

ASSESSING THE IMPACTS OF SELF-HELP GROUP BASED MICROCREDIT PROGRAMMES: NON-EXPERIMENTAL EVIDENCE FROM THE RURAL AREAS OF COASTAL ORISSA IN INDIA

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Abstract

This impact assessment study of microcredit was conducted by a cross-sectional data-set drawn from a pool of 200 samples from Puri district of India. A structured pre-tested household schedule was used to gather information from households. The "household" was taken as the unit of analysis; and a comparison between the factual and counterfactual was formed as the base of the study where the statistical means of the target households were compared with that of the control households across various variables. The statistical test of significance was conducted by using z-test. Under the econometric model, probit model was used to understand the determinants of the probability of participation in the Self-help Group based microcredit programmes. The study resulted into positive impact of Self-help Group based microcredits programmes on the household income, saving, employment days, literacy position and reduction in migration. The probability of participation was greatly determined by savings, employment days, days of migration and number of literates of the households.

Introduction

Microcredits are tiny loans for production and consumption purposes provided to poors who often lack access to the formal banking systems. Non-formal credit was in practice in India from centuries where the money lenders dominated the sector with low transition period and less transaction cost but with

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usurious interest rates and corruptive procedures. Understanding the importance of microcredits, Government of India at a later stage considered it a part of national financial framework (Panda, 2009).

Small scale financing to weaker section of the society in India was started way back in 1960s with cooperative banking followed by the nationalisation of the commercial banks and initiation of Lead Bank Scheme in 1969. Social banking again strengthened by establishment of Regional Rural Banks (RRBs) in 1975 and National Bank for Agriculture and Rural Development (NABARD) in 1982. This social banking phase was characterised by extensive subsidised credit. The Integrated Rural Development Programmes (IRDP) in 1980s started by Government of India with the mission of poverty alleviation through credit programmes accelerated at a larger scale. In 1990s India had financial system approach where small scale financial products and services disbursed by Microfinance Institutions (MFIs) who were broadly Non-government Organisations (NGOs). Group based microcredit programmes were developed which started operating on peer pressure, social and moral collateral. Self-help Group (SHG) based microcredit programmes with a motive of thrift and credit started replicating and grew extensively. The innovation of SHG-Bank Linkage Programme (SBLP) by NABARD in the year 1992 started scaling up the SHG based microcredit interventions and later accredited as the biggest microcredit intervention in the world. From the year 2000 onwards, the financial inclusion phase started with legitimising NGO-based MFIs and with the provision of customised microcredit products as per the poors' demand (Panda, 2009).

It is difficult to trace the exact date of the SHG initiation in India. Few researchers traced out the existence of women SHGs working with the facilitation of NGOs even before 1980s. In the early 1980s, these women SHGs were noticed by the policy makers and had shown their concern for development and replication (Reddy and Manak, 2005). However Fernandez (2007) courted that the SHGs have first emerged as a Karnataka based NGO, MYRADA in 1985, and by 1987, MYRADA had about 300 SHGs under its project.

The SHGs are group villagers, mostly women from similar socio-economic background, who pool their saving regularly and re-lend within the group on rotational basis or based on a pre-defined criteria. But Reserve Bank of India (RBI) explained SHGs as registered or unregistered group of micro entrepreneurs

having homogenous social and economic background voluntarily, coming together to save small amounts regularly, to mutually agree to contribute to a common fund and to meet their emergency needs on mutual help basis. These SHGs are not limited to thrift and credit only rather they act as a tool for overall socio-economic development of the poor by addressing income generation, women empowerment, capacity building, education, micro-enterprise development, linkage building etc (Panda, 2008). These SHGs work on principles like unity and self-help with the understanding of the fact that they stand if united otherwise they will fall.

The SHGs have started massive growth after the SHG-Bank Linkage Programme; and by 2004-05, 1618456 numbers of SHGs were financed under this programme jointly by commercial banks, Regional Rural Banks and Cooperatives (Bose and Khaklari, 2007). Under this programme the states like Orissa and Jharkhand also experienced the SHG movement with the active facilitation of intermediary NGOs.

Review of literature

There were many impact studies conducted at regional, national and international level to explore the effect of group based microfinance interventions. Various researches conducted in different states of India had concluded the positive impact of SHG group based microcredit on the overall socio-economic development of poor ruralities (Panda, 2008; Lalrinliana and Easwaran, 2006; Sarangi, 2003; Dwarkanath, 2002; Saundariya and Mahanta; 2001). The study conducted by SIDBI (2008) covering 10 states of India found increased household income, consumption especially on food, employment opportunities and employment man-days, high cost education etc. but had weak evidence of equality income distribution among the microcredit participating households. Choudary and Vasudevaraj (2008) found that SHG-based microcredit programmes in India have had significant achievement in outreach to 10 million people with a saving accumulation of about Rs. 8 Millions. The national level study conducted by NABARD and GTZ (Hannover, 2005) on the SHG-Bank Linkage Programme in India also corroborated similar findings.

Even the studies conducted in different countries have proved that the group based microcredit interventions had a positive effect on the household characteristics like income, saving, expenditure, employment, micro-enterprise

development, empowerment, literacy and reduction in migration (Rahman, Rafiq and Memon, 2009; Haque and Yamao, 2008; Paul and Woldemicael, 2008; Chowdhury, 2007; Cuong, Pham and Minh, 2007; Javed, Luqman, Khan and Farah, 2006; and Onogwu and Arene, 2007).

There were also weak evidences of impact of the group based micro-credit interventions. Jung (2004) had the effectiveness of microcredit programmes despite their rapid expansions. Similarly Shamsuddoha and Azad (2004) did not find the substantial effect of microcredit to eliminate the poverty situation of the poor people in Bangladesh. Again the discussions of Hulme (2000) on the darker side of the microcredit put the researchers to go beyond the universal assumption of the positive impact of microcredit interventions. In this direction, this micro-research aims at measuring the impact of the SHG based microfinance over a range of socio-economic characteristics of the participating rural households in the coastal regions of Orissa state in India.

Methodology

This study was conducted in Puri district in the state of Orissa by employing a multistage sampling method. A pool of 200 sample size of cross-sectional data were engaged to conduct this study. In the first stage Puri district from Orissa was selected purposively. Again Pipli and Nimapara blocks from Puri district were selected randomly in the second stage. In the third stage five villages from each block were randomly selected; and in the fourth stage, from each village 10 households for target group and 10 households for control group were selected randomly and 10 households for control group were selected by matching method. Data collection was done by using pre-tested household schedules.

A comparison between the target households and control households across various variables was formed the base of the study. Target group contained households whose family members were under the Self-help Group based microcredit programmes; while the control households were the households who were neither under any Self-help Group neither based microcredit programme nor under any other group based microcredit interventions like Grameen Joint Liability Group (JLG), Mutually Aided Cooperative Societies (MACS) etc. The comparison between the target group and control group across various household characteristics happens to be one of the simplest methods for quasi-experimental research and is most suitable model in the absence of baseline information where

the control group was a counterfactual rather than factual (ADB Evaluation Study). Also this method controlled the exogenous variables in this study.

This study had engaged target group versus control group technique to understand the impact of Self-help Group based microcredit on the target households where the control group had served as counterfactual instead of factual. Under this methodology finding of the counterfactual was a tough task and the selection of the control households which could be similar with the target households across a range of variables was difficult. So in some cases selection of counterfactual was made by taking possible variables.

Microcredit interventions impact at individual level, household level and enterprise level (Panda, 2009) but this study had considered “household” as the unit of analysis to measure the direct and indirect impact of Self-help Group based microcredit. There were six household variables i.e. income, saving, expenditure, literacy, employment and migration selected in this study. These variables found suitable in past impact assessment researches conducted by SIDBI (2008), Panda (2008), Sarangi (2007), Hannover (2005) and Amin, Rai and Topa (2003).

Statistical significance test to understand difference between two means i.e. between the target group and control group, was conducted by using z-test because of the higher sample size (Chandel, 1999). The value of “z” was computed by the following equation,

$$z = \frac{(\text{Mean of } X_1 - \text{Mean of } X_2)}{\text{SE of (Mean of } X_1 - \text{Mean of } X_2)} \text{ equation—1}$$

Where, X_1 is the sample represented the target group
 X_2 is the sample represented the control group
 SE represented the Standard Error

The Gini coefficient and Lorenz curve were employed to measure the inequality of income distribution as the Gini coefficient is a measure of statistical dispersion, most prominently used as a measure of inequality of income distribution (Panda, 2008). It is a ratio with values between 0 and 1: the numerator is the area between the Lorenz Curve of the distribution and the uniform distribution

line; the denominator is the area under the uniform distribution line. The Gini Coefficient is calculated by the formula,

$$G = 1 - \sum_{k=1}^{k=n-1} (X_{k+1} - X_k) (Y_{k+1} + X_k)$$

Where, X is the Percentage Cumulative Frequency and,

Y is the Percentage Cumulative Total Income

To understand how the probability of participation determined by various determinants, probit regression model was used (Sarangi, 2007). Since the participation in the microfinance programme depended upon various endogenous factors, so a non-linear regression model i.e. logistic regression model was chosen. Probit model was suitable to address the issue of endogeneity.

$Y_i = \alpha + \beta X$, where $Y = 1$ for participation and $Y = 0$ for non participation,

Where, α is the constant and β is the coefficient of explanatory variables, where

$Y_i = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \dots + \beta_n X_n$, where, $\beta_1, \beta_2, \beta_3, \dots, \beta_n$ are the coefficient of variables X_1, X_2, X_3 respectively.

Results and discussion

The target households recorded annual household income of Rs. 71557.00 while the control households had Rs. 67896.00 of income per household per annum. The intervention of the microcredit programmes led to 5.39 per cent of higher annual income in the target households as compared to that of the control households which was found statistically significant as evident from the z-value (Table-1). Since the study involved the comparison between factual and counterfactual, so it could not map the actual growth on household income. The annual income of target and control households force us to think whether all the households under the SHG programmes have been drawn from low-income households, since the basic definition of microfinance thrusts on the provision of finance to low to middle level households. Not being a longitudinal study and suffering from the lack of a stable baseline, the current research could not focus on the mentioned issue.

Table 1: Difference in means between the target and controlled group across household characteristics

Variables	Sample Size	Target Group	Control Group	Percentage difference over controlled group
Annual income	100	71557.00 SD: 15384.87 CV: 21.50	67896 SD: 13422.12 CV: 19.77	5.39 (z value: 1.79*)
Asset Positions	100	522686 SD: 162342.48 CV: 31.05	476051 SD: 136101.04 CV: 28.59	9.79 (z value: 2.201**)
Annual Saving	100	3749.47 SD: 2178.63 CV: 58.10	2309.12 SD: 1954.81 CV: 84.65	62.38 (z value: 4.92***)
Employment Days	100	623.16 SD: 203.57 CV: 32.67	490.88 SD: 177.69 CV: 36.20	26.95 (z value: 4.89***)
Literates	100	3.45 SD: 1.01 CV: 29.52	2.21 SD: 0.74 CV: 33.60	56.10 (z value: 9.90***)
Migration Number	100	0.52 SD: 0.64 CV: 123.69	0.95 SD: 0.82 CV: 86.43	-45.26 (z value: 4.13***)

SD : Standard Deviation

CV : Coefficient of Variation

**** Significant at 1 per cent level*

*** Significant at 5 per cent level*

** Significant at 10 per cent level*

(Figures in parenthesis represent the average annual income per family member per household)

Annual income: Annual average household income

Asset Positions: Value of all fixed and variable assets including productive assets

Annual Saving: Annual average household savings

Employment Days: Annual average household employment days

Migration number: Number of family members who migrate annually per household

Literates: Average number of literate members per household

Data presented in Table-2 shows that the inequality in income distribution was not affected by the microcredit intervention (Figure 1 and 2) as the difference in the value of Gini Coefficient between the target group and the control group was found very negligible. It established the weaker impact of microcredit interventions on the equality of the income distribution. However from Table-1,

higher inconsistency and variability was traced in the target group as compared to control group with regards to the annual household income as the coefficient of variation was found higher in target group than that of the control group. This result corroborates the results of Panda (2008).

Table 2: Gini Coefficient of Target and Control Group

Gini Coefficient	Target Group	Control Group
		0.107

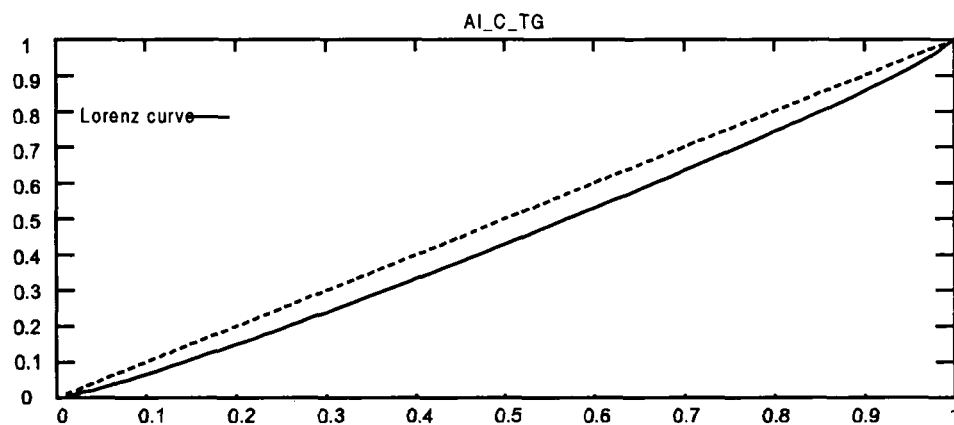


Figure 1: Lorenz Curve for Annual Income Distribution in Target Group

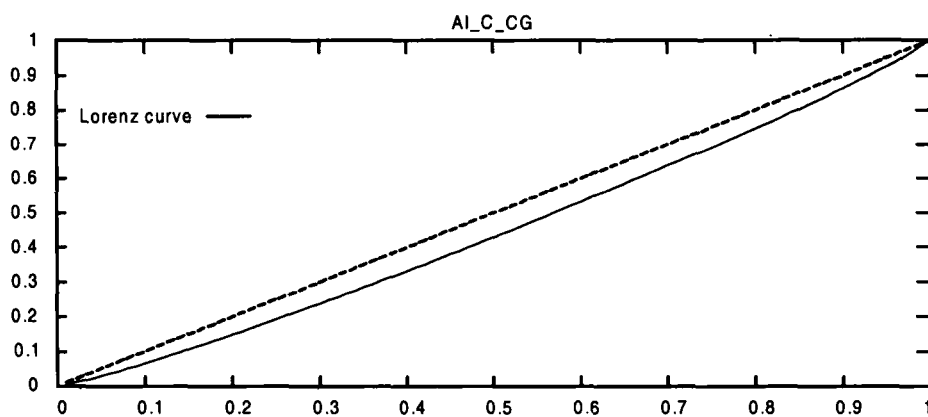


Figure 2: Lorenz Curve for Annual Income Distribution in Control Group

The higher household income in the target households as compared to that of the controlled households (Table-1) might have resulted due to higher investment in the productive assets. The assets position of the target households was 9.79 per cent highly significant higher over that of the control households. But the assets positions of the target group was lesser consistent as compared to that of the control group.

Another reason behind higher household income microcredit beneficiary households could be due to higher employment generation and higher outcome as a result of the use of microcredits. The target households were found with 623.16 number of annual average employment days as compared to 490.88 number of annual employment days of the control households (Table-1). This shows that the microcredit cliental households had 26.95 per cent highly significant higher annual employment days as compared to that of the control households. The higher employment days in the target group were due to the increased operational capacity of the farming and micro-enterprises. Also the increased operational capacity demanded higher employment days and employees which again led to the increased employability of non-employed household members. So the higher employment days were the result of the increased employment days of the existing family members and employment of other family members as a result of higher capacity utilisation, addition and diversification of existing business (including farming as a business). The inconsistency and variability of the employment days were reduced from control group to target group as evident from the coefficient of variation presented in Table-1.

The increased employment days as a result of the microcredit programmes had reduced the migration significantly. The number of family members migrating per annum was reduced by 45.26 per cent from control group to the target group which was found statistically highly significant. But the increased coefficient of variation in the target group over that of the control group signifies higher inconsistency and variability in the number of family members migrating per household in the target group as compared to that of the control group.

The major objectives of the Self-help Group based microcredit programmes was saving first and then the provision of credit. The members of the groups had contributed regularly a monthly saving of Rs. 10 to Rs. 20. This monthly saving increased the savings of the target clients which was not found for the non-cliental

households. The monthly saving habit of the cliental households led to a habit of saving in commercial banks, post offices and other sources apart for monthly group saving, which in turn increased the annual savings of the target households as compared to that of the control households. Data presented in Table-1 shows that the annual savings of the target households was Rs. 3749.47 and that of that control households was Rs. 2309.12. The target households had recorded highly significant higher savings by 62.38 per cent over that of the control households. Since all the participating households must contribute savings so it reduced the inconsistency and variability savings to a great extent in the target group as compared to that of the control group.

The microcredit intervention had led to an increased number of literates per households in the target group by 56.10 per cent over that of the control group and it was statistically highly significant (Table-1). Participation in the microcredit groups led to enhanced literacy status of the clients who in turn catalysed the increased literacy position of the family members in their own household.

Table 3: Probit estimate results

Independent Variable	Coefficient	Standard Error	t- value
Annual income	1.79628e-06	7.94389e-06	0.23
Annual saving	0.000155813	5.40707e-05	2.882
Employment Days	0.00153029	0.000696439	2.20
Migration number	-0.736410	-3.31	0.222724
Migration days	-0.00885366	0.00723958	-1.23
Literates	0.754465	0.131817	5.73
R-squared: 0.77			
Adjusted R-squared: 0.72			

Explanation of variables is as follows:

Annual income:	Annual average household income
Annual Saving:	Annual average household savings
Employment Days:	Annual average household employment days
Migration number:	Number of family member who migrate annually per household
Migration days:	Annual average number of days of migration per household
Literates:	Average number of literate members per household

The probit results presented in Table-3 show determinants of the participation in the Self-help Group based microcredit programmes. The positive coefficient of the annual household income shows the positive relationship between the household income and probability of participation. Since the dependent variables

were the determinants and also consequences of participation (Sarangi, 2007), the participation was found positively correlated with household income, but it was not found very significant. However household savings, employment days and literacy was significantly positively correlated with the probability of the participation in the Self-help Group based microcredit programmes. The migration days and number of migrating family members were negatively correlated with the probability of participation as evident from the negative coefficient in Table-3. This shows that participation in the Self-help Group based microcredit programmes reduces migration and increases savings, employment, literacy and income of the participating households.

Conclusion

The Self-help Group based microcredit interventions in the coastal district of Puri in Orissa State of India had positive impact on participating rural households. The household income was 5.39 per cent higher in the target households as compared to the control households. Increased saving habit as a result of Self-help Group principles had led higher annual household saving by 62.38 per cent in the target households over the control households. Similarly per annum household number of employment days and number of literates were higher by 26.95 per cent and 56.10 per cent respectively in the target group as compared to that of the control group. Assets position was also higher in the target group by 9.79 per cent that that of the control group. Also the target group had experienced 45.26 per cent lesser number of family members migrating per annum per household as compared to that of the control group. However weak evidence of the impact of Self-help group based microfinance programme on the equality of the income distribution in households was traced from the study.

The probability of participation was strongly determined by savings, employment days, migration days and number of literates of the household. The income, savings, employment days and number of literates of the household were positively correlated; and migration days and number of family members migrating of the household were negatively correlated with the probability of participation in the Self-help Group based microcredit programmes.

Scope for further research

This study being a quantitative study, employed closed-ended information

through interview schedule, so it could only be able to tell 'what' the impact is but remains silent on why and how is the impact. So this study invites further probe by researchers to design suitable qualitative research methods to study the 'why' and 'how' factor of the impact studies. There are also some of the variables which this study did not include due to the specific objectives of the study and time and resource limitations. Again this study looks forward to academic researches on impact assessment with variables like women empowerment, household decision making and participation in Panchayati Raj Institutions (PRIs) by the SHG members. Also studies can be conducted to measure the impact of SHGs on micro-enterprises and micro-entrepreneurship taking micro-enterprise as the unit of analysis. Since many of the above mentioned studies conducted in India and abroad were of qualitative in nature, so the demand of the hour is to go for quantitative studies with statistical and econometric tools.

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