Group Lending Scheme operating through Primary Agricultural Credit Society: A Critical Assessment

Amit, Kundu and Suranjana, Mitra

Department of Economics, Jadavpur University, West Bengal, India

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AMIT KUNDU

Reader in Economics, Department of Economics, Jadavpur University, Kolkata-700032, West Bengal, India. E-mail: akundu1970@rediffmail.com, akundu29@rediffmail.com

&
SURANJANA MITRA

Senior Lecturer, Department of Economics, Loreto College, Kolkata, West Bengal, India, Pin-700071 E-mail : mitra_suranjana@yahoo.co.in

ABSTRACT

The basic objective of the paper is to identify the effectiveness of group lending based microfinance programme operating through Primary Agricultural Credit Society to improve the economic condition among the rural participants in two blocks of Hooghly district in West Bengal. Here to do the impact study we have considered both Difference-in-Difference and First Difference Method with the help of longitudinal data and it is applied to minimize the possibility of selection bias during the time of drawing samples. It came out from field survey that very few marginal farmers had taken credit from their respective groups for agricultural purposes. Results reveal that there has been no significant impact of microfinance programme in terms of improvement of the outcome variables among the member households in spite of low interest rate charged on loans, high repayment rate within groups and small size of self-help groups. The reasons responsible are lack of skill-based training programmes for the members of groups and lack of marketing facilities to promote and sell the products produced by the members of self-help groups. The only positive aspect is the members can now protect themselves from the crunches of professional money lenders who charged exorbitant interest rates.

Key Words: Microfinance, Self-help groups, Joint liability Credit Contract, Primary Agricultural Credit Society.

JEL Classifications: Q14, G21, I38

GROUP LENDING SCHEME OPERATING THROUGH PRIMARY AGRICULTURAL CREDIT SOCIETY: A CRITICAL ASSESSMENT

Introduction:

Rural finance as defined by the World Bank is the provision of a range of financial services such as savings, credit payments and insurance to individuals both in farm and non-farm sector on a sustainable basis. It includes financing for agriculture and agro processing sector. Agricultural finance is defined as a subset of rural finance dedicated to financing agriculture related activities. Microfinance is the provision of financial services for poor and low-income people and covers the lower ends of both rural and agricultural finance. Co-operative credit societies always have a very important role to play in Indian financial system especially in the sphere of rural finance. The cooperative movement which is the largest socio economic movement in the world, has contributed significantly to the alleviation of poverty, creation of productive employment as well as the enhancement of social integration in the country. The cooperative sector is mainly concerned with agricultural credit, marketing of agricultural products and distribution of fertilizers and pesticides and other essential commodities. The cooperative banking system has a three-tier structure providing short-term, medium-term and long-term agricultural credit with Primary Agricultural Credit Societies (PACS) at the village level, the Central Cooperative Banks at the district level and the State Cooperative Banks at the state level. The formation, registration, operation and winding up of cooperatives are governed by state laws and regulations. Agriculture credit for the small and marginal farmers can be treated as one form of micro credit because the size of credit disbursed through PACS is a function of the size of land owned by the borrower. Though the Agriculture Credit Review Committee under the chairmanship of Dr. A.K.Khusro in its historic report of 1989 propagated the concept of micro credit delivery through the self-help groups as a part of business development programme of the Primary Agricultural Credit Societies, the SHG concept did not gain much ground in the cooperative sector in India. The National Bank for Agriculture and Rural Development model initiated in 1992 did not envisage implementation of SHG in the cooperative sector through PACS. In 1995 the State Government permitted the PACS of West Bengal to enroll the self-help groups as members of PACS. The Hooghly District Central Cooperative Bank Ltd. one of the leading District Central Cooperative

Banks in West Bengal started motivating the rural poor and established six groups in the month of January 1996. Since then the Bank has enormously increased the number of self-help groups and credit linkage thereof. The basic objective of the paper is to investigate how effective this joint liability microfinance programmes through Primary Agriculture Credit Societies is in improving economic condition of the rural participants.

Group Lending Programme under PACS through formation of Self-Help-Group.

The group approach delegates the entire financial process to the group rather than the financial institutions, here PACS. These groups are in turn linked to a microfinance institution for sourcing of additional funds as well as depositing their savings. "Group liability" refers to the terms of the actual contract whereby individuals are both borrowers and simultaneously guarantors of other clients' loans (Gine and Karlan, 2006). A self-help group (SHG) is a small, economically homogenous and affinity group of the rural poor, voluntarily coming together to save small amount of money regularly, provide collateral free loans with terms decided by the groups and have collective decision-making. Under the cooperative-SHG linkage programme, groups can be formed directly by the different branches of Cooperative Banks or via PACS. Harper, Berkhof and Ramakrishna (2003) in their study found out that the more successful a DCCB is at SHG linkage, the higher the proportion of SHGs linked to the PACS. The process of forming groups by PACS and the different branches of DCCBs are same and that is narrated below.

- A locality is chosen and the target group is selected. The women of the chosen locality particularly belonging to poor families are the target group.

- The target group is addressed by the staff from PACS or by employees of branches of DCCBs who are entrusted with the task of initiating the movement along with officers from NABARD and DCCB. Sensitization camps and motivation programmes are organized for the target group.

- The target group self-select their members (at least five and not exceeding fifteen) having same economic status to form a self-help group.

- The members first decide a name for the group which is a unanimous decision by all the members of the group in the first meeting.

- After the group name is decided, a leader and a deputy leader are selected from among the members. Usually a literate member is selected as the leader. If all members in a group are illiterate, the SHG supervisor helps them to maintain accounts and keep record of meetings.

- The amount to be deposited as savings on monthly basis is decided by the members of the group which varies from Rs. 10 to Rs. 50. The money must be given by the 10th of every month to the leader of the group

- After the first month's collection the leader opens an account with the PACS or with the branch in the name of the group and deposits the amount collected from the members of the group. A passbook is issued in the name of the group. The money is deposited by the 10th of every month in the account with the society. The group deposit earns interest which is currently 4% per annum.

- The group has to maintain the following documents- a Minutes Book, a Cash Book, a deposit ledger and a loan ledger.

- The group has to save for six months. The group is constantly monitored by the SHG supervisor, an employee of PACS during these six months.

- Several training programmes are arranged by PACS for the target group to create self employment opportunities for the target group. The different types of training programmes are mushroom cultivation, production of vermi compost, tailoring, poultry etc. Non-government organizations do not play any role in the nurturing of SHGs in these two blocks.

- After six months the group becomes eligible for loan facilities. The group is sanctioned *four times* the amount deposited as loan. The loan is granted in the name of the group after which the loan is distributed among the members either depending on the need or equally which again depends on the unanimous decision of the group members. The loan is repaid to the group within a stipulated time period and along with an interest rate

decided by the members of the group, usually 12% per annum. There are different reasons for which a group member may take a loan. Loans can be both for consumption as well as production purposes. Productive loans can be for self employment or for agriculture purposes.

▪ The loan is repaid by the members to the group which in turn is repaid to the PACS or the branch. The branch or the PACS charge some interest rate which again differs from one PACS to the other. The repayment period for the group is decided by the group unanimously. The repayment period for the branch or PACS is decided by the respective agencies. There is a maximum time limit within which the loan must be repaid to the agencies. It is observed that the group members are very eager to repay the loan in order to avail of the successive loan facilities.

So we can identify that the Self-Help Groups formed under PACS has two important features: (i) the group size is small and (ii) the rate of interest charged against credit is comparatively low. Larger size of group can lead to management problems and sometimes lengthens the time that members have to wait to get their first credit. But these groups are free from these hindrances because the average number of members of each group is six[i]. Besides that the rate of interest charged against credit is comparatively low if we compare that with other microfinance system like government supported SGSY scheme[ii].

Overview of Literature:

The findings by Hulme and Mosley (1996) stated that poor households do not benefit from microfinance; it is only non-poor borrowers (with income above poverty lines) who can do well with microfinance and enjoy sizeable positive impacts. Morduch (1998) in his study established that the households served by the microfinance programmes do substantially better than control households. At the same time, no evidence was found to support claims that the programmes increase consumption levels or increase educational enrolments for children relative to levels in control villages. He concluded that membership does little to reduce poverty, it may however reduce vulnerability. Coleman (1999) found no significant impact of access to microcredit on improving household wealth. Khandker (2001) in his study confirmed that programmes make a difference to poor participants by raising per capita income and consumption as well as

household net worth, thereby increasing the probability that the programme participants lift themselves out of poverty. Coleman (2006) found that the insignificance was limited to general beneficiaries and that a positive impact was found among committee members who received access to financing. Asian Development Bank (2007) in their study of three countries indicated that the microfinance projects had positive effects on the status of women particularly in the household like greater role in household generation of cash, greater involvement in making major expenditure decisions and generating cash savings, ability to generate more income on their own and greater role in business decision making, acquisition of more skills and expanding their network of friends and support system and increased acquisition of assets. Bebezuk and Haimovich (2007) found that credit increased labour income in a statistically and economically significant manner. The impact was sensitive to the size of the loan. Roodman and Morduch (2009) established that microcredit is effective in reducing poverty. Kondo, Orbeta, Dingiong and Infantado (2008) found out that the impact of microfinance programme on per capita income, total expenditures and food expenditure is only slightly significant but with regressive features. This is in sharp contrast to the other studies which indicated that the majority of microfinance programme clients are poor. Rafiq, Rahman and Momen (2009) in their findings argue that microcredit is more effective for relatively wealthier borrowers compared to non-wealthy borrowers. The reasons for ineffectiveness of microfinance programme through joint liability loan contract system to reduce poverty have been identified by many researchers through their findings. The MIT study by Banerjee, Duflo, Glennerster and Kinnan (2009) found no impact on measures of health, education, or women's decision-making among the slum dwellers in the city of Hyderabad, India. Similarly, the study by Dean and Zinman (2009), which measured the probability of being below the poverty line and quality of food that people ate, found no discernible effects. Mahajan (2005) stated that microcredit is a necessary but not a sufficient condition for micro-enterprise promotion. Pollin (2007) stated that micro enterprises run by poor people cannot be broadly successful simply because they have increased opportunities to borrow money. For large number of micro enterprises to be successful, they also need access to decent roads and affordable means of moving their products to markets. They need marketing support to reach customers.

Methodology:

The sample is drawn from Hooghly district of West Bengal. Hooghly has been selected because it has the maximum number of self-help groups provided with bank loan which are formed by PACS and the amount of loan disbursed to these groups by the District Central Cooperative Bank is also the largest (Progress of SHG –Bank Linkage in India 2005-06, NABARD). The role of the Hooghly District Central Cooperative Bank Ltd. (HDCCB) in microfinance is also significant compared to the Cooperative Banks of other districts and has been considered as the role model for many districts and states. There were 8419 savings-linked SHGs out of which 8395 were under PACS of HDCCB as on 31.03.03. The total number of female SHGs was 8242. The total number of credit-linked SHGs was 5296 out of which 5087 were female SHGs. The amount of savings deposit mobilized by SHGs was Rs. 214.43 lakhs and the amount of loan disbursed was Rs. 666.67 lakhs. At the end of that financial year it was estimated that the repayment rate of borrowing under joint liability was 98%. (Annual Report of Hooghly District Central Cooperative Bank Ltd.). Out of the eighteen blocks in Hooghly, only two blocks have been selected for the survey randomly and these two sample blocks are (i) Chinsurah-Mogra and (ii) Tarakeshwar. Both the blocks have tribal based communities with a considerable percentage of people lying below the poverty line. Chinsurah-Mogra has two PACS affiliated to Hooghly DCCB Ltd **-** Digsui Union Large Sized Primary Cooperative Agricultural Credit Society Ltd. and Talandu Sech 'O' Samabyay Unnayan Samiti Ltd. The former is the oldest. This is also another reason for choosing Chinsurah-Mogra. This society was formed on 5th March 1957 at Digsui catering to the needs of 13 villages – Digsui, Khalsi, Gannegarh, Bagri, Daharchakulai, Mamudpur, Kabirhati, Naksha, Fatehpur, Taragun, Champarui, Aashphal and Rajarambati. Since 1996, SHG loan is also being provided by the society. The latter was formed on 26.12.73. It covers two villages – Talandu and Bharatpur. SHG loan has been introduced in this society since 1998. In Tarakeshwar there are eighteen PACS out of which one is chosen randomly and it is known as Vivekananda Samabyay Krishi Unnayan Samiti Ltd. Incidentally it has the maximum number of savings-linked and credit-linked groups. This society was formed on 17th September 1977. It covers five villages – Kanaria, Mohonbati, Nacchhipur, Tullyan and Champadanga. The loan disbursed through SHGs was utilized both for agricultural purpose as well as for other purposes like consumption, construction and repair, business etc. But the information on the amount of loan used for agricultural purpose out of the total SHG loan is not available. Other

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loan included education and medical loan. Similarly, Talandu Sech 'O' Samabyay Unnayan Samiti Ltd. also disburses term loan and SHG loan. The different types of loan disbursed by Vivekananda Samabyay Krishi Unnayan Samiti Ltd. were pledge loan and SHG loan along with crop loan. The rate of recovery varied between 80% and 90% for all the three PACS in the financial year which ended in 2003.

As our basic objective is to do impact study, during the time of drawing samples we divided the sample into two groups i.e. treatment group (the group consists of the households who have formed SHG under PACS) and control group or reference group. For joint liability loan contract system, all the groups that were formed in 2004 (which is here considered as base period i.e. t^{th} period) were used as the sample as not too many groups were formed during this year. Most of the members of each group were included in the sample. The total number of groups formed during this year in the three PACS was 47. We were very careful during the time of selecting the control group. Here the sample households belonging to control group are chosen from the same locality from where the sample households belong to treatment group is chosen. But we are sure that the sample respondents belonging to control group are not getting any indirect benefit from the sample respondents belonging to treatment group. Besides that the rural households where one member at one side is a direct member of PACS and another member mainly female is a member of SHG are left out during the time of drawing samples. To minimize the problem of sample selection bias we here depend on longitudinal data. So the survey was carried out twice in order to determine the impact of microfinance programme on the treatment group and to evaluate whether there has been any economic improvement among the members of self-help groups as compared to the control group within the concerned time period. The first survey period was from August to November in 2005-06 to get the socio-economic information of the sample respondents during September to December, 2004 and the second survey period was from September to December in 2008[iii]. The periods were chosen to minimize the recall period of each respondent and to get direct observation as much as possible. After the sample households were selected the socio economic conditions were studied with the help of a well framed detailed questionnaire in order to determine the impact of microfinance in improving economic conditions among the participants. In our sample, the rural households of the same villages had the option of either joining any of the self-help groups or stay away from them. Thus the sample has two categories:

1. Individuals who have taken membership of self-help group in the tth period and plans to take credit in future when required from her respective group under joint liability loan contract. These individuals in our paper belong to Treatment Group.

2. Individuals, from almost identical socio-economic background who are not members of joint liability loan contract system in the tth period but have the eligibility to join any of the groups. These sample respondents belong to control group.

The total sample size is 376 out of which the treatment group has 276 individuals and the control group has 100 individuals. As the group members are indirectly attached with PACS, initially we have to identify the size of land holdings of the sample households belonging to treatment as well as control group which is shown in Table-1.

Table -1: Distribution of the sample respondents in terms of the size of land ownership

Size of Land (Acres)	Treatment Group		Control Group	
	2004:(t^{th} period)	2008: $(t+1)^{th}$ period	2004	2008
No Land	144	144	45	45
< 1 acre	90	90	19	19
1 acre to 2.5 acres	40	40	36	36
Greater than 2.5 acres	2	2	0	0
Total	276	276	100	100

Source: Collected through field survey.

According to Land Ceiling Legislation marginal farmers are those whose ownership of land holdings is not more than 2.5 acres. It is observed that 130 sample households belonging to treatment group are marginal farmers both in t^{th} and in $(t+1)^{th}$ period. They have the eligibility of taking credit directly from PACS (under individual liability loan contract) but still they prefer their wives to join the group and become a member of the group under PACS. The main reason is that under direct membership of PACS a rural household can only get credit for agricultural purposes but under joint liability system a member household can get credit from their respective groups not only for agricultural purposes but also for non-agricultural purposes like house repairing, health, and sometimes purely for consumption purposes.

Impact assessment among the sample respondents on the basis of longitudinal data:

Pooled cross section can be very useful for evaluating the impact of a certain event or policy. In our survey the data arises from a natural experiment. A natural experiment occurs when some exogenous event like any change in government policy can possibly change the socio-economic environment of the individuals or households. This natural experiment always has a control group which is not affected by the policy changes and a treatment group which is thought to be affected by the policy changes. In order to control for systematic differences between the control and treatment group we need two years data, one just before the implementation of the policy and one after the change. With in the framework of a natural experiment the effect of a change in economic policy is most often assessed with the help of an estimator called difference-in-difference estimator. To get the estimate we shall have to depend on longitudinal data. To collect the longitudinal data we attempt to follow the same households or individuals across time. Let the two time periods be denoted as t^{th} period and $(t+1)^{th}$ time period. These years are not adjacent i.e. t^{th} period corresponds to 2004 and $(t+1)^{th}$ to 2008 in which year the actual impact have been measured. Thus our sample is usefully broken down into four groups, (i) the control group before the change, (ii) the control group after the change, (iii) the treatment group before the change and (iv) the treatment group after the change. In this '*before versus after*' comparison the time gap taken here is four years. We can call 'C' as control group and 'T' as the treatment group. DT here is treated as dummy variable and equal to 1 for those in the treatment group 'T' and 'zero' for control group. We also consider D2 as the dummy variable for the second time period. So the equations of our interest are

$$y_{it} = \alpha_0 + \alpha_1 D2 + \alpha_2 DT + \alpha_3 D2DT + \alpha_4 DRatio_{it} + \alpha_5 CRINGACT_i + \alpha_6 CRNIGACT_i + u_{it} \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots (1)$$

$$MPCE_{it} = \alpha_0 + \alpha_1 D2 + \alpha_2 DT + \alpha_3 D2DT + \alpha_4 DRatio_{it} + \alpha_5 CRINGACT_i + \alpha_6 CRNIGACT_i + \alpha_7 OUTMCR + u_{it} \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots (2)$$

Here two outcome variables of interest are y_{it} which denotes the average monthly income of the ith sample household in the tth period and $MPCE_{it}$ is Monthly adult equivalent[iv] per-capita consumption expenditure of the ith sample household in the tth period. During the time of calculating y_{it} we have to consider net income from land and income from other sources like

income as an agricultural labourers as well as a non-agricultural labourer (reference period is one year), earnings from selling milk products, working in potato stores, small business like grocery shop, cycle repairing shop, tea stalls, tailoring, wage income as labourers after being engaged in different activities as masons, carpenters, trolley drivers, providing tuitions and working in small firms (reference period is one month). It also includes women folks working as maids, cooks in primary school for mid-day meals and Integrated Child Development Scheme workers. It includes income earned from National Rural Employment Guarantee Scheme under NREGA Act which promises to provide total 100 days of employment in a financial year to adult members of any rural household willing to do unskilled manual work at the statutory minimum wage. This income has been considered only for the $(t+1)^{th}$ period[v]. After calculating the annual income where necessary (particularly for farm income and income from NREGA) we have converted that in to average monthly income. If in a sample household we observe more than one earning member or an earning member is involved more than one occupations then initially we have converted the earning(s) of each member in terms of monthly income and then added the average monthly income of each earning member to get y_{it} the average monthly income of the ith sample household either belongs to treatment group or to control group in the tth period. Similarly we can get the value of average monthly income of the sample household's income in the $(t+1)^{th}$ period in current price. But we have to convert that average monthly income in constant term considering 2004-05 as the base year on the basis of consumer's price index of the agricultural labourers of West Bengal. During the time of calculating monthly per-capita consumption expenditure of the sample household i.e. MPCE we initially have to subtract average monthly savings and average amount spent for loan repayment per month if required from calculated average monthly income to get total monthly consumption expenditure of that sample household. Dividing that by adult equivalent family members we can get MPCE of the ith household.

Among the explanatory variables in both the equations, $DRatio_{it}$ is the dependency ratio of the ith household in the tth period. It is the ratio between total number of adult equivalent family members and total number of adult equivalent earning member(s). $DRatio_i$ may change over time if the participant of the microcredit programme becomes an earning member in the second period after taking credit from her respective group and utilize that for any income generating activity. $CRINGACT_i$ is total size of credit taken by the sample members for income generating activity between the concerned time periods. Loans taken for cultivation, health, son's/ husband's

business like tea stall, grocery shop, tailoring, cycle garage etc. and self-employment are here considered as credit taken for Income generating activity. Expenditure on health after taking credit from her respective group is here considered as investment of the member for income generating activity because health is an asset for an individual as most of the earning members of the sample households work in unorganized sector. In India out of pocket individual medical expenditure is very high. Therefore loans through joint liability loan contract system provide much relief to the rural poor because they do not have health insurance. Easy loans available for health purposes at low rate of interest through joint liability loan contract system helps the member households to be fit after proper treatment which ultimately help them to join her(his) economic activity within a very short period. Better the health better will be the working capability of the individual and hence more will be scope of earning. As we here consider only two time periods, total size of credit taken by the member households between the concerned time period for income generating activity are accommodated in the second time period. Same thing also happens for $CRNIGACT_i$ i.e. size of microcredit taken by the member households for non-income generating activities. Loan taken for consumption, marriage, housing, education are here treated as non-income generating activity. Credit taken from respective groups for non-income generating activity indirectly help the participants to raise their income as well as consumption because that prevents them to fall in to debt trap after taking credit from informal sources with high rate of interest. Table-2 shows the distribution of the borrowers belonging to treatment group who took credit from their respective groups either for income generating activity mainly cultivation or for non-income generating activity within the concerned time period.

Table-2: Distribution of the sample households for purposes of taking credit.

Purpose of Borrowing	Number of Respondents took credit between 2004-2008
1. Income Generating Activity	
(i) Cultivation	75
(ii) Self-Employment	05
(iii) Husband's/ Son's	33

	business	
(iv)	Health	20
Total Number of Households took microcredit from their respective group for different Income Generating Activities		133
2. Non-Income Generating Activities		
(i)	Daily Expenses	55
(ii)	Education	14
(iii)	Housing	28
Total Number of Households taken microcredit from their respective group for different Non-Income Generating Activities		97

Souce: Data collected from field survey.

So it comes out that only 75 out of total 276 sample households took microcredit for cultivation under joint liability system[vi]. No question of the existence of multi-co linearity in the above two models and the Pearson Correlation Coefficient between CRINGACT and CRNINGACT is .12 and that is statistically insignificant[vii]. In the second equation we incorporate another dummy variable OUTMCR i.e. whether the participant has any outstanding microcredit in the second time period. It is '1' if the participant has any outstanding microcredit in the second time period and '0' otherwise. Actually if the participant has any outstanding microcredit in the second time period, then she has to pay a good amount for loan repayment and that can be done only through sacrificing present consumption which ultimately may affect $MPCE_{i2}$.

Here α_3 measures the effect of the policy. Without other factors, in the regression $\widehat{\alpha_3}$ is the difference-in difference estimator. It is also called average treatment effect because it measures the effect of the 'treatment' or policy on y_{it} or $MPCE_{it..}$ In the first model $\widehat{\alpha_3}$ represents $\{(\overline{y_{2T}} - \overline{y_{1T}}) - (\overline{y_{2C}} - \overline{y_{1C}})\}$ and in the second model it represents $\{(\overline{MPCE_{2T}} - \overline{MPCE_{1T}}) - (\overline{MPCE_{2C}} - \overline{MPCE_{1C}})\}$. The Table-3 gives the summary statistics of the explanatory variables both in t^{th} and in $(t+1)^{th}$ period.

Table-3: Summary Statistics of the Explanatory Variables:

Table-3A: Of the Sample Respondents belong to Treatment Group

Variables	Base Year 2004 (t^{th} time period)			2008 i.e. $(t+1)^{th}$ time period		
	Mean	Median	S.D.	Mean	Median	S.D.
y	2402.99	1750	2140.36	2847.29	2047	2307.19
MPCE	671.64	535	512.4	728.5	563	557.5
CRINGACT	0	0	0	3492.41	2000	12266.31
CRNINGACT	0	0	0	1718.41	0	3025.19
N	276			276		

Table-3B: Of the Sample Respondents Belong to Control Group

Variables	Base Year 2004 (t^{th} time period)			2008 i.e. $(t+1)^{th}$ time period		
	Mean	Median	S.D.	Mean	Median	S.D.
y	2842.07	1987.5	2362.06	2948.38	2142	2416.39
MPCE	757.9	650	428.8	782.5	689	409.5
CRINGACT	0	0	0	0	0	0
CRNINGACT	0	0	0	0	0	0
N	100			100		

Source: Calculated from the data collected directly from field survey

It has been checked that there is no significant difference between $\overline{y_{1T}}$ and $\overline{y_{1C}}$ or $\overline{MPCE_{1T}}$ and $\overline{MPCE_{1C}}$. So we can mention that during the time of drawing samples from the control group there was little possibility of selection bias. Rather we can say that in the tth period

the economic condition of the sample households belonging to treatment group and that belonging to control group were almost homogeneous in nature. It is also observed that average size of microcredit taken for income generating activity is comparatively higher if we compare that with non-income generating activity. In the following Table-4 we put the regression results of Model-1 and Model-2

Table-4: Regression results of the models mentioned in Equation (1) and Equation (2)

Name of the Explanatory Variables	Model-1: Outcome variable y_{it}	Model-2 : Outcome variable $MPCE_{it}$
Constant	277.565*	756.036*
D2	146.911	21.806
DT	-550.485	-105.410
D2DT	-94.489	-5.139
DRatio	22.074	1.772
CRINGACT	.03534*	.00333
CRNIGACT	.224*	.05091*
OUTMCR		-86.641
$\overline{R^2}$	.054	.034

*=> significant at 5% level.

From the above table it is clear that $\widehat{\alpha_3}$ i.e. the parameter estimate of D2DT is highly insignificant in both the models. So it comes out that there is no significant improvement in terms of average monthly income and monthly adult equivalent per capita consumption expenditure among the participants of microcredit programme between the concerned time periods[viii].

Impact study through First Differenced Method:

The impact study can also be analyzed on the basis of simplest kind of panel data of two periods. So we have taken the cross section data of a group of households both belonging to control group

and treatment group of two separate periods. Here t = 1 is for base line period and t = 2 for current period. We can write a model with a single observed explanatory variable as

$$Y_{it} = \beta_0 + \delta_0 d2t + \beta_1 X_{it} + a_i + u_{it} \text{ when } t = 1 \text{ and } 2 \ldots \ldots \ldots \ldots \ldots \ldots \ldots. (3)$$

In this model d2t is the dummy variable which equals to zero when t = 1 and one when t =2. Therefore the intercept at t = 1 is β_0 and at t =2 is $\beta_0 + \delta_0$. The explanatory variable a_i is generally called unobserved effect. In this application the main reason for colleting panel data is to allow for the unobserved effect a_i to be correlated with the explanatory variables. To remove the unobserved effect we can difference the data across the two years. If we subtract the second equation i.e. the situation when t =2 from the first equation when t = 1 we have the following equation

$$(Y_{i2} - Y_{i1}) = \delta_0 + \beta_1(X_{i2} - X_{i1}) + (u_{i2} - u_{i1})$$

Or $$\Delta Y_i = \delta_0 + \beta_1 \Delta X_i + \Delta u_i \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots. (4)$$

Here 'Δ' denotes the changes from t = 1 to t = 2. The above equation is called the first differenced equation. It is just a single cross section equation. The most important is that Δu_i is un-correlated with ΔX_i. To do the impact study we modify the above first differenced equation (4) in the following form

$$\Delta y_i = \delta_0 + \beta_1 DT + \beta_2 \Delta DRatio_i + \beta_3 CRINGACT_i + \beta_4 CRNIGACT_i + \Delta u_i \ldots \ldots. (5) \quad \text{and}$$

$$\Delta MPCE_i = \delta_0 + \beta_1 DT + \beta_2 \Delta DRatio_i + \beta_3 CRINGACT_i + \beta_4 CRNIGACT_i + \beta_5 OUTCR + \Delta u_i \quad (6)$$

As two surveys had been done more than two years apart, the problem of selection bias during the time of choosing samples could be minimized. Here all household specific variables are not dropped out. Rather $\Delta DRatio_i$ will be non-zero if either (i) the family size changes or (and) (ii) the number of earning member of the sample household changes. It is expected that after taking credit from the respective group the member herself or her son become new earning member of the family after being self-employed. The two explanatory variables CRNIGACT and CRNINGACT were zero at t=1. Total size of microcredit taken for income generating activity (CRNIGACT) and for non-income generating activity (CRNINGACT) taken by the self-help group members between the concerned time period are accommodated in t =2. Now to know the

impact of micro credit on the two outcome variables we mainly have to test the significance of β_1, β_2, β_3 and β_4 respectively. The results of the two regressions of the equations of first differences are placed in the following Table-5:

Table-5: Results of First Differenced Method where outcome variables are Δy_i and $\Delta MPCE_i$

First Differenced Estimators	Model-1 Δy_i	Model-2 $\Delta MPCE_i$
$\widehat{\delta_0}$	130.814	21.217
$\widehat{\beta_1}$	260.819	25.070
$\widehat{\beta_2}$	-260.830*	-97.842*
$\widehat{\beta_3}$	-.001154	-.001876
$\widehat{\beta_4}$	.03109	.008853
$\widehat{\beta_5}$		3.382
$\overline{R^2}$	.210	.067

*=> Significant at 5% level.

So from the above table it is clear that except ΔDRatio no other explanatory variable related with microcredit play any significant role to improve Average monthly income or Monthly adult equivalent per-capita consumption expenditure of the participants of microcredit programme with in the concerned time period. The reason behind low value of $\overline{R^2}$ has already been explained previously.

From the above tables it can be definitely said that there has been no economic improvement among the participants operating through joint liability loan contract system under Primary Agricultural Credit Society. The in-efficiency of micro credit programme under joint liability credit contract operated by Primary Agricultural Credit Society for economic improvement among the participants is reflected in Table-6 where it is observed that between the concerned time periods only little number of households belonging to treatment group is able to improve their economic conditions. Here according to the estimate of Planning Commission of India done by the expert group, the rural poverty line of West Bengal was Rs.445.38 MPCE in 2004-05. So we need not make any adjustment of MPCE of the sample respondents in the tth time period but some adjustments of both average monthly income and monthly per-capita consumption

expenditure of the entire sample respondents both belonging to treatment group and control group in 2008 was required. All are converted at constant term after considering 2004-05 as base year and adjustments were done on the basis of consumer's price index of the agricultural labourers of West Bengal.

Table-6: Distribution of the sample respondents in terms of MPCE both in t^{th} and $(t+1)^{th}$ period

Range of MPCE	Treatment Group		Control Group	
	t^{th} period	$(t+1)^{th}$ period	t^{th} period	$(t+1)^{th}$ period
Below Rs.350	23	17	11	10
Between Rs.350 and Rs.445	121	119	24	24
Above Rs.445	132	140	65	66
Total	276	276	100	100

Source: Calculated by authors on the basis of data collected from field survey

Table-6 shows that majority of the participants of microfinance programme under PACS are either lying above the poverty line or lying just below the poverty line in the tth period. The picture is almost identical even in the $(t+1)^{th}$ period. Now we will have to identify the reasons responsible for such a result in spite of the high repayment rate, low rate of interest charged from the members within the group and small size of groups where there is constant monitoring and peer pressure within the group. Let us now identify the reasons behind the ineffectiveness of microfinance programme through joint liability loan contract system operated by PACS in these two blocks from where the samples are drawn. The reasons behind such a result are explained below.

Possible reasons for the ineffectiveness of microcredit programme running under PACS among the rural participants:

Since farming is and will presumably continue to be the main economic activity of many rural people, a match between microfinance and the farmer's need is required. The primary function of Primary Agriculture Credit Society is to provide agriculture credit through individual liability loan contract system. The Primary Agriculture Credit Society also plays an important role in the

joint liability loan contract system. The self-help groups are formed and nurtured by PACS which act as Micro Finance institutions (MFI). Yet the number of borrowings for cultivation from PACS through joint liability loan contract system is much less compared to other types of borrowings. The main reasons responsible for the mismatch between microfinance and farmer's needs are stated below:

1. Actually more than half of the samples respondents belonging to treatment group possess no land and near about 33% of the respondent households are having less than 1 acre of land. Since the return from the land is risky and if not then the return is just sufficient for self-consumption, there will be problems for repayment if loans are taken for agriculture purpose. Therefore households majority of whom are marginal farmers prefer not to take loans for agriculture purpose from PACS through joint liability loan contract system because it involves peer pressure and group dynamics.

2. Lack of initiative on the part of PACS for skill based training facilities: There has not been much scope of training by the three PACS in the study. Talandu Sech 'O' Samabyay Unnayan Samiti Ltd. did not have any training programme for the poor women who have formed SHGs in the two villages to which it caters. Digsui Union Large Sized Primary Cooperative Agricultural Credit Society Ltd. had arranged for the training programme for mushroom cultivation in 2002. It was a three day programme, the cost of which was entirely borne by the respective PACS. Vivekananda Samabyay Krishi Unnayan Samiti Ltd. has provided training to its members of SHGs to produce vermi compost, produce *'sindoor'* and *'alta'*. It has also given them training about breeding of eggs of ducks which can be sold at a higher price. Some training was also provided for 'zari work'. But these training were not on a large basis and all were provided much before 2004. After 2004 no arrangements for training programmes have been made for the members of joint liability loan contract system.

3. Lack of initiative on the part of members of SHGs for training facilities – The rural women are also not very motivated nor are they very much inclined to undertake any training programme because they say it is difficult for them to manage time after household chores to attend training programme. They remain very busy and prefer to remain very busy with their indoor activities and thus do not find any incentive to undertake any productive activity.

4. Lack of marketing facilities: Even though there have been efforts by some rural women of these blocks on their own initiatives though not a large scale basis to undertake some productive activity like embroidery which is known by the name of 'kantha stitching', production of clay items but the major constraint they face is the problem of marketing their products because again no provision has been made for selling these products. Mushroom cultivation also faced the same problem and finally was stopped.

5. Problem of funds and skill-based training programmes: The PACS complained of not getting proper financial assistance and assistance for skill-based training programmes from the higher authorities in spite of constant reminders to them.

6. Availability of an alternative avenue for skill-based training programmes organized by Panchayats through District Rural Development Cell: The "Swarnajayanti Gramin Swarozgar Yojona", a scheme of the government provides funds to the rural women at a subsidized rate along with training facilities which is acting as an incentive for them. Thus they are gradually losing interest in the SHG- Bank linkage programme and showing their preference for the government scheme.

7. Loans for employment generating activities of rural women almost negligible: It is negligible because of lack of skill-based training programmes and absence of entrepreneurial skills among the members of self-help groups as compared to borrowings of other kinds. Loans have been taken for cultivation purpose i.e. to support family income. But since most of the members are marginal farmers, the income generated from cultivation did not show any significant change.

Conclusions:

The linkage model of the Microfinance programmes promoted by NABARD could be considered for replication towards extending more credit to marginal and sub-marginal farmers. Groups of marginal and sub-marginal farmers could act as joint liability groups serving as collected guarantor of loan extended by PACS. But it came out from field survey that not only the marginal and semi-marginal farmers even the landless rural households (a sizable number of them lying above the poverty line) joined in this microfinance programme. Though the size of the group is small, the rate of interest charged against microcredit is comparatively low (12% per

annum) and the repayment rate within the group is very high (near about 98%) because of peer pressure and group dynamics, there has been no significant impact on the standard of living of rural people after joining microfinance programme through forming Self-help group under Primary Agricultural Credit Society. This is reflected as there is no significant change in the monthly income and monthly adult equivalent per-capita consumption expenditure of the respondent households belonging to treatment group within the concerned time period. Lack of proper initiative for investment in income- generating activity because of lack of skill-based training programme is one of the main causes of it. The marginal farmers are also not so much willing to take loan for agricultural purposes as the return is uncertain in nature. The only positive aspect is that the members can protect themselves from the clutches of professional money lenders.

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End Notes:

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[i] Small size of the group can automatically reduce the possibility of coordination failure among the group members which can also reduce the possibility of default.

[ii] In the Government of India supported micro credit programme under SGSY scheme the rate of interest charged against credit is 24% per annum.

[iii] So to do the impact study, we consider the time gap of four years.

[iv] Following Townsend (1994) to get adult equivalent family members we have considered 1 for any adult member (both male and female), 0.25 for any member of that household up to six years of age and 0.5 for any member of the household between six and fourteen years of age and 0.75 between fourteen and eighteen years of age. During the time of calculating Dependency Ratio we have calculated that in terms of adult equivalence

[v] During the time of incorporating earnings of a rural household from NREGA, we have to consider the total earnings of that sample household under NREGA between Septembers - December 2007 to September-December 2008 which indicates that the reference period is here last one year.

[vi] A good number of sample households own the size of landholdings around 1 bigha or 0.33 acres or less. The entire yield from land is used for self-consumption which indicates zero marketable surpluses. They prefer not to take loan for cultivation under joint liability micro credit system operated by PACS because repayment might become a problem as no extra income is generated from production of crops. So 43 out of total 90 sample respondents possesses land less than 1 acres and 30 out of 40 sample respondents possesses land between 1 acre to 2.5 acres took loan from their respective group for agricultural purposes between the concerned time period. Actually the marketable surpluses of the second category of respondent households are not zero and they have few extra earnings which can help them to replay their credit. The remaining two members with ownership of land more than 2.5 acres took credit for cultivation from their respective groups. Thus even though 130 respondents possess land, yet only 75 of them availed loan facilities for cultivation through joint liability loan contract system operated by PACS in 2008. We have found identical picture in NSSO (59th round, 2005) report where it was observed that there is substantial differences between marginal / semi marginal farmers and other farmer households regarding the purpose for which loan is obtained for. It was noted that the share of consumption loan is higher among the marginal and sub-marginal farmer households. In West Bengal the proportion of credit among those households for production purposes is 49.8% and for non-production purposes that is 50.2%.

[vii] Total number of respondents who took credit both for income generating activities as well as non-income generating activities between the concerned time periods is 35. But one can take credit only after repaying the previous one. As the group size is small and size of credit is not so large, few members took loan more than once.

[viii] Very low value of $\overline{R^2}$ is not important in this type of econometric study for natural experiment. The required parameter estimate is insignificant and most of the remaining explanatory variables are also insignificant.