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Participation in Self-help Group Activities and Its Impacts: Evidence from South India

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Institution building is now recognised as vital for poverty reduction across the world. This paper focuses on the determinants of participation in Self-Help Groups (SHGs) and its impacts on household welfare. The participation in SHG activities is influenced by various household level and contextual factors. Our results support that the public policies geared towards increasing women's participation in SHGs generate substantial income and have significance in household welfare. The quantity and quality of food consumed, the health of household members, and children's education have improved. Thus, the institution building contributes greatly to improving household welfare. Therefore, continuing public support for the expansion of these SHGs appears crucial to achieve poverty reduction.

I. INTRODUCTION

The Millennium Development Goal (MDG) emphasises three strategic objectives of strengthening the capacity of the rural poor and their organisations, improving equitable access to productive natural resources and technology and increasing access to financial services and markets in order to achieve poverty reduction (IFAD 2003, Maluccio and Flores 2005).

Institutions are formed for natural resource management like water, forest, land, development of rainfed agriculture, and environmental management. Local people's organisations in the form of Self-Help Groups (SHGs), User Groups (UGs), Watershed Committees (WCs), Watershed Associations (WAs), Joint Forest Management Committees (JFMCs), Micro Finance Institutions (MFIs) and other social groups have come up widespread with support from the State for mobilising community and harnessing their resources in productive pursuits. These

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institutions, by and large, aim at creation of sustainable livelihood opportunities for their members. The process of group formation itself has been encouraged by the government as a tool for rural development (Planning Commission 2002). In particular, the SHGs are formed across countries as an effective strategy for poverty alleviation, human development and social empowerment.

Over the years many researchers (Morduch 1998, Ismawan 2000, Zeller, *et al.* 2001, Gregorio *et al.* 2004, Dutta and Magableh 2004, Maluccio and Flores 2005, Levy 2006) have attempted to study the functioning of SHGs, their performance and impacts on poverty reduction with different programmes and varying objectives. Experiences show that though there is strong theoretical and empirical evidence about the conditions for the success and failure of institutions in poverty reduction, natural resources management and environmental sustainability, designing policies to create local institutions still remain a challenge (Heltberg 2001, Suresh Kumar 2007). More specifically, the effect of natural resource management and environmental variables influencing the participation SHGs is yet to be explored. In this context, the present paper focuses on the role of SHGs formed under watershed development programme and their potential role in improving the welfare of the rural households. By doing so the present paper contributes to the existing literature on how the natural resources and environmental variables influence participation in SHGs and the impact of participation on household welfare.

II. STUDY AREA

The study area is Coimbatore district of Tamil Nadu state, India. The Coimbatore district is one of the largest districts of Tamil Nadu and is situated in the Western part of Tamil Nadu. The district has an aerial extent of 7,470 sq. km accounting for 5.74 per cent of the total geographical area of the state. The district lies between North latitude 10°13'00" to 11°23'30" and East longitudes 76°39'00" to 77°30'00". The district receives rain both in southwest and northeast monsoons. The northeast monsoon contributes the maximum of 328.2 mm during October to December. The average annual rainfall of this district is 647.2 mm from winter, hot weather, southwest monsoons and northeast monsoons. Agriculture has to depend largely upon minor irrigation projects, and other sources such as wells, rainfed tanks, etc. due to poor rainfall.

II.1 Watershed Development and Self-help Groups (SHGs)

The watershed development programmes involving the entire community and natural resources influence (i) productivity and production of crops, changes in land use and cropping pattern, adoption of modern technologies, increase in milk production etc.; (ii) attitude of the community towards project

activities and their participation in different stages of the project; (iii) socio-economic conditions of the people such as income, employment, assets, health, education and energy use; (iv) impact on environment; (v) use of land, water, human and livestock resources; (vi) development of institutions for implementation of watershed development activities; and (vii) sustainability of improvements.

To promote participation of local villagers in implementation of various watershed development activities, the community based organisations (CBOs) are formed. They include User Groups (UGs) and Self-Help Groups (SHGs). The UGs are homogeneous groups, which are responsible for the management and maintenance of structures created in the common lands of watershed. SHGs are homogeneous groups whose members share a common identity, such as agricultural labourers, landless households, women, shepherds and scheduled castes/tribes. These groups are formed for various income generation activities like goat rearing, cattle rearing, micro-finance thrift groups, and small shops, etc. The SHGs are formed mainly for the women members. The focus of the present paper is the SHGs.

The formation of SHGs has been made a mandatory in all watershed development programmes in the country. The Project Implementing Agency (PIA) constitutes SHGs in the watershed areas. Around 50 per cent of villagers who are directly or indirectly dependent on watersheds should generally be enrolled as members in the SHGs. The PIAs set up a revolving fund not exceeding Rs.1,00,000 to be given as seed money for vocational development by the SHGs at a rate not exceeding Rs.10,000 per SHG for undertaking income generating activities. This seed money must be recovered from the SHG members in a maximum of six installments on monthly basis. This could be reinvested in the same or other SHGs (Government of India 2003).

Unlike most of the SHGs formed under different programmes which act as microfinance thrift groups, the SHGs formed under watershed development programmes involved in diversified activities. They include income generation activities like goat and cattle rearing, small shops, tailoring, etc. Moreover, the groups involve in savings and lending to their own members. Of course, the participation in watershed development activities is rather limited.

II.2 Characteristics of Programme and Control Households

The general characteristics of the sample households show that the average size of the family in consumption units is worked out to 3.29 and 3.10 respectively for the members and control households (Table I). The average number of workers is 2.3 and 1.9 out of 3.8 and 3.6 for members and control households. The labour force participation rate thus comes out to 61.51 per cent

and 57.88 per cent respectively for the above households. The higher labour force participation is due to better scope for agricultural production, livestock activities and other off-farm and non-farm economic activities. It is obvious that the labour force participation rate among SHG member households is higher than the control households, implying that the access to other employment opportunities help women members to participate in the SHG activities.

TABLE I
CHARACTERISTICS OF THE PROGRAMME AND CONTROL HOUSEHOLDS

Particulars	SHG members		Control
	Functioning	Failed	
Number of respondents	325	50	375
No. of persons in the household	3.8	3.4	3.6
Household Size in consumption units ^a	3.29 **	2.96	3.10
Number of workers	2.3 * **	2.0	1.9
Labour force participation (%)	61.51 ***	63.77	57.88
Total value of assets (Rs.)	89471.49 ***	66847.00	59470.43
Educational level of the SHG member	8.7 ***	9.1	7.1
Educational level of the husband	9.8 ***	9.8	7.4
Age of the SHG member	38.8	36.9	39.1
Number of dependents	0.29	0.20	0.33
Number of children	0.21	0.16	0.31
Own dwelling (% of households)	100	100	100
Renovation of dwelling (Rs.)	863.08 ***	900.00	81.33

Source: Field survey during November 2006 – April 2007.

Note: Estimated 't' statistics. *** significance at 1% level; ** significance at 5% level; * significance at 10% level from the corresponding values of control households.

^aConsumption group

	Lusk Coefficient
Male above 14 years	1.00 consumption unit
Female above 14 years	0.83 consumption unit
Children 11 -14 years	0.83 consumption unit
Children 6 - 10 years	0.73 consumption unit
Children below 5 years	0.50 consumption unit

(Rao, 1983)

It is evidenced that almost all the households have own dwelling but with little variation in maintenance expenses incurred. The additional income earned and access to borrow capital help the SHG member households to make at least some renovation works. The renovation expenditures incurred by the households revealed that the SHG members spent Rs.863 to Rs.900, while control households spent only Rs.81.33 towards maintenance.

The total household income from all activities is higher in the case of member households than the control. The household income is worked out to Rs. 33,836.68 per year and Rs.28,353.13 per year respectively for member households and control households, which is 19.34 per cent higher than the income earned by the non-member households (Table II). Being bottom of the rural income scale, the households participate in farm and non-farm income activities as wage labourers to get additional income for their subsistence needs. Of the total household income, the agricultural wage earnings and non-agricultural wage earnings form the major sources of income. The per capita income is worked out to Rs.8,999.12 and Rs.7,854.05 for participant and control households, registering a difference of 14.58 per cent. Thus one can conclude that the SHG activities bring not only increased income of the households who participate in various income generation activities but also help them in asset building.

TABLE II
DIFFERENT SOURCES OF INCOME AND THEIR RELATIVE IMPORTANCE
AMONG RURAL LABOUR HOUSEHOLDS

(Rupees per household per year)

Particulars	SHG members		Control
	Functioning	Failed	
Crop production including own livestock	1588.22 (4.69)	0.00 (0.00)	1399.00 (4.93)
SHG income	662.56 *** (1.96)	354.32 (1.30)	0.0 (0.0)
Agri. Labour earnings	16965.48 ** (50.14)	21453.50 (79.00)	15994.29 (56.41)
Non -agri.wage earnings ^a	14620.43 ** (43.21)	5350.00 (19.70)	10959.84 (38.65)
Total household income	33836.68 *** (100.00)	27157.82 (100.00)	28353.13 (100.00)
Household size (number of persons)	3.76	3.42	3.61
Per capita income (Rs./year)	8999.12 ***	7940.88	7854.05
Value of assets (Rs.)	89471.49 ***	66847.00	59470.43

Source : Field survey during November 2006 – April 2007.

Note: ^a including the income from non-farm income generation activities like business, service sectors etc.

Estimated 't' statistics. ***significance at 1 % level; ** significance at 5 % level;

* significance at 10 % level from the corresponding values of control households.

III. METHODOLOGY

III.1 Data and Sampling

To fulfill the objectives, a multistage random sampling procedure was followed. In the study area, around 216 SHGs spread across 98 micro watersheds in seven blocks were formed. These SHGs were formed for a number of activities such as goat rearing, milch animals rearing, sweet stalls, textiles, rice shop, basket making, groceries, vegetables shop, and petty shops. A sample of 75 SHGs spread across 27 micro watersheds were randomly selected so as to cover SHGs of different activities covering entire geographical locations. While selecting the groups, the groups which are failed and ever existed have also been included in order to study the reasons for failure. Mostly a SHG comprises of 12 women members. For the purpose of the study, five women members in each SHG were randomly selected and studied. Thus, a total of 375 households who participate in SHG activities were selected. To make comparative study, an equal number of 375 women household members who do not participate in SHG activities were selected randomly and studied as control. The control households are homogeneous to the SHG members in caste, occupational class, and socio-economic conditions except participation in SHG activities. The homogeneity in terms of caste, occupation and socio-economic conditions plays a crucial role in bringing people together for meetings and other activities. The identical households who do not participate in the SHGs were listed. Among them the control households were selected randomly. This was done mainly to capture the effect of participation in SHGs on household income. Thus, a sample of 750 rural women households was studied for the purpose.

The data were collected at three levels viz., watershed level, SHG level and household level. Watershed level data were collected from the respective PIAs. The data pertaining to conditions of watershed like number of ponds, check dams, number of wells, cropping pattern, area under crops, afforestation, water resources potentials created, details on grazing land and other infrastructure facilities were collected from the records maintained by the PIAs and village administrative offices. Also, we had discussions with the local villagers regarding the conditions of watersheds, particularly the water level in the ponds, etc. The group level data were collected from the registers maintained by the SHGs. They include income and expenditure of the production activities of groups, savings and lending details, meetings organised, meetings attended by the members and characteristics of the SHGs, amount of revolving funds mobilised, and details of the activities involved. The household level data were collected from two types of respondents by personally administering interview schedule. The information such as (i) household socio-economic data including income, asset position, and consumption details, and (ii) women's participation in SHG activities were

collected. In addition, small focus group meetings were organised among the SHG members to assess the overall impact of SHG on income, consumption and poverty reduction. The data were collected during the period November 2006 to April 2007.

III.2 Participation in SHGs and Its Impact on Income

Method 1: Simple Mean Comparison

As our objective is to assess the participation in group activities and its impacts on the household welfare, simple comparison of key indicators was done. As the SHG member households and control households were randomly selected, a simple comparison of income and other indicators can provide unbiased estimate of the programme (Coady *et al.* 2001). The programme evaluation literature suggests that the comparison of mean differences would be a viable tool if the programme placement is random.

However, the watershed development programme is not randomly placed and also the SHGs are formed by not selecting the rural households randomly under watershed development programmes. These groups are target oriented and include rural households who are in the bottom of the rural income scale such as agricultural labour households, landless households, women, shepherds and scheduled castes/tribes. Since the households are not randomly selected, bias due to non-random programme placement arises (Baker 2000).

Method 2: Statistical Analysis

Model 1: Instrumental variable method

On the lines of the above discussion for estimating the impact of women participation in SHG activities on the welfare indicator namely the income (Rs/year/household), we controlled for the observed heterogeneity across households and estimated the following multivariate Ordinary Least Squares (OLS) regression model:

$$Y = \alpha + \beta X + \gamma P + U_1 \quad (1)$$

Where, Y refers to yearly income of the household (INCOME). The variable 'X' is the vector of household specific and contextual factors which affect the household income. These variables include educational level of the women SHG member (WEDN), educational level of the husband/head of the household (HEDN), number of workers (WORKERS), involvement in own crop production

activities (CROP), infrastructure development (INFRA)¹ and condition of the watershed (WATCONDN). The condition of watershed is measured by an index of different indicators such as irrigation intensity of the watershed village² cropping intensity of the watershed village³, and watershed eco-index⁴ (reflecting additional green cover created). It is assumed that the condition of watershed not only provides employment and increase the income level of cultivators and landless households, but also reduces the riskiness of the agricultural income. As the members of the SHGs are mainly the agricultural labourers and other rural landless labour households, better the condition of watershed village, better will be their income level. Hence, unwilling default or non-participation will be lower (Zeller *et al.* 2001). Thus, the better managed watersheds imply the favourable production environments, this will help smooth functioning of the groups, less social tension and more cohesion.

The error term U_1 is assumed to follow independently identical distributions. The variable P is a dummy capturing the household (i.e. women member) participation in SHG activities that is it takes value unity for the household who participates in SHG and zero for the control households.

As per the programme evaluation literature, the variable P cannot be treated as exogenous.⁵ To control for such possible endogenous selection of women members in the SHG activities, we therefore employ instrumental variable approach.⁶ This requires identification of a valid instrument variable i.e. one which is highly correlated with participation but not correlated with

¹ Defined as an index including length of roads, number of post offices, number of schools, number of hospitals and veterinary hospitals.

² Irrigation intensity is measured as a ratio of gross irrigated area to the net irrigated area and expressed in percentage.

³ Cropping intensity is defined as a ratio of gross cropped area to net cropped area and expressed in percentage.

⁴ Watershed eco-index is used to represent the fraction of green cover area in the watershed. The present study used induced WEI to represent additional area made green through watershed treatment as proportion of whole watershed area and expressed as percentage.

⁵ Exogeneity means that the right-hand side variables are determined independently of income and so they are uncorrelated with the error term in the income regression. Because women members of SHG activities are selected by the programme officials, SHG participation is not exogenous.

⁶ An instrumental variable is the classic solution for the problem of an endogenous regressor. An instrumental variable is an observable source of exogenous variations in programme participation (Baker 2000).

income.⁷ Here, the variable P is replaced with its predicted value derived from a probit regression of the following model.

$$P = \alpha_0 + \alpha_i H_i + \beta_i C_i + U_2 \quad (2)$$

Where, P is a binary variable, takes the value 1, if the household is participant in SHG; 0, if it is control households i.e. non-member households. H_i is the vector of household specific variables influence women member participation in SHG activities, and C_i is the contextual factors which influence women participation in SHG activities. The household specific variables included in the model are: educational level of the women SHG member (WEDN), educational level of the husband/head of the household (HEDN), number of dependents (DEPENDENT), and income from sources other than SHG activities (RESOURCE). The women participation is also influenced by the contextual factors like condition of the watershed (WATCONDN), infrastructure development (INFRA) and presence of other formal watershed organisations (FOWI). To implement the instrumental variable estimation, we need instruments that do not affect the outcome variable viz., income directly but which affect women participation in the SHG activities. As an instrument we choose the presence of other formal watershed organisations (FOWI). The model was estimated by two stage least squares method (2SLS).

Model 2: Heckman two-step selection model

The above model of instrumental variable method may some time restrictive in that it ignores the fact that women members who are more likely to benefit from SHG participation are in turn more likely to be observed members. To allow for such self-selection, we estimate the following Heckman's two step procedure (Coady *et al.* 2001).

To assess the impact of women's participation in SHG on income, the following model was estimated.

⁷ In other words, the instrumental variable is one which is correlated with the women participation in SHG activities but not already in the regression for income and is not correlated with the error term in the income equation, U_1 .

$$\text{PARPN} = \beta_0 + \beta_1 \text{WEDN} + \beta_2 \text{HEDN} + \beta_3 \text{DEPENDENT} + \beta_4 \text{RESOURCE} + \beta_5 \text{INFRA} \\ + \beta_6 \text{FOWI} + \beta_7 \text{WATCONDN} + \epsilon_i$$

$$\text{INCOME} = \mu_0 + \mu_1 \text{WEDN} + \mu_2 \text{HEDN} + \mu_3 \text{WORKERS} + \mu_4 \text{CROP} + \mu_5 \text{INFRA} + \mu_6 \text{WATCONDN} \\ + \mu_7 \text{MEMBERSHIP} + \mu_8 \lambda + \epsilon_i \quad (3)$$

The women member participation in SHG activities is expected to influence by various household specific variables and contextual factors.

First a Probit model was estimated to identify factors driving participation. This allows us to calculate a household specific selectivity variable (inverse mill's ratio, λ) with which we address the self-selection bias using the Heckman two step approach. The inverse mill's ratio, λ , which measures the probability of the household being a participator, is used to address self-selection bias.⁸ In the first step, a household specific self-selection variable λ was estimated with the following Probit model.

$$\text{Prob} (\text{PARPN} = 1) = \beta' K + \epsilon_i \quad (4)$$

$$\text{From which } \lambda = \varphi (\beta' K) / 1 - \Phi (\beta' K) \quad (5)$$

Where K is a set of variables explaining the participation decisions, φ and Φ are the probability density and cumulative distribution of the error term respectively. In the second step, λ is used as an explanatory variable in the income equation to account for bias in the estimation due to self-selection. The income equation was estimated by OLS method regressing the explanatory variables and Inverse Mills Ratio (IMR). The additional regressor controls for the part of the error term in the outcome equation that is correlated with the dummy variable for participation. The definition of variables and their descriptive statistics are presented in Table III.

⁸ The IMR is used as an additional regressor. It is calculated for each observation of the selected sample from the first stage of Probit estimation. If the coefficient of the IMR is found to be significant, sample selection bias is really exists and including IMR as an additional regressor is relevant and increases efficiency. Contrarily, insignificant effect of the IMR indicates no such sample selection bias is detected (Dutta and Magableh 2004).

TABLE III
**DEFINITION AND DESCRIPTIVE STATISTICS OF THE VARIABLES USED
 IN DETERMINANTS OF PARTICIPATION**

Variables	Definition of the variables	Number of observation	Mean	Standard Deviation
PARPN	Binary variable: 1, if the household participates in SHG; 0, otherwise	750	0.43	0.02
INCOME	Income of the household in Rs/year/household	750	30503.45	612.40
WEDN	Educational level of the women SHG member in years	750	8.33	4.44
HEDN	Educational level of the husband of SHG member in years	750	9.78	4.42
DEPENDENT	Number of dependents in the family (adults aged above 60 years and children below five years)	750	0.28	0.57
WORKERS	Number of workers in the household	750	2.11	0.03
RESOURCE	Income from activities other than SHG activities	750	32324.71	15677.98
CROP	Binary variable: 1 if the household involved in own crop production activities; 0, otherwise	750	0.16	0.02
WATCONDN	Condition of the watersheds in index	750	81.19	13.83
INFRA	Infrastructure development index	750	45.24	17.00
FOWI	Binary variable: 1 if the formal other watershed institutions present; 0, otherwise)	750	0.69	0.46
MEMBERSHIP	Binary variable: 1 if the household is a member in SHG; 0, otherwise	750	0.43	0.02

IV. RESULTS

IV.1 Factors Influencing Women Participation in SHGs

The women participation in SHGs is influenced by various household specific factors like educational level of women (WEDN), educational level of husband (HEDN), number of dependents (DEPENDENTS), income from sources other than SHG activities and presence of other formal watershed institutions (FOWI) (Col.3 of Table IV). These variables found to significantly influence the women participation on the expected line.

The education can have two different types of effects on participation in SHG activities. Education some times offers exit options and this is likely to reduce participation (Lise 2000). However, educated women members can be influential in the household and can participate in the group activities. If this happens, then participation in group activities is positively influenced by education. Similarly, educational level of husband encourages women participation in group activities. Thus, both the educational level of the women members and husband education positively influence the participation in group activities. Similarly, other income sources positively influence the women participation in group activities. As income from other sources like wages increases, the women members likely to participate more in the SHG activities in order to achieve increased saving and income generation.

The supra household factor namely the presence of formal watershed institutions (FOWI) like the watershed association, watershed committee, and other user groups in the watershed significantly and positively influences the women participation in SHG activities. This is mainly because prior experience in the village has a positive influence on participation in collective action (Baland and Platteau 1996). Similarly, the presence of other formal or informal watershed organisations (FOWI), such as watershed association, watershed committee, user groups, increases social interactions and the possibility of enforcing agreement (Baland and Platteau 1996, White and Runge 1995, Pender and Scherr 1999). The presence of such organisations is likely to influence participation in SHG activities when those organisations provide complimentary inputs (Pender and Scherr 1999).

IV.2 Impact of Participation on Household Income

Our interest is to know the relationship between women participation in SHG activities and its impact on household income (an indicator of household welfare). This issue is addressed by introducing women participation (PARPN) as an explanatory variable in the income regression. The results are presented

in Table IV. The results of the OLS estimation of factors influencing household income is presented in Column (2) of Table IV. The participation in SHG activities is found to significantly and positively influence the household income.

Besides, the household specific characteristics such as educational level of the husband (HEDN), number of workers in the household (WORKERS), and involvement in own crop activities (CROP) are the significant factors influencing household income. The condition of watershed (WATCONDN) is fairly a good indicator of the agricultural development of the village and opens up scope for wage employment in the watershed village. Since most of the households depend on the agricultural wage income for their livelihood, the significance of the environmental variable, WATCONDN, is crucial. Our analysis shows that the condition of watershed significantly and positively influences the household income.

Considering the issue of endogeneity in programme participation, we also employed instrumental variable technique and estimated two equations by two stage least squares method (2SLS). In the first stage, a probit model of women participation in SHG activities was estimated and then the predicted value of participation was included as an explanatory variable in the income equation. The results (Col. (3) and (4)) are presented in Table IV.

To control for self-selection issues, a Heckman two step procedure was employed. The results (col.5) from Table IV revealed that the income is influenced by husband education, number of workers in the household, involved in own crop production activities, condition of the watershed and membership in the SHG. The estimate of the inverse Mills' ratio in the regression model is statistically significant and has positive sign, suggests that participation in SHG activities and household income are positively correlated. Inclusion of Inverse Mills Ratio (λ) in the specification corrects for the selection bias and the significance of the other regressor (Pattanayak 1998).

The results suggest that the higher education level of head of the family i.e. husband education, number of workers in the family, crop production activities and better condition of watersheds enable the households to increase their income. The positive and significant IVMR implies that there exists sample selection bias and the estimation of Heckman two step procedures is a relevant one. The positive sign indicates that those who are more likely to participate in stage one of the SHG participation tends to enhance their income (Dutta and Magableh 2004).

TABLE IV
PARTICIPATION IN SHG ACTIVITIES AND ITS IMPACT
ON HOUSEHOLD INCOME

Variables	Income	Women participation	Income	Income
CONSTANT	27130.94 (6.745)	-1.1929 (-3.01)	11676.69 (2.503)	17510.36 (4.023)
WEDN	54.3887 (0.450)	0.0184 * (1.613)	-192.062 (-1.378)	-61.5221 (-0.477)
HEDN	212.9683 * (1.771)	0.0662 *** (5.242)	1021.00 *** (4.906)	727.982 *** (3.832)
DEPENDENT	..	-0.1593 * (-1.893)	..	..
WORKERS	2845.964 *** (4.182)	..	2660.941 *** (3.712)	2892.105 *** (4.326)
RESOURCE	..	0.000761 *** (2.645)	..	..
CROP	2779.24 *** (17.050)	..	1227.365 *** (10.460)	2563.498 *** (15.508)
WATCONDN	108.014 ** (2.932)	0.0009 (0.270)	94.2432 ** (2.427)	103.037 ** (2.846)
INFRA	12.6766 (0.419)	0.0002 (0.062)	51.3352 (1.614)	21.1225 (0.709)
FOWI	..	0.2528 ** (1.959)	..	..
PARPN	17721.2 *** (11.083)	..	46809.83 *** (6.091)	..
MEMBERSHIP	..	..	..	19438.79 ** (2.693)
IVMR	..	..	..	22400.3 *** (5.275)
Model	OLS	Probit	2 SLS	Heckman
Log likelihood function	..	-485.01	..	..
Chi squared	..	69.70 ***	..	..
Adjusted R squared	0.33	..	0.30	0.36
F Statistics	54.33 ***	..	38.43 ***	52.73 ***
Number of observations	750	750	750	750

Source: Field Survey 2006-2007.

Note: *** significance at 1 % level; ** significance at 5 % level; * significance at 10 % level.

Figures in parentheses indicate estimated 't' ratios.

IV.3 Do Participation in SHGs Matter in Improving Household Welfare?

It is expected that participation in SHG activities enables the rural households to earn more income, and improve social awareness and thus helps in achieving higher nutritional security. The percentage increase in income accounts for 19.34 per cent over the control households.

Analysis of pattern of consumption expenditure of the rural households revealed that per month per household consumption expenditure is worked out to Rs.2,569.17 and Rs.2,094.56 for the member and control households with a difference of 22.65 per cent (Table V). Of the total consumption expenditure, the food items account for 56.58 per cent and 43.42 per cent for non-food items in member households, where as for the non-member households it is 55.61 per cent and 44.39 per cent respectively for food and non-food items. The expenditures towards non-food items further reveal that the expenditure on education, medical seems to be higher among the member households when compared to control households. This clearly indicates that the access to cash flow, additional income generated and social interactions through participation in SHG activities not only help the households to acquire adequate nutrients, but also in uplifting the status of household and better health.

TABLE V
HOUSEHOLD CONSUMPTION EXPENDITURE IN RURAL HOUSEHOLDS
(Rupees per household per month)

Particulars	SHG members				Control	
	Functioning		Failed		Amount	%
	Amount	%	Amount	%		
FOOD						
Cereals	222.81	8.67	205.38	9.28	139.40	6.66
Pulses	228.64	8.90	168.52	7.62	173.57	8.29
Oils	230.41	8.97	206.39	9.33	252.47	12.05
Vegetables	118.18	4.60	102.82	4.65	98.89	4.72
Spices and Condiments	78.78	3.07	71.09	3.21	12.63	0.60
Meat and Chicken	142.07	5.53	96.54	4.36	77.94	3.72
Milk	270.46	10.53	290.88	13.15	227.87	10.88
Sugar	23.04	0.90	29.96	1.35	44.97	2.15
Egg	16.32	0.64	16.43	0.74	4.63	0.22
Beverages	115.88	4.51	120.72	5.46	123.41	5.89
Others	7.13	0.28	8.86	0.40	8.98	0.43
Total Food Expenditure	1453.72***	56.58	1317.59	59.55	1164.76	55.61
NON-FOOD						
Fuel	233.28	9.08	203.13	9.18	79.74	3.81
Cosmetics and toiletries	34.02	1.32	27.52	1.24	29.44	1.41

(Table V Contd.)

Particulars	SHG members				Control	
	Functioning		Failed		Amount	%
	Amount	%	Amount	%		
Clothing	149.58	5.82	130.00	5.88	148.59	7.09
Household maintenance ^a	195.05	7.59	121.47	5.49	160.84	7.68
Recreation	285.73	11.12	256.26	11.58	269.06	12.85
Education	81.18**	3.16	27.33	1.24	72.07**	3.44
Medicines	85.76	3.34	80.42	3.63	44.29	2.11
Festival	14.62	0.57	14.50	0.66	75.54	3.61
Others ^b	36.23	1.41	34.33	1.55	50.23	2.40
Total non-food	1115.45***	43.42	894.96	40.45	929.80	44.39
Total Household Expenditure	2569.17***	100.00	2212.55	100.00	2094.56	100.00

Source: Field survey during November 2006 - April 2007.

Note: ^a kitchen utensils, electricity, bulbs.

^b Includes expenditures on purchase of furniture, social obligations, services towards barber, tailor, dhoby, others.

Estimated 't' statistics. *** significance at 1 % level; ** significance at 5 % level;

* significance at 10 % level from the corresponding values of control households.

V. CONCLUSION AND POLICY RECOMMENDATIONS

The study finds mixed evidence of women participation in SHGs activities. The participation helps in enhancing the households' income and improving welfare. It is evidenced that the women members participate in various activities such as meetings, group saving, production activities and monitoring of various group activities.

Educational level of the women member, educational level of the husband, income from sources other than SHG activities, supra household level factors like condition of the watershed, infrastructure development of the watershed and presence of formal watershed institution significantly influence the women participation in group activities. Thus, our policy focus should be tilted towards development of infrastructure in the rural areas, women empowerment through ensuring literacy, and ensuring sustainability of watershed institutions or village panchayats which could complement resources. This will help in a big way to ensure more women participation in SHGs and collective action in the rural areas.

Our results support that the public policies geared towards increasing women's participation in SHGs generate substantial income and have positive impact on household welfare in many ways. The quantity and quality of food consumed, the health of household members, and children's education

have improved. Thus, the institution building contributes greatly to improving household welfare. Therefore, continuing public support for the expansion of these SHGs appears crucial to achieve poverty reduction.

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