at which the variables are stationary. It is observed that except Youth and Gini Index, all variables are stationary at 1st Difference. For performing Granger Causality Analysis, all the variables are first converted into stationary. The Granger Causality Analysis is conducted to explore the causal relationships between different variables and Gini Index. This analysis is supplementary to the results obtained from the regression analysis, and similar results would further strongly validate the findings.

Table 13.3 ADF
Fischer Unit Root Test
and Granger Causality
Analysis

<i>3 (a) ADF Fischer Unit Root Test</i>		
<i>Variable</i>	<i>1st Difference</i>	<i>2nd Difference</i>
Agri. Value Added	20.4743*	–
Arable Land	41.2866*	–
Education exp.	35.5137*	–
GDP per capita	29.8353*	–
Health exp.	40.9208*	–
Inflation	40.0204*	–
Borrowers	56.0061*	–
Openness	36.0273*	–
Polity	27.9915*	–
Rural Population	37.825*	–
Unemployment	27.3745*	–
Value of Loans	47.5648*	–
Youth	–	35.6247*
Gini	–	64.3030*

<i>3 (b) Granger Causality Analysis</i>		
<i>Variables (X – Y)</i>	<i>X doesn't cause Y</i>	<i>Y doesn't cause X</i>
	<i>F-Stat</i>	
D(EDEXP) – D(GINI,2)	4.26111**	0.54593
D(GDPPC) – D(GINI,2)	0.24779	4.13722**
D(INF) – D(GINI,2)	5.72630*	4.29359**
D(BOR) – D(GINI,2)	4.35854**	5.91653*
D(VOL) – D(GINI,2)	8.22867*	0.54378

Source Author's own computation of results. All variables are converted into natural logarithm. (*), (**) and (***) denote the 1, 5 and 10% levels of significance, respectively

Table 13.3 (b) shows the results of the Granger Causality Test. The results show that the number of borrowers (weighted no. of active borrowers) has a bi-directional causal relationship with Gini Index. This validates the findings from the regression estimation and provides a robust evidence of the effectivity of increasing the number of borrowers in decreasing inequality. The second microfinance intensity measure and

weighted value of loans have a unidirectional causal relationship with Gini Index; hence, it's not the appropriate microfinance intensity measure that should be used to reduce inequality.

It is seen that education expenditure Granger causes Gini Index. This also supports the positive and significant relationship between the two observed in the regression estimation. This implies that with the increase in government spending on education the inequality is increasing. It could be due to the persistent educational inequality, like unequal distribution of academic sources, books and technologies across these countries. A bi-directional relationship between inflation and Gini Index is also seen. The significant relationship between inflation and inequality seen from the regression estimation along with bi-directional causality indicates the major role played by inflation in causing inequality.

CONCLUSION AND RECOMMENDATIONS

This paper explored the linkage between microfinance and inequality, through 2 microfinance intensity measures for 5 SAARC countries, for the period 2000–2018. This study was conducted to deduce the impact of microfinance on the selected countries, through Panel EGLS regression and Granger Causality Analysis. It is noticed that the number of borrowers has a bi-directional causal relationship with Gini Index and reduces inequality. This indicates that policymakers should focus on expanding the outreach of MFIs by expanding the number of existing borrowers. It was also noticed that value of loans doesn't contribute to the reduction in inequality due to various factors. Higher loan value seems to be a superficial method to measure outreach of microfinance as the amounts are not necessarily used for income-generating purposes, and higher loan amounts may also cause the poor to fall in a debt-trap. This indicates that the regulatory mechanism of the MFI in these countries has certain loopholes which should be addressed. The intervention of private banks is also causing trouble for the MFIs and forcing them to be profit-centric in order to sustain. A clear line regarding the activities and functionalities needs to be drawn between other types of banks and MFIs. Further, this paper also contributes to sustainable development goals by providing analysis and possible solutions for the 10th goal of reducing inequalities in the 5 countries. It is observed that government health expenditure significantly reduces inequality, but the 5 countries are seen to have low health expenditures, except Nepal which meets WHO's

recommendation of health expenditure of 5% of the GDP. The results also show that unemployment increases inequality and only Sri Lanka has been able to substantially decrease unemployment rates.

The policymakers of these countries should understand the potential of microfinance and its combined impact in reducing inequality. Microfinance also helps to combat problems like unemployment and increase the purchasing power of poor people. The focus should be on sound and efficient policies for MFIs. Mechanisms similar to that of priority sector lending can be inculcated in MFIs, their priority sectors being small-scale industries and other small and upcoming enterprises. This paper somehow has certain limitations that need to be addressed in future studies. All SAARC countries couldn't be included due to lack of data. This paper doesn't include an inter-country analysis between the SAARC countries. Future research can be done for all SAARC countries using hierarchical clustering to analyse the characteristics of each country, taken into consideration their individual heterogeneity. The only obstacle is the difficulty of availability and compatibility of data.

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