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Kundu, Amit and Mukherjee, Arghya Kusum

Department Of Economics, Jadavpur University, Kolkata, India

10 January 2011

Impact of Swarna Jayanti Gram Swarojgar Yojona (SGSY) on Health, Education and Women Empowerment

ARGHYA KUSUM MUKHERJEE[a] and AMIT KUNDU* [b]

[a] ASSISTANT PROFESSOR IN ECONOMICS, SRIKRISHNA COLLEGE, NADIA , WEST BENGAL

[b] ASSOCIATE PROFESSOR IN ECONOMICS, DEPARTMENT OF ECONOMICS, JADAVPUR UNIVERSITY, KOLKATA, WEST BENGAL, INDIA

E-mail: akundu1970@rediffmail.com, akundu29@gmail.com

Abstract:

Swarna Jayanti Gram Swarojgar Yojona (SGSY), a government sponsored micro credit programme of India, has been designed to ameliorate income poverty among the rural poor, particularly women, through human capital development and strengthening female agency. In this backdrop the basic objectives of the paper are to see: (a) whether the programme has any impact on health of the programme participants across Socio Religious Communities (SRCs) (b) Whether the programme has any significant role in improving education across SRCs. (c) Whether SGSY programme has been able to enhance female agency irrespective of caste and community affiliation. The District of Murshidabad, West Bengal, has been chosen as the field of study. All the selected SHG members were two years old. The initial sampling was done in 2006 to know about the pre-SHG participation socio economic condition. The resurvey was conducted in 2008. The study shows that from 2004 to 2008, the programme has significant impact on female agency across all SRCs except Muslims, but the role of the programme in forming human capital is insignificant irrespective of SRCs. If household specific unobserved heterogeneity is removed, then significant impact of the programme on female agency becomes insignificant across all SRCs except UCs.

Keywords: Micro Credit, SGSY Scheme of the Government of India, Panel Data, Unobserved heterogeneity, Fixed effects.

JEL Classifications: C23, I38, J16

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Introduction: Among several policy tools for reducing poverty, there is a growing consensus that, in the long run, human capital formation will be one of the most powerful instruments (Schultz, 1961; Bils and Klenow, 2000; Krueger and Lindahl, 2000). The performance of financial markets and human capital formation are related in several ways. Access to financial services allows rural households to take full advantage of their productive opportunities, facilitates consumption smoothing, and offers tools for the management of risk thereby reducing the vulnerability associated with poverty. Higher and more stable income flows positively influence the demand for education in the rural areas of low-income countries (Maldonado et al, 2002). Information, incentive, and contract enforcement problems severely constrain, however, the access of poor rural households to formal financial markets. Through the adoption of new lending technologies, nevertheless, microfinance organizations (MFOs) have been offering mostly credit and sometimes deposit facilities for savings to segments of the population otherwise without access to formal financial services (Navajas and Gonzalez-Vega, 2002).

The relationship between poverty and health has been characterized as synergistic and bi-directional (Das Gupta & Chen, 1996; Wagstaff, 2001). On the one hand, poverty limits capacities to produce health. On the other hand, ill health impoverishes, diminishing the potential of increasing economic well-being of individuals and households (Over et al., 1992; Krishnan, 1999). There have been recent suggestions that participation in micro-credit may be beneficial to the health of the poor, particularly for women (Feurestein, 1997; Fisher, Holland & James, 2001; Patel, 2000). Micro-credit could impact on health through various pathways. The expansion of opportunities created by participation includes increasing assets and enhancing female autonomy, which are key determinants of women's health (Amin, et al., 1998; Jacobson, 1993; MacCormack, 1988; Moss, 2002). The expansion of opportunities created by participation includes increasing assets and enhancing female autonomy, which are key determinants of women's health (Amin, et al., 1998; Jacobson, 1993; MacCormack, 1988; Moss, 2002). The promotion of SHGs and other forms of micro-credit may be an important route to health development through positive influences on underlying causes of ill-health. Human capital theory proposes that individual income earning will increase through self-investment in health, education, and training. Grossman's notion of health capital demonstrated that health is unique in

that it is both a consumption good, and an investment good. The former suggests that heath is desirable for making people feel better, while the latter implies increasing income earning potential, by increasing the number of healthy working days (Mohindra, 2008).

The relationship between education and income is complex. If a high marginal value is placed on the health and education of family members, increases in income will be devoted to improvements in these areas. Thus, income is expected to influence the schooling decisions positively for poor households. At the same time, healthier and better-educated household members will be able to produce more, and this improved productivity will be rewarded in the labor market with higher incomes (Duryea and Pages, 2002). Human capital formation faces, however, severe obstacles. Because human capital cannot be seized and transferred to a lender in the event of default, it cannot be used as collateral; consequently, the poor must fund their educational choices out of their retained earnings, wealth, or abstention from current productive work. Because they are poor, the marginal cost of doing so may be prohibitively high (Ray, 1998).

This shortcoming of credit markets accentuates the joint causation between income and human capital. Combined with increasing returns to investment in education, imperfect credit markets may generate a poverty trap (Bardhan and Udry, 1999). That is, relatively wealthy individuals will be able to invest in human capital, and this will enable them to earn enough income to remain wealthy. In contrast, the poor will be unable to invest in human capital, and thus they will earn lower incomes and remain poor. By increasing the flow of household earnings, microfinance may allow greater investments in human capital. Furthermore, through the fungibles of borrowed funds, loan funds may finance current educational expenses. Indeed, the innovations in lending technologies associated with SGSY usually allow households without traditional collateral to pledge their reputation and, therefore, their future ability to generate income flows from their human capital, as a guarantee on their loans. In this way, microfinance enhances the deployable wealth of the household. Loans from microfinance organizations increase the pool of current resources available, among other uses, for education, and may increase future income flows, thereby providing additional resources to fund education.

Over time the stated development goals of women's empowerment have evolved and broadened, from a concentration on the relative well-being of women vis-a-vis men to the incorporation of

notions of women's agency in the attainment of greater well-being for all, and particularly for women (Mahmud, 2003). It is important to distinguish this shift in emphasis as one from passive acceptance of well-being enhancing assistance to one of active participation in the attainment of those well-being objectives. In fact, women's agency is being increasingly posed as the pathway of social change that 'can alter the lives of both women and men' (Sen, 2002). In this context, it is pertinent to explain the term 'empowerment'. The World Bank views empowerment as 'the expansion of assets and capabilities of poor people to participate in, negotiate with, influence, control, and hold accountable institutions [government] that affect their lives (Narayan, 2002). In UNDP, it is about participation in decision-making processes as the 1995 Human Development Report puts it: 'empowerment is the expansion of people's capabilities that involves an enlargement of choices and thus an increase in freedom' (UNDP 1995).In all these cases, empowerment enshrines the role of the state as the backbone for an empowered citizen.

2. SGSY, Health, Education and Female Agency

The Swarnajayanti Gram Swarozgar Yojana (SGSY), a credit-based scheme sponsored by the Government of India for poverty alleviation, is perhaps the largest of its kind in the world. The scheme was designed to promote out of poverty through investment in human capital. Under this scheme for group Swarojgaris, Self Help Groups are formed. SHGs are small informal associations created for enabling members to reap economic benefit out of mutual help, solidarity, and joint responsibility. The benefits include mobilization of savings and credit facilities and pursuit of group enterprise activities. The group-based approach not only enables the poor to accumulate capital by way of small savings but also helps them to get access to formal credit facilities (Anand, 2003). These groups by way of joint liability enable the poor to overcome the problem of collateral security and thus free them from the clutches of moneylenders. The joint liability not only improves group members' accessibility to credit, but also creates mechanisms like peer monitoring leading to better loan recoveries (Stiglitz,1993), besides some of the basic characteristics of SHGs like small size of membership and homogeneity of composition, bring about cohesiveness and effective participation of members in the functioning of the group . In general, SHGs created on the above lines of functioning have been able to reach the poor effectively, especially women and help them obtaining easy access to facilities like savings and credit, and empower them (NABARD, 1995).

Improved health can be achieved through access to food, access to health care, healthy behaviours, a healthy environment, social inclusion, social support, social influence, awareness and sense of coherence. As a part of this policy, SHG members of SGSY scheme have been integrated with the formal health system. Auxiliary Nurse and Midwife (ANM) workers in each health sub-centre organize a team taking ASA workers and SHG members in each village where SGSY programme is going on. This team creates awareness among villagers about the benefit of living in a healthy atmosphere, the need of using mosquito net during night, benefit of using sanitary latrine etc. From matured SHGs, health activists will be identified to become Community Health Development Workers (CHDWs). They are the first contact persons for the delivery of simple health services, for which, communities do not have to depend on the medical doctors. This will also give them opportunity to impart health awareness and education. The goal is for health to become part of daily routine, rather than something to attend to during an episode of illness. There will be sub-health centre to become the epicenter, to provide emergency care round the clock. The outreach activities are organized around this epicenter with the help of the ANM, ASA workers and CHDWs.

Training swarojgaris for entrepreneurial capacity is an integral part of SGSY programme. The SGSY programme jointly provides credit and education. This feature was absent in erstwhile IRDP programme. Through one or two days basic orientation programme the SGSY programmme tried to impart training for enhancing functional as well as entrepreneurial skill. Through this programme SHG members become familiar with the objectives, responsibilities, and elements of book keeping, knowledge of marketing, acquaintance with costing and pricing and also financing with bank. In our study area, we can observe that there is significant change in the educational status of the SHG (Self Help Group) participants. Before participation in the programme, 52 percent of the participants don't know how to read or write, but after programme participation, 34.6 percent of them have become literate. Through informal schooling like 'Ravindra Mukta Vidyalaya', some SGSY participants enhanced their years of schooling. After joining the programme 9.5 percent SHG members passed the 'Madhyamik (class 10 plus)' examination, whereas eleven SGSY members got employment in nearby Sisu Siksha Kendra (SSK).

Participation in SGSY programme is hypothesized to increase empowerment in at least three ways: by placing more financial resources in women's hands, by increasing women's bargaining power within the household because of increased financial contributions, and by building solidarity, self-esteem and self-efficacy through group activities with other women. These forms of empowerment, in turn, reduce barriers to accessing family planning services, including financial constraints, restrictions on mobility outside the household, lack of information about contraception, and opposition from husbands (S. Amin & Pebley, 1994; Hashemi et al., 1996; Schuler & Hashemi, 1994; Schuler et al., 1997; Steele et al., 2001). One additional mechanism by which microfinance programmes enhance empowerment is social learning and social influence. Social influence is a diffusion model in which interpersonal interactions in social contexts change individuals' preferences; social learning is a closely-related concept in which interpersonal or impersonal interactions provide information that changes an individual's decision-making process (Montgomery & Casterline, 1996).

A majority of microfinance programmes target women with the explicit goal of empowering them. There are varying underlying motivations for pursuing women's empowerment. Some argue that women are among the poorest and the most vulnerable of the underprivileged and thus helping them should be a priority. Others believe that investing in women's capabilities empowers them to make choices, which is a valuable goal in itself, but it also contributes to greater economic growth and development. It has been well documented that an increase in women's resources results in increased well-being of the family, especially children (Mayoux, 1997; Kabeer, 2001; Mosley and Hulme, 1998). Hashemi et al. (1996) investigates whether women's access to credit has any impact on their lives, irrespective of who has the managerial control. Their results suggest that women's access to credit contributes significantly to the magnitude of the economic contributions reported by women, to the likelihood of an increase in asset holdings in their own names, to an increase in their exercise of purchasing power, and in their political and legal awareness. They also found that access to credit is also associated with higher levels of mobility, political participation and involvement in 'major decision-making' for particular credit organizations. Holvoet (2005) finds that in direct bank-borrower minimal credit, women do not gain much in terms of decision-making patterns. However, when loans are channeled through women's groups and are combined with more investment in social

intermediation, substantial shifts in decision-making patterns is observed. Mayoux (1997) argues that the impact of microfinance programmes on women is not always positive. Increases in income for women can come at the cost of heavier workloads and repayment pressures. Men in the family to set up enterprises use their loans, or sometimes women end up becoming unpaid family workers with little benefit. Furthermore, it can lead to withdrawal of male support and decrease in male contribution to household expenditure. Rahman(1999), using a anthropological approach with in-depth interviews, participant observations, case studies and a household survey in a village, finds that between 40% to 70% of the loans disbursed to the women are used by the spouse and tensions within the household increase (domestic violence). Nevertheless, majority of the findings conclude that by helping women meet their practical needs and increase their efficacy in their traditional roles, micro finance can help women to gain respect and achieve more in their traditional roles, which in turn can lead to increased esteem and self-confidence.

BIDS and the World Bank (Pitt and Khandker 1998) in a joint research carried out the most comprehensive and rigorous micro-finance impacts studies that have established causality among microfinance several outcome indicators. This body of research provides a strong indication that the programs help the poor in consumption smoothing as well as in building assets. The findings also lend support to the claim that micro-finance programs promote investment in human capital (such as schooling) and contribute to increasing awareness to reproductive health (such as the use of contraceptives) among poor families. This major study also sheds lights on the role of gender-based targeting and its impact on household or individual welfare. Findings suggest that women do acquire assets of their own and exercise power in household decision-making (Khandker, 2003). Morduch (1998), using the same BIDS-World Bank survey data but a different technique (difference-in-difference method), finds that program effects are either non-existent or very small. He argues that the Pitt and Khandker (1998) estimates of program impacts are over-estimated and, thus, the flagship programs such as the Grameen Bank do not really help the poor. There is hardly any study analyzing the impact of SGSY on education, health and female agency across Socio Religious Communities (SRCs) of the programme participants. Therefore, it is interesting to see whether the SGSY programme has any impact across SRCs. This paper shows that though the programme has significant impact on female agency, but insignificant impacts on education and health. If household specific unobserved factors are

removed, then that significant impact on female agency is also removed. This result remains unaltered even if we adjust for time invariant household unobserved characteristics. The paper has been organized as follows: Section-3 deals with methodology and data; section-4 contains results and discussions.

3. Methodology and Data

3.1. Operational Definition of 'Health', 'Education' and 'Female Agency'

Each adult women of the surveyed household were asked following questions: (a) Whether they can demand for their own health care; (b) they can use contraceptives ;(c) they think taking Tetanus Vaccine, Iron Tablets and regular medical checkup is urgent as pre-natal care;(d) feel no mental trauma from husband or any other family members. In this 0-6, scale for each affirmative answer the respondent gets one mark. Among scores of all the adult women of a particular household, maximum as percentage of 6 is taken as proxy of household 'Health Index'.

Index of education is based on following variables: (I) Years of schooling.(II) Experience of any professional training like tailoring, embroidery, making candle, preparing jam or jelly etc. (III) Knowledge about book keeping. (IV) Any job market experience, i.e. they are self employed or employed anywhere else. (V) Knowledge of marketing, and (VI) experience of interaction with bank. All adult women members of the household were asked these above mentioned questions. For each yes the respondent gets one marks and otherwise zero in 0-6 scale. Maximum of these values as a percentage of 6 is taken into account.

Here we define female agency in terms of economic spaces and private political spaces. Economic spaces represent opportunities for livelihoods, employment, property, etc. The private political space consists of hierarchies and placements within families and households, which are determined by age, relationship and gender. Therefore, the index of 'Female Agency' has been constructed on following questions to respondents: (a) Ability to spend own income according to own will. (b) Ability to make large purchases. (c) Ability to make small purchases. (d) Ability to decide what item to be cooked. (e) Can go nearby bank, movie, market or hospital alone. (f) Going and staying with parents and siblings. (g) Decision about children's health or education and (h) birth numbers. For each 'yes', the score is one in 0-8 scale. These questions were asked to all adult women of a respondent household. Scores of all the women of the household were

transformed in percentage of 8.Highest among these percentages is taken as value of the 'Index of Female Agency'.

Impact Analysis with Panel Data: In this paper, we tried to estimate conditional demands for a set of household bahaviours, conditioned on the household's borrowing from SGSY run SHGs. However, there are several services from SHGs, but here programme participation has been represented by 'borrowing'. Consider the reduced form equations (1) to (4) for the borrowing for UCs, OBCs, SCs and Muslims programme participants respectively:

$$C_{ut} = X_{it}\beta_{bu} + \eta^{b}_{iu} + \xi^{b}_{iut} \ldots(1)$$

$$C_{iot} = X_{it}\beta_{bo} + \eta^{b}_{io} + \xi^{b}_{iot} \ldots\ldots\ldots (2)$$

$$C_{ist} = X_{it}\beta_{bs} + \eta^{b}_{is} + \xi^{b}_{ist} \ldots\ldots\ldots\ldots(3)$$

$$C_{imt} = X_{it}\beta_{bm} + \eta^{b}_{im} + \xi^{b}_{imt} \ldots\ldots\ldots (4)$$

Where X is a vector of household characteristics like household's asset[1], and index of social connectedness[2], η is an unmeasured determinant of borrowing that is time invariant and fixed within a household. ξ is non- systematic error term. The conditional demand for outcomes Y_{it} such as 'Female Agency', 'Education' and 'Health' in each period conditional on the level of borrowing by UCs, OBCs, SCs, and Muslims for each period is as follows:

$$Y_{it} = X_{it}\beta_{y} + C_{iut}\delta_{u} + C_{iot}\delta_{o} + C_{ist}\delta_{s} + C_{imt}\delta_{m} + \eta^{y}_{i} + \xi^{y}_{it} \ldots (5)$$

Where δ_u, δ_o, δ_s, δ_m are the effects of UC-credit, OBC credit, SC credit and Muslim Credit. The impact of borrowing can be obtained by estimating equation (5). Borrowing irrespective community affiliation has to be estimated jointly with eq (5). The problem of estimation arises from the possible correlation of η_i^b and η_i^y and ξ^{b}_{it} and ξ^{y}_{it}. If the estimation methodology doesn't take into account this endogenity, the biased estimates of parameters will be obtained. The endogeneity in the SGSY-borrowing arises due to unmeasured household attributes affecting both borrowing and conditional outcomes. These attributes include endowments of innate health, ability and fecundity (Pitt, 1998). Eq (5) doesn't have any variable, which is included in eq (5),

but not in equation (1) to (4). It implies the equation (5) is not distinguishable from eq (1) to eq (4). Standard methodology to resolve this household endogeneity is to use instrumental variables.

Pitt and Khandker (1998) adopted a two-stage instrumental variable (IV) method to resolve the endogeneity of a household's participation. In the IV method, they used exogenous gender- and landholding-based exclusion restrictions to create discontinuous household's program choice variable. That variable was interacted with household's observable characteristics to create instruments. With panel data where households have more than one observation (t>1), such two-stage identification restrictions are not required. This is simply done by differencing out the unobserved household attributes, which are the sources of correlation between the credit demand and household outcome equations (Khandker, 2003). Therefore, our new estimated equation is:

$$\Delta Y_i = \Delta X_i \beta_y + \Delta C_{iu} \delta_u + \Delta C_{io} \delta_o + \Delta C_{is} \delta_s + \Delta C_{im} \delta_m + \Delta \xi^{y}_i \ldots.(6)$$

Consistent estimates of parameters can be obtained by using household level fixed effect methods. This is based on strong assumption that error terms of borrowing equations are uncorrelated with the error term of outcome equation. Setting aside two period pulled data method eq (6) can be estimated two competing methods: (a) Fixed Effect (FE) and (b) First Difference (FD). One involves differencing the data, and the other involves time-demeaning. For two period data, Fixed Effect and First Difference estimates are identical. The equivalence of FE and FD depends on the estimation of same model in both cases. In FD, it is natural to include an intercept; this intercept is actually the intercept for second period in the original model written for the two periods. Therefore, FE estimation must include a dummy variable for the second period in order to be identical to the FD estimates. FD estimation is straight forward to implement in any econometric and statistical package, and it is easy to estimate heteroskedasticity-robust statistics after FD estimation (Wooldridge, 2009). We have applied here FD estimation technique. Applying OLS to equation (6) can give us consistent estimator if ΔX_i and ΔCi are uncorrelated with $\Delta \xi_i$; and ΔX_i and ΔCi have some variations across individuals and all other assumptions of Classical Linear Regression (CLRM) hold.

We further want to see if we just pull the data and apply OLS what happens to estimates of the parameters. Consistent estimator of parameters can be obtained if unobserved household specific time invariant factor (η) is uncorrelated with explanatory variables. The resulting bias from the

pooled regression is known as heterogeneity bias. It solely comes from omitting a time constant variable.

Data and their salient features:

The District of Murshidabad, West Bengal, has been chosen as the field of study. As per Census 2001, total Muslim population of the District is3, 73, 5380. 48.6 percent of the Muslim population is literate and 42.8 percent of the Muslim women can read or write. In the 0-6 age group the Muslim sex ratio is 976. As per the estimate of Indicas Analytics[3], India Today, 2004, the score of the district in the index of social progress is .46. In the District of Murshidabad, there are 5 Subdivisions, 26 Blocks, 256 Gram Panchayats and 2290 Mouzas[4]. In order to grasp the ecological variation in the study we have chosen purposively Kandi Sub Division, part of 'Rarh Bengal'[5], and Berhampore Sub Division, part of 'Ganges Delta'. The households are sampled in villages that are with and without the SGSY program. In program villages, both the program participant and non-participants are sampled. The sampling was done from the detailed list of SHGs provided by the District Rural Development Cell (DRDC). Overview of sampling across Sub Divisions is given below.

Table1. Over View of Sample Size across Sub-Divisions

District: Murshidabad Sub Divisions Covered	No of Villages with SGSY programme Covered	No of Villages without SGSY programme Covered	No of SHG under SGSY covered in Programme Villages		No of SHG Members Under SGSY Groups Covered in Programme Villages		Non-SHG Members Covered in Prgramme Villages		Non-SHG Members Covered in Non-Programme Villages	
			2004	2008	2004	2008	2004	2008	2004	2008
1.Kandi	5	2	30	30	150	140	70	65	30	30
2.Berhampore	5	2	30	30	150	137	70	67	30	30
Total	10	4	60	60	300	277	140	132	60	60

Source: collected through field survey

At the stage of sampling of SHGs under SGSY scheme, however, an intervening stratification by categories of socio religious communities was introduced. SHGs were classified among four strata by caste and community affiliation: Schedule Caste Hindus (SCs), Other Backward Castes (OBCs), Muslims and Upper castes (UCs). Here Muslim means Muslim General Caste. Table 2 depicts overview of sampling across SRCs.

Table 2.Over View of Sample Size across Socio Religious Communities

District: Murshidabad Socio Religious Communities	No of SHG Members Under SGSY Groups Covered in Programme Villages		Non-SHG Members Covered in Prgramme Villages		Non-SHG Members Covered in Non-Programme Villages	
	2004	2008	2004	2008	2004	2008
UC	120	109	50	50	30	30
OBC	60	58	30	27	10	10

SC	60	55	30	28	10	10
Muslim	60	55	30	27	10	10
Total	300	277	140	132	60	60

Thirty Groups, each having two year's age, were chosen from each Sub-Division. Each group consists of 10 to 15 members. Five members from each group were chosen randomly and their households were surveyed. Therefore, total three hundred SHG member-household were surveyed. Seventy households having same socio-economic back ground as SHG member-households from the program villages of each region were surveyed. Similarly, thirty households from the non program villages of each Sub-Division were interviewed. Initially it was done in 2006. The survey started from January and ended in July to minimize recall period about their pre- SHG participation socio-economic situation. As all the SHGs are two years old, therefore, pre-SHG year implies 2004. In 2006 the sample contains hundred twenty Muslim SHG members and sixty SHG members each from other three SRCs. All these households were resurveyed in 2008. During this period, twenty three SHG members have left the group, whereas 8 individuals who were non-SHG members became SHG members in program villages in 2008. Therefore, in 2008 we have 277 individuals who are SHG members and 132 individuals who are non-SHG members in program villages and sixty non-SHG members from non-program villages. Therefore, in 2008 among 277 SHG members 109 are Muslims, 58 are UCs, 55 are OBCs and 55 are SCs. Among 132 non-SHG members of program villages 50 are Muslims, 27 are UCs, 28 are OBCs and 27 are SCs. Among 60 non-SHG members of non-program villages 30 are Muslims and other three SRCs each have 10 members. Program villages in Kandi Sub-Division are Salar, Raigram, Agardanga, Alugram and Masla, whereas Villages in Berhampore Sub-Division are Bazarsau, Kamnagar, Saktipur, Mirzapur and Simuldanga. Non program villages in Kandi Sub-Divison and Berhampore Sub-Divisions are Berbari, Bhabanipur, and Ibrahimpur and Sonar Gram respectively.

The paper's assessment on impact of borrowing relies on panel data so the sample is restricted to households who form the panel that is those have been interviewed in both periods. A detailed summary statistics of all the explanatory and explained variables are given in table-1 and 2 for the year 2004 and 2008 respectively. The monetary values of variables like asset and borrowing

have been adjusted by the consumer price index of agricultural labourers with 2004-05 as the base line

Table 3.Summary statistics of explanatory variables and explained variables in 2004 and 2008

Variabes SRCs	Asset		Index of female agency		Index of Education		Index of Health		Index of social connectedness		Borrowing	
	2004	2008	2004	2008	2004	2008	2004	2008	2004	2008	2004	2008
UCs	47756 (12036)	54690 (14796)	58.34 (13.10)	59.48 (12.57)	17.21 (1.49)	23.83 (5.29)	23.13 (2.42)	30.93 (5.19)	42.5 (19.88)	52.2 (23.64)	0	5403.94 (8016.20)
OBCs	48760 (14702	54228 (12338)	56.77 (11.95)	62.29 (12.28)	17.20 (1.53)	22.94 (4.21)	23.19 (2.77)	30.05 (4.21)	46.44 (20.72)	48.17 (20.9)	0	5049.4 (7254)
SCs	50222 (13928)	53754 (15460)	56.02 (11.87)	60.09 (12.82)	17.22 (1.23)	22.57 (3.88)	23.32 (2.28)	29.71 (4)	43.32 (22.91)	43.35 (19.98)	0	5457.98 (8976.46)
Muslims	50976 (11528)	53034 (13402)	54.27 (13.21)	57.16 (11.83)	17.01 (1.16)	22.76 (3.93)	22.89 (2.53)	30.13 (3.37)	42.64 (16.81)	49.55 (21.7)	0	4425.22 (6159.06)
Control	49498 (16014)	52954 (12138)	53.82 (13.61)	56.5 (13.96)	17.38 (1.38)	22.73 (3.22)	23.4 (2.34)	30.1 (3.78)	46.88 (20.65)	47.16 (24.78)	0	0

Terms in first brackets are Standard Deviations

From table-3 we can see that values of all the variables increased from 2004 to 2008 both for the treatment and control group. Values of Index of Female Agency, Index of Education and Index of Health have increased in 2008 compared to 2004. The pertinent question is how much of this increased value for borrowing from SGSY?

4. Result and Discussions

Ignoring household specific unobserved heterogeneity, we estimate equation (5) using pooled regression. The results are described in table 4. Table shows that for UCs, OBCs and SCs female agency has increased significantly due to participation in the SGSY programme, whereas the agency has increased, though insignificantly, for Muslim women. Due to participation in SHG irrespective of caste and community affiliation women have greater say both within and outside the household. Participation in this state-run-microfinance programme has increased the education of all the programme participants across all the Socio Religious Communities (SRCs). However, this increment is not statistically significant compared to control group. SHG members are involved with ANM and ASA workers for generating health awareness. From the statistical analysis, it is revealed that participation in SGSY run SHGs has increased the 'Index of Health' across SRCs, but insignificantly.

Table 4. Impact of Borrowing across SRCs Obtained from Pulled Regressions

Dependent Variable SRCs	Index of female agency	Index of Education	Index of Health
UCs	5.913E-04***	6.039E-05	1.690E-05
OBCs	8.902E-04**	4.78E-05	7.750E-05
SCs	6.224E-04*	1.390E-05	5.147E-06
Muslims	2.51E-04	6.28E-05	1.28E-04

,,*** implies significance at 1, 5 and 10 percent level of significance.

To iron out the household specific unobserved heterogeneity we estimate equation (6) using First Difference method. If there is any unobserved heterogeneity, then results from the pooled regression will differ from the results of First Difference Method. However, as evident from table 5, the significant positive impact of the SGSY programme on women empowerment is weed out for all SRCs except UCs. It implies that instead of the programme, the household specific time constant factors that ultimately determine the female empowerment

Table 5. Impact of Borrowing across SRCs Obtained from First Difference Regressions

Dependent Variable SRCs	Index of female agency	Index of Education	Index of Health
UCs	1.53E-04**	1.656E-02	4.735E-05
OBCs	4.180E-05	1.93E-05	1.63E-04
SCs	9.97E-05	1.532E-04	1.250E-03
Muslims	1.14E-04	2.656E-04	2.327E-05

,,*** implies significance at 1, 5 and 10 percent level of significance

Details of pooled regressions and First Difference regression are given in appendix

Conclusion: The paper examines the impact of women's participation in SGSY programme using data from a survey conducted in West Bengal in 2006 and 2008. The results are not consistent with the view that women's participation in SGY helps to increase human capital in a significant way. Section 4, describes the results of the estimation. Pooled regression shows that borrowing from SGSY has significant impact on female agency for all SRCs except for Muslims, but insignificant impact on health and education. This result differs from First Difference (FD) estimation. In FD estimation, the impact of SGSY programe on women empowerment is significant for UCs only. It implies that if a time invariant unobserved characteristic like entrepreneurships is removed, then participation in SGSY alone can't change the status of the women. Women, who are comparatively more empowered, participate in the SGSY programme. Impact of SGSY participation varies across SRCs due to difference in socio religious status i.e. difference in traditional restrictions on mobility and social interactions. The underlying reasons behind under performance of the scheme lie in the implementation of the recommendations of SGSY guideline. The SGSY guideline identifies key activities in each block and makes provision of the complete range of development support which includes market survey, credit, technology, training leading to skill up gradation and establishment of forward and backward linkages (SGSY guidelines, MORD June 2003). Activity wise analysis in the survey area indicates that in case of dairy and poultry 81 percent of the swarojgaris get skill

development training. In other activities no skill development training was imparted. Interview with swarojgaris reveal that only 21 percent of the swarojgaris have book keeping skill. It reflects inability of the programme to deliver the desired benefits to programme participants. It calls for major overhauling of existing policies so that programme participants can get desired benefits of participation.

FD method is based on strong assumption that error terms of borrowing equation and outcome equation are uncorrelated, but if they are correlated for factors other than endogeneity of borrowing then introducing two stage instrumental variable technique with household level fixed effect will be a solution. Though we have tried to ameliorate the problem of unobserved heterogeneity and self selectivity, but unable to remove the problem of counter factual. Therefore, one can find counterfactuals to get estimates that are precise in nature.

Notes:

1. Asset includes money value of items like land, furniture, poultry, cows and goats, irrigation pump, radio, cassette player, TV, rickshaw.

2. Household social connectedness is computed as involvement of the household members in different organizations like Village Education Committee (VEC), Water users associations, Puja Committee, Local Clubs and political parties. Here index is based on five questions. One point is obtained for each 'yes' and zero otherwise. Each question has equal weight. Total score of each household member will be divided by 5, and maximum of these values will be taken as proxy of 'household social connectednesses.

3. Economic Research Firm
4. Lowest land revenue collection unit.
5. Lies between the Western Plateau and high lands (Bordering Chhotanagpur Plateau and Ganges Delta)

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Appendix

Table1A. Impact of Borrowing and Other Variables on Female Agency Obtained from Pulled Regression

Explanatory variables	Coefficients	t Values
Constant	58.289*	26.794
Borrowing by UCs	5.913E-04***	1.655
Borrowing by OBCs	8.902E-04**	2.198
Borrowing by SCs	6.224E-04*	2.646
Borrowing by Muslims	2.51E-04	-.572
Index of Social Connectedness	2.28E-02	1.178
Asset	3.33E-05	.544
D08	1.953	1.916

,,*** implies significance at 1, 5 and 10 percent level of significance

R=.684, R^2=.466, adjusted R^2=..462

Table2A. Impact of Borrowing and Other Variables on Education Obtained from Pulled Regression

Explanatory variables	Coefficients	t Values
Constant	17.1*	36.26
Borrowing by UCs	6.039E-05	.7
Borrowing by OBCs	4.78E-05	.489
Borrowing by SCs	1.390E-05	.245
Borrowing by Muslims	6.28E-05	.593
Index of Social Connectedness	7.249E-03	1.548
Asset	1.01E-05	.682
D08	5.728*	23.281

,,*** implies significance at 1, 5 and 10 percent level of significance

R=.139, R^2=.019, adjusted R^2=.19

Table3A. Impact of Borrowing and Other Variables on Health Obtained from Pulled Regression

Explanatory variables	Coefficients	t Values
Constant	23.48*	44.98
Borrowing by UCs	1.690E-05	.177
Borrowing by OBCs	7.750E-05	.715
Borrowing by SCs	5.147E-06	.082
Borrowing by Muslims	1.28E-04	-1.095
Index of Social Connectedness	2.741E-04	.053
Asset	1.10E-05	.673
D08	6.903*	25.339

,,*** implies significance at 1, 5 and 10 percent level of significance

R=.180, R^2=.32, adjusted R^2=.24

Table4A. Impact of Borrowing and Other Variables on Female Agency Obtained from First Difference Regression

Explanatory variables	Coefficients	t Values
Constant	5.923*	24.85
Borrowing by UCs	1.53E-04**	2.270
Borrowing by OBCs	4.180E-05	.408
Borrowing by SCs	9.97E-05	.861
Borrowing by Muslims	1.14E-04	.907
Index of Social Connectedness	7.94E-03	1.442
Asset	2.853E-06	.165

,,*** implies significance at 1, 5 and 10 percent level of significance

R^2=.34, adjusted R^2=.24

Table5A. Impact of Borrowing and Other Variables on Education Obtained from First Difference Regression

Explanatory variables	Coefficients	t Values
Constant	3.069*	2.637
Borrowing by UCs	1.656E-02	.651
Borrowing by OBCs	1.93E-05	.039
Borrowing by SCs	1.532E-04	.271
Borrowing by Muslims	2.656E-04	-.808
Index of Social Connectedness	2.51E-04	.41
Asset	9.53E-06	.113

,,*** implies significance at 1, 5 and 10 percent level of significance

R^2=.3

Table 6A. Impact of Borrowing and Other Variables on Health Obtained from First Difference Regression

Explanatory variables	Coefficients	t Values
Constant	7.11*	27.35
Borrowing by UCs	4.735E-05	.424
Borrowing by OBCs	1.63E-04	1.287
Borrowing by SCs	1.250E-03	.208
Borrowing by Muslims	2.327E-05	-.17
Index of Social Connectedness	1.106E-05	.586
Asset	1.65E-04**	2.241

,,*** implies significance at 1, 5 and 10 percent level of significance

R=.128, R^2=.36, Adjusted R^2=.24