INCLUSIVE GROWTH THROUGH MICROFINANCE AND ENTREPRENEURIAL TRAINING

IMPACT EVALUATION OF A SELF-HELP GROUP PROGRAM: EVIDENCE FROM SOUTH INDIA

FINAL REPORT

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AUTHORS: MISHA SHARMA & SURAJ JACOB

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List of Abbreviations

BoP	Base of Pyramid
DID	Difference in Difference
HIH	Hand in Hand
SHG	Self Help Group formed as part of the program
ITT	Intention to Treat
NABARD	National Bank for Agriculture and Rural Development
NGO	Non-Governmental Organization
RCT	Randomized Controlled Trial
SBLP	Self-Help Group Bank Linkage Program

SHG	Self-Help Group
SHPI	Self-Help Group Promoting Institutions
TOT	Treatment on Treated

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Executive Summary

Despite rapid economic growth, India accounts for the largest number of people living below the poverty line, with 22% of the population or 270 million people living on less than $2 per day (World Bank, 2016).[1] Access to formal financial services can play a vital role in facilitating inclusive development and reducing inequality in society.[2] It provides vulnerable sections an opportunity to save and create wealth, to borrow and engage in income-generating activities, to mitigate shocks, and thus improve their quality of life.

In this context, the Self-Help Group (SHG) model in India emerged as a powerful platform by providing access to formal financial services to unbanked and under-banked, especially rural and poor women, who are least likely to gain access and use formal financial service. The SHG movement was primarily led by National Bank for Agriculture and Rural Development (NABARD) with several NGOs aiming to mobilize and organize rural poor into self-sustained groups. However, the program gained momentum in 1992, when NABARD linked a small number of SHGs with banks under the Self-Help Group Bank Linkage Program (SBLP) so as to provide access to formal financial services.

While there have been several empirically rigorous studies on the impact of microfinance on poor and low income households, very little empirical evidence exists on the impact of SHG-based program on the socio-economic lives of poor. This study assesses the impact of a SHG based microfinance model on the overall well-being of low income households in terms of household's investment capacity and consumption, occupation and income profiles, women's bargaining power within the household and their financial behaviour in terms of saving and credit patterns.

The study was conducted in partnership with Hand in Hand India, who implemented the SHG program, consisting of three arms of intervention, that of, group formation, training and loan disbursement. The study uses a Randomized Controlled Trial (RCT) approach to examine the impacts of combined access to financial services and business training in three districts of Tamil Nadu on a wide set of socio-economic outcomes. The randomized design of this impact evaluation enables us in understanding whether micro credit combined with entrepreneurial training is effective and if so, to what extent. The study also seeks to explain the household characteristics that explain why some take up micro credit, while other don't.

Overall results from the study suggest that the implemented SHG program is a powerful tool in mobilizing rural households to save and acquire loans from formal sources, thus formalizing financial services for the poor. SHGs act as an important platform for achieving financial inclusion for rural women belonging to low income households. Results also indicate that a holistic SHG program comprising not just of group formation and loan disbursement, but of business and skills training, makes group members more likely to start and expand businesses. It also helps make them more likely to reinvest their profits, thereby promoting self-employment and opportunities to diversify their income, and increasing their welfare overall.

[1] India's Poverty Profile by The World Bank- http://www.worldbank.org/en/news/infographic/2016/05/27/india-s-poverty-profile

[2] Overview of Financial Inclusion by The World Bank- http://www.worldbank.org/en/topic/financialinclusion/overview

Rationale and Motivation

Despite rapid economic growth in India, a large number of households continue to remain excluded from its development story: India accounts for the largest number of people living below the poverty line, with 22% of the population or 270 million people living on less than $2 per day (World Bank, 2016).[3] Approximately 80% of India's poor live in rural areas, with self-employment and casual labour being the main source of income. Indian poor own fewer assets and lack access to basic infrastructure such as water and sanitation, fuel and light, education and health, which are pre-requisites for social and economic well-being.

Access to formal financial services can play a vital role in facilitating inclusive development and reducing inequality in society.[4] It provides vulnerable sections an opportunity to save and create wealth, to borrow and engage in income-generating activities, to mitigate shocks, and thus improve their quality of life. Financial Inclusion has been identified as one of the key enablers in reducing poverty and boosting prosperity and hence has become a priority for policymakers, regulators and development agencies, world over. Recognizing the potential of financial inclusion in positively impacting the lives of poor, the Indian Government too has actively taken steps over the last few decades to increase access and use of formal financial services among low income and poor households.

Since independence, the Indian Government has always emphasized the links between financial inclusion and economic growth through the creation of nationwide network of rural cooperative banks in the 1950s, followed by nationalization of commercial banks in the 1960s and an aggressive drive through the 1970s and 1980s to expand rural banking.[5]

However, financial services for the poor, in India, truly evolved in the 80's and 90's with the formal sector for financial services expanding by including not just the traditional commercial banks, regional rural banks and cooperative, but also, innovative financial channels in the form of microfinance institutions and SHG models with the aim of providing financial services to the Base of the Pyramid (BoP) population. Specifically, the SHG movement aimed to mobilize and organize rural poor into self-sustained groups and was led by National Bank for Agriculture and Rural Development (NABARD) along with several Non-Governmental Organizations (NGOs). The program gained momentum in 1992, when NABARD linked a small number of SHGs with banks under the Self-Help Group Bank Linkage Program (SBLP) so as to provide access to formal financial services. Today there are 7.9 million savings linked SHGs with a total savings of INR 137 billion as of March 2016.[6] SHGs in its evolved form are seen as more than just a conduit for credit- they also act as a delivery mechanism for various other services ranging from entrepreneurial training, livelihood promotion activity and community development programs.

[3] India's Poverty Profile by The World Bank- http://www.worldbank.org/en/news/infographic/2016/05/27/india-s-poverty-profile

[4] Overview of Financial Inclusion by The World Bank- http://www.worldbank.org/en/topic/financialinclusion/overview

[5] Do Rural Banks Matter? Evidence from Indian Social Banking Experiment (Burgess & Pande, 2005)- http://econ.lse.ac.uk/staff/rburgess/wp/aer.pdf

[6] Inclusive Finance India Report, 2016- https://us.sagepub.com/en-us/nam/inclusive-finance-india-report-2016/book257789#description

Given the large focus on financial inclusion in India and the enormous amount of resources that have been invested in promoting financial services of the poor, it is important to examine the impact that financial inclusion has on the socio-economic livelihoods of the poor. It is important to recognize that financial inclusion is only a means to an end and not an end in itself and thus understanding the true benefits of access to financial services remains of paramount importance. While there have been several empirically rigorous studies on the impact of microfinance on poor and low income households, very little empirical evidence exists on the impact of SHG-based program on the socio-economic lives of poor. This study assesses the impact of a SHG based microfinance model (comprising of three key components, that of, group formation, training and loan disbursement) on the overall well-being of low income households in terms of household's investment capacity and consumption, occupation and income profiles, women's bargaining power within the household and their financial behaviour in terms of saving and credit patterns.

Evidence on impacts of SHG program will help contribute to the larger development debate on impact of access to financial services on socio-economic indicators of household, albeit using a SHG based model. However, given the uniqueness of the study in terms of a SHG based intervention that not just focuses on group formation but also emphasizes on the need for business training and subsequent micro loans to be invested in income generating activities, the research will allow us to make relevant policy recommendations broadly around the impact of SHG program on business generation and expansion and household finance, women-empowerment and the ways in which the program can be enhanced to achieve maximum impact for rural women from low income households.

Evidence on Impact of SHG Program

The self-help group (SHG) program, which began as a women's empowerment initiative in the 1980's, added a financial component in 1992, when a NABARD initiative linked a small number of SHGs with banks.[7] As the SHG movement has extended its reach across India, the initiative has helped incorporate rural and poor individuals, particularly women, into the development process and has helped improved their overall well-being. This literature review scans the research that investigates the effects of SHG on social and economic indicators, both at an individual and household level as well as effects on women empowerment and overall livelihoods indicators.

Over the last three decades, the SHG movement has increasingly gained force across India as a way of providing rural-poor women a platform for mobilizing socio-economic resources. As of June 2016, there are over 7.9 million savings-linked SHGs, covering approximately 2% of the total number of households in India. Female groups, exclusively account for 86% of SHGs. SHG savings have accumulated to 137 billion rupees with an average growth rate of 24% annually. Additionally, 1.83 million SHG loans are outstanding worth 373 billion rupees.[8].

The evidence on the impact of SHGs on women empowerment has been mixed so far. While some of the earlier studies failed to recognize any relationship between microcredit, poverty and empowerment, when additional methods of empowerment were considered, outside of economic and financial parameters, women empowerment improved noticeably (Burra et al, 2005). Examples of alternative channels were establishing grain banks, watershed programs and women's own banks within SHGs and savings groups. When SHGs were supported across different types of programs, women reported improved access to economic resources and basic needs, increased mobility and greater control of income generated.

More recent studies have been optimistic about SHGs ability to significantly improve women empowerment (Swain and Wallentin, 2007). The general narrative is that women become more comfortable with handling money and making independent financial decisions, which in turn improves solidarity, social networks, and respect from the household and other community members (Brody et al, 2016). Not surprisingly, SHG involvement improved the likelihood of women's election to local government bodies (also known as *Panchayati Raj Systems*). Combining training, awareness raising and other activities with SHG membership further influenced the impact on empowerment.

The financial and economic impact of SHGs has been convincingly positive, however. Saving, income and borrowing generally increase after members have been involved in an SHG (Puhazhendi & Satyasai, 2000). As individuals generally allocate loans to income-generating purposes, SHG members have subsequently recorded an increase in assets attributed to joining groups. On a household level, studies suggest that SHGs have had positive impacts on consumption smoothing, diversification of income and nutrition through

[7] Banking on Self-Help Groups: Twenty Years on, (Tankha, 2012) https://www.microfinancegateway.org/sites/default/files/mfg-en-paper-banking-on-self-help-groups-twenty-years-on-2012.pdf

[88] Inclusive Finance India Report, 2016- https://us.sagepub.com/en-us/nam/inclusive-finance-india-report-2016/book257789#description

increased calorie intake (Deininger & Lui, 2009). As a result, SHGs have contributed to lifting those involved out of poverty, with one study noticing poverty rates reducing from 42% to 22% after members had joined SHGs (Puhazhendi & Satyasai, 2000).

However, there is concern that SHG are failing to include the poorest individuals in their programs. For example, fewer poorer women are perceived to participate in SHGs, leading to concerns surrounding the ability of SHGs to liberate the poorest of the poor. As the highest dropout rate for SHG membership is also amongst the very poor, SHGs ability to include the poor is hindered further (Tankha, 2012).

With regard to the performance of the SHGs, NGOs promoted groups performed better than bank promoted groups (Swain & Varghese, 2008). The relationship between the NGO and bank is the most important for the effect of training on income generation. Of the three SHG linkage models, Swain et al identify banks providing credit and NGOs providing organization support to SHGs to be the most effective structure for harnessing the positive effects of training. This linkage model proves to be most effective because it utilises the comparative advantages of both institutions. As expected, older groups also perform better. Participation in trainings, however, improved asset accumulation but had no effect on income generation (Swain & Varghese, 2008).

Overall, research on the impact of SHGs has discovered significant positive effects on both financial and economic indicators such as savings, borrowing and income. On women empowerment, one of the most recent and holistic systematic review[9] of impacts of SHGs suggests that economic SHGs have positive effects on various dimensions of women's empowerment, including economic, social and political empowerment. However, there are important variations in the impact of SHGs on empowerment that are associated with program design and contextual characteristics (Brody et al, 2016).

Although there have been several studies such as the ones mentioned above, that have looked at the impact of SHG programs on an array of socio-economic factors, the studies have mostly applied non-experimental or quasi-experimental designs to test the SHG effects. Our study is one of the first to use an experimental technique, which is both robust and rigorous in establishing the causal impact of the SHG program on the livelihoods of the study participants. In this context, our study is the first scientific impact evaluation (to the best of our knowledge) of a SHG program in India.

[9] Economic SHG Program for Improving Women's Empowerment: A systematic review- http://www.3ieimpact.org/en/evidence/systematic-reviews/details/236/

Study Context

Research Objectives

This study titled '*Inclusive Growth through Microfinance and Entrepreneurial Training: An Impact Study'* investigates the impact of an SHG-based microfinance and entrepreneurship training program which was implemented by a Tamil Nadu-based NGO, Hand in Hand (HIH India) on the overall well-being of rural women. Under this program, women form savings groups, receive entrepreneurial training and borrow from HIH for business activity. Please note, however, that Hand in Hand India provides SHG programs based on a model of implementation different from the program which is evaluated in this report. Consequently, this report should be viewed from the perspective of an impact assessment of a general SHG scheme.

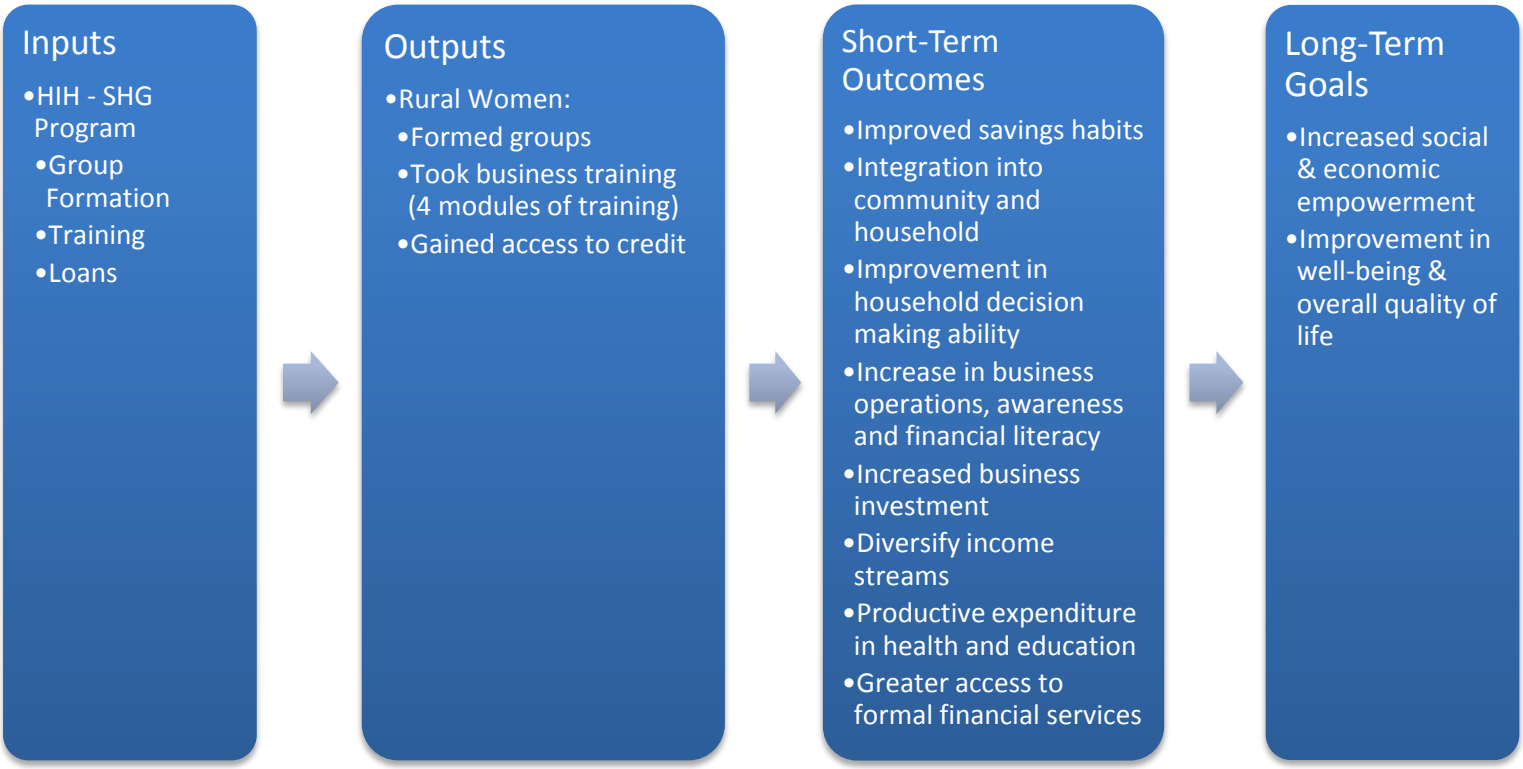
Using an experimental design, the project studies the impacts of combined access to financial services and business training in three districts of Tamil Nadu- Sivagangai, Virudhunagar and Tuticorin on a wide set of socio-economic outcomes such as consumption, savings and borrowings, business creation and profits, vulnerability to shocks, education, health and sanitation, domestic violence, and intra-household decision making. The randomized design of this impact evaluation enables us in answering the following questions:

- Is micro-credit combined with entrepreneurial training effective? Does it help poor households increase their well-being, consumption and business profits, and does it have positive impacts on education, health, and women empowerment?
- To what extent is the program effective and how do the impacts differ for different segments of the population, in particular the poorest, the least educated, and those without a business?
- What are households' characteristics that explain why some take-up micro-credit, while others don't?

Theory of Change

Our theory of change is described in the following graph. We hypothesize that providing training and loans to SHGs will reap positive returns at several levels. Since the program implementation is divided into three broad categories, that of, group formation by bringing together rural women from same villages into common groups, providing four modules of training and lastly providing loans for their business activity, we believe that each of these parts of the program would have parallel effects on the individuals participating in the study. Upon take up of the program, the study hoped to see short term positive outcomes across income and expenditure patterns, savings and credit behavior and increase in business activity thereby leading to smoothening of consumption, ability to cope up with shocks and investment in productive streams such as education and health. We hypothesize that these short term outcomes would in turn lead to achieving long term goals pertaining to social and economic empowerment and improvement in the overall quality of life.

Figure 1: Theory of Change



Research Methodology

The study uses a randomized controlled trial (RCT) design to evaluate the impact of the SHG program. RCTs are considered to be the golden standard[10] for an impact assessment since it allows us to isolate the causal effect of the program on the outcome variables of interest due to the random assignment of study participants into the treatment group as well as the control group, therefore minimizing the selection bias that would otherwise occur if the participants themselves chose to enter the group they preferred. The random assignment ensures that the two groups are comparable before the intervention, such that any differences post intervention can be attributed to the program itself, thereby allowing us to rigorously evaluate the nature and extent of the impact of the program. The randomization for this study was done at the village level such that some villages were randomly selected to receive the treatment versus those villages that did not receive the treatment.

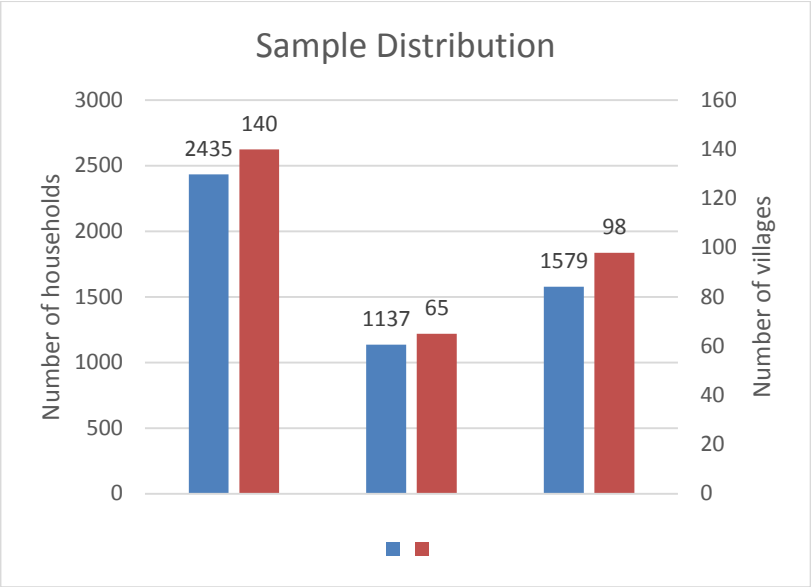
Sample Size and Location

The study was conducted in 3 districts in the state of Tamil Nadu, namely, Sivagangai, Virudhunagar and Tuticorin. A total of 303 villages were covered under the study and were assigned randomly into treatment and control groups. A total of 5061 households were then selected from these villages to constitute as our study participants[11].

[10] Using Randomization in Development Economics Research: A Toolkit- https://economics.mit.edu/files/806

[11] In the Baseline surveys, 5442 households across 315 villages were covered, however sue to logistical considerations households from 12 villages were removed from the study bringing the number of households

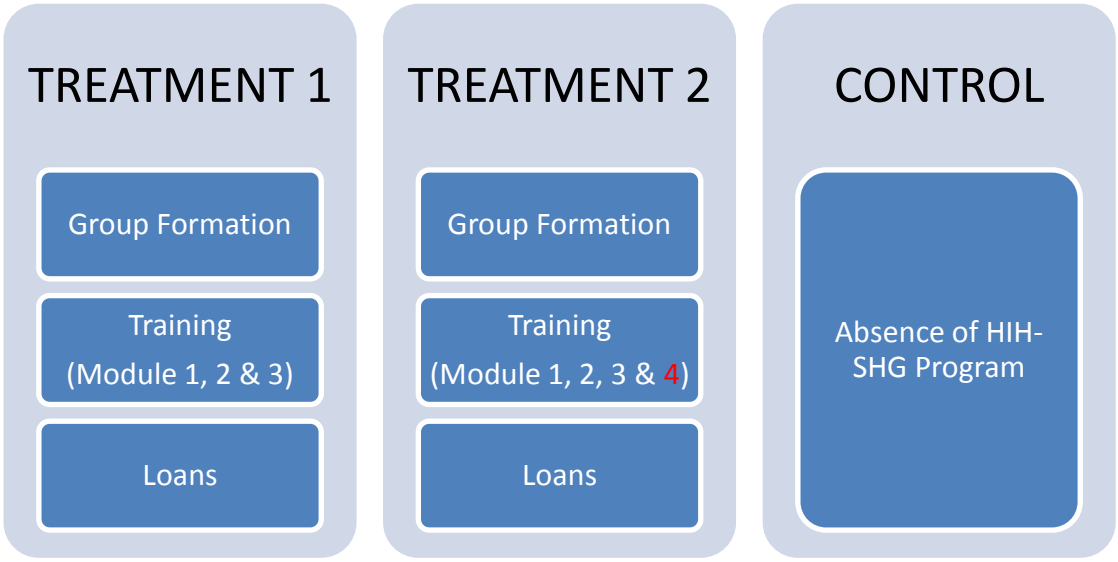
Figure 2: Sample Distribution



Intervention Design

The intervention program provided to the treatment group was designed into three arms categorized as group formation, training and loan disbursements. The treatment arm was further categorized into two groups, that of, treatment 1 and treatment 2, with the only difference between the two groups being an additional module of training.

Figure 3: Study Design



covered to 5061 households in 303 villages. Balance checks were carried out on these 5061 households to ensure the validity of comparison between the treatment and control groups.

Details of Implementation

We partnered with Hand in Hand India[12] (HIH) for the implementation of the SHG program. HIH was founded with the objective of alleviating poverty through job creation and integrated community development. The study programme was unique in the sense that it not just provides loans to SHG's, but also provides business training to these groups, in order to make efficient and profitable use of these loans. As our implementation partner, HIH was directly responsible for administering the intervention within the study districts.

A brief linear summary of each step of the intervention is as follows:

- SHG group formation in each treatment village.
- Module 1 Training: Given immediately following group formation, this module focuses on the basics of SHG membership and initiates the mandatory savings period. It is administered over a 2-day period.
- Module 2 Training: Given 2 months after group formation, this module focuses on enterprise development, opportunity identification, entrepreneurial competencies, and viability of the enterprise, financial analysis and loan. It is administered over a 2-day period.
- Module 3 Training: Given 3 months after group formation, this module focuses on business training. This component includes training on maintaining books of accounts, basics of operating a business, etc. It is administered over a 2-day period. Completion to this level is a requirement for eligibility to the first loan cycle.
- Module 4 Training (Treatment 2 Only): Given 5 months after group formation, this module is effectively a repeat of Module 3, providing more intensive training on the same topic. This module is administered over a 2-day period.
- Loan Cycle[13] 1: Given 6 months after group formation, first loan cycle consists of INR 10,000 loan with a 12-month repayment term
- Loan Cycle 2 and 3: Subsequent loans are given if and when required by the SHG member, provided the first loan cycle has been paid off.
- Skill Training: Provided 4-5 months after group formation, this module is administered only for SHG members with an expressed interest in a specific trade for which HIH has available trainers (e.g. tailoring, animal husbandry, etc.)

Timeline and Project Activities

The study spanned across a period of 6 years with three rounds of data collection at different stages of the project and the intervention period lasting for 3 years due to operational challenges on the ground in terms of difficulty in implementing the SHG program due to lack of credit and stiff competition in the study areas by other NGOs and Government agencies providing similar services.[14]

[12] HIH Website- http://www.hihindia.org/

[13] The loans follow a monthly repayment schedule with an annual interest rate of 26%.

[14] Refer to the Limitations section to learn more about the challenges in the implementation of the program

Figure 4: Study Timeline

A brief linear summary of different activities undertaken during the timeline of study is listed below:

- Village Panchayat Level Survey- Conducted among 315 villages, at the start of the study with the objective of assessing the socio-economic conditions of the study village as a whole and mapping the level of infrastructure available in the study areas.
- Baseline Household Survey- Conducted among 5061 households, 2 months after the to study the level of socio-economic patterns of study households before the intervention of the program
- SHG Intervention- Implemented 1.5 years after the start of study among treatment households over a period of three years to study the impact of the program
- Midline Survey- Conducted among 1595 households, 3.5 years post the intervention of the program to short term impacts of the SHG program on socio-economic variables of interest.
    - Household Survey- Conducted with the objective of assessing household level impacts of the SHG program
    - SHG Survey- Conducted to provide descriptive and qualitative information on the quality of SHGs, functions they perform, benefits they perceive and program components undertaken in terms of joining groups, attending training and acquiring credit.
- End line Survey- Conducted among 4356 households, approximately 4.5 years post the intervention of the program to assess the long term impacts of the SHG program on socio-economic variables of interest.
    - Household Survey- Conducted with the objective of assessing household level impacts of the SHG program
    - SHG Survey- Conducted to provide descriptive and qualitative information on the quality of SHGs, functions they perform, benefits they perceive and program components undertaken in terms of joining groups, attending training and acquiring credit.

Descriptive Statistics: Endline Survey

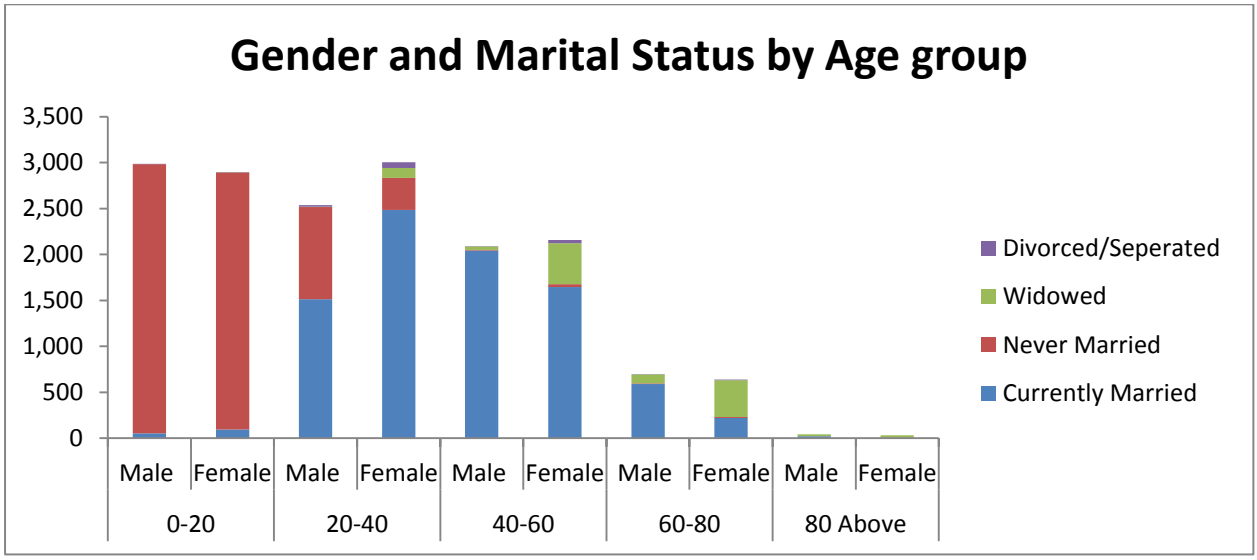
Sample

Between the baseline and endline survey rounds, there was an attrition of 14% on the original sample of 5061 households, resulting in an endline sample size of 4356 households. The chief reason for attrition was noted to be households not wishing to participate in the survey rounds following the baseline. Statistical balance checks conducted using the baseline data after removing the households which were not a part of the endline surveys confirmed that despite subsequent attrition the treatment and control groups were comparable at the time of the baseline allowing for the use of the empirical analysis explained in the research methodology section.

Household Demographics

The household survey covers a household population of 17082 individuals of which 6292 are adult females. The average household comprises of 4.5 members with 2 adults and 2 children. 35% of the household population is below the age of 20 and 8% is above the age of 60. Unsurprisingly, 98% of the sample below the age of 20 is unmarried and 60% of those above the age of 20 are currently married. The sex ratio of our sample is 1045 females for every 1000 males. This is consistent with the sex ratios reported for our study districts as per the 2011 census, even though it is higher than the average sex ratio of Tamil Nadu.[15]

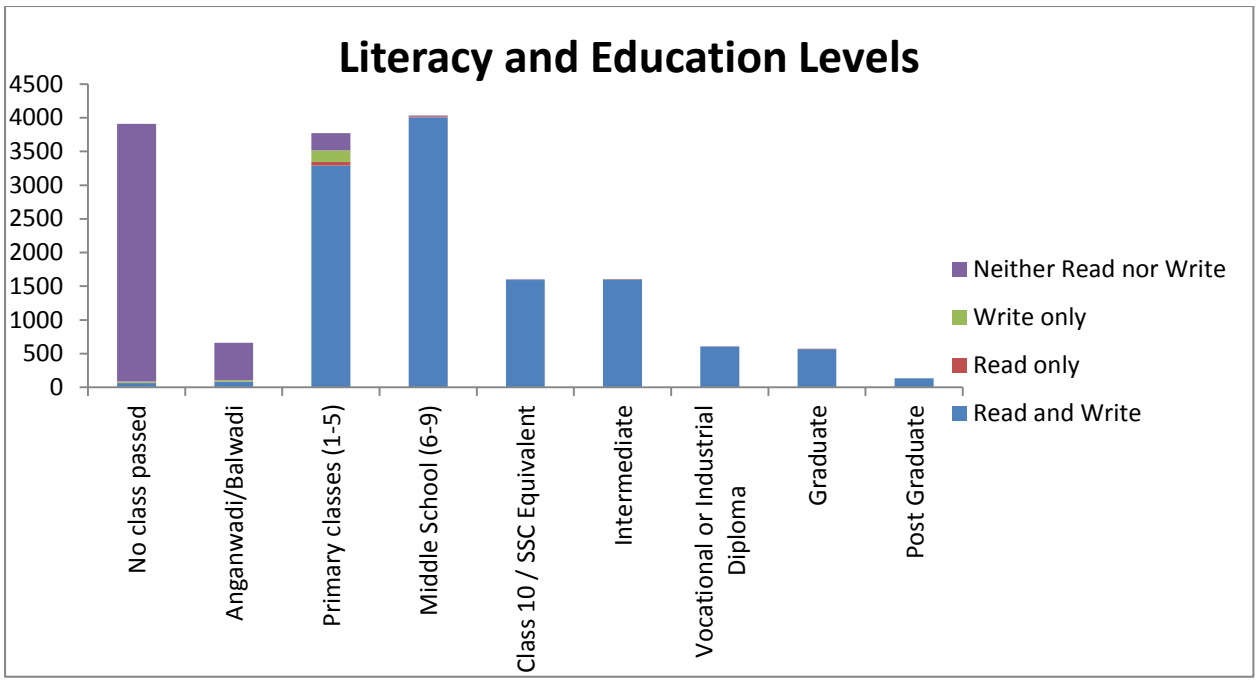
Figure 5: Gender and Marital Status of Household Sample



23% of the sample population has had no formal education of any kind, while 28% can neither read nor write i.e. approximately 6% of household members with some level of primary schooling are still unable to read or write. However, of the 73% of the population that has had formal schooling, 22% have attained an educational status beyond matriculation or 10th grade and 90% are able to read and write.

[15] [15]The sex ratio is the number of females per 1000 males. The sex ratio for Sivagangai, Tuticorin and Virudhunagar are 1000, 1024 and 1009 females per 1000 males respectively as per 2011 Census data. The sex ratio for Tamil Nadu in 2011 was 995.

Figure 6: Literacy and Education Levels of Household Sample



Men are 1.2 times more likely than women to be able to read and write and women are 1.8 times more likely to be unable to read or write. The male and female literacy rates[16] are 78% and 63% respectively, similar to national estimate of 82.14% for men and 65.46% for women as per the government census of 2011. Tamil Nadu is the 14th most literate state in India, with a literacy rate of 80.3% as per the 2011 census.

Occupational Structure

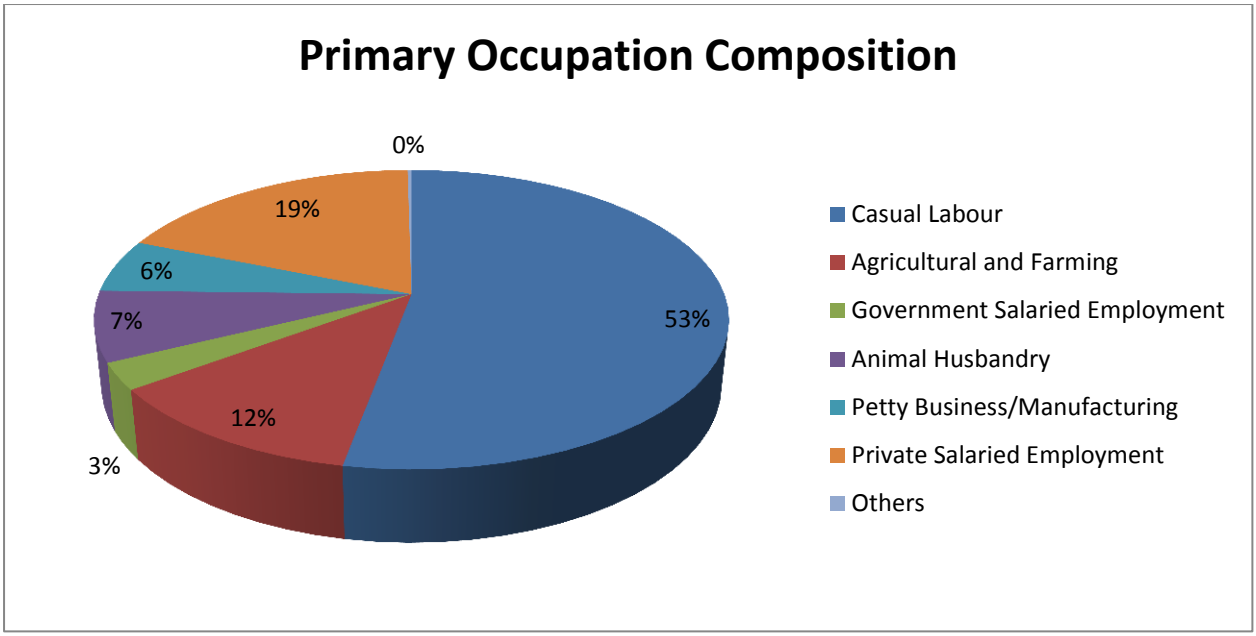
In this section, we take a look at the occupational structure of the sample of which 69% of the adult population reports being employed. Furthermore the male labor force participation rate[17] at 74% is higher than the female equivalent which is 64%. The age dependency ratio[18] of this sample is 41 dependents per 100 working age population which is lower than the all India average of 52 dependents per 100 as per World Bank data from 2013.

[16] The male and female literacy rate were calculated using the following formula – males/females who can read and write (7 years and above)/total male/female population(7 years and above)

[17] The labour force participation rate is the proportion of the population above the age of 15 that is economically active.

[18] Age dependency ratio is the ratio of dependents--people younger than 15 or older than 64--to the working-age population--those ages 15-64 and calculated for this sample as follows (5005/12088 *100)

Figure 7: Occupation Composition of Household Sample



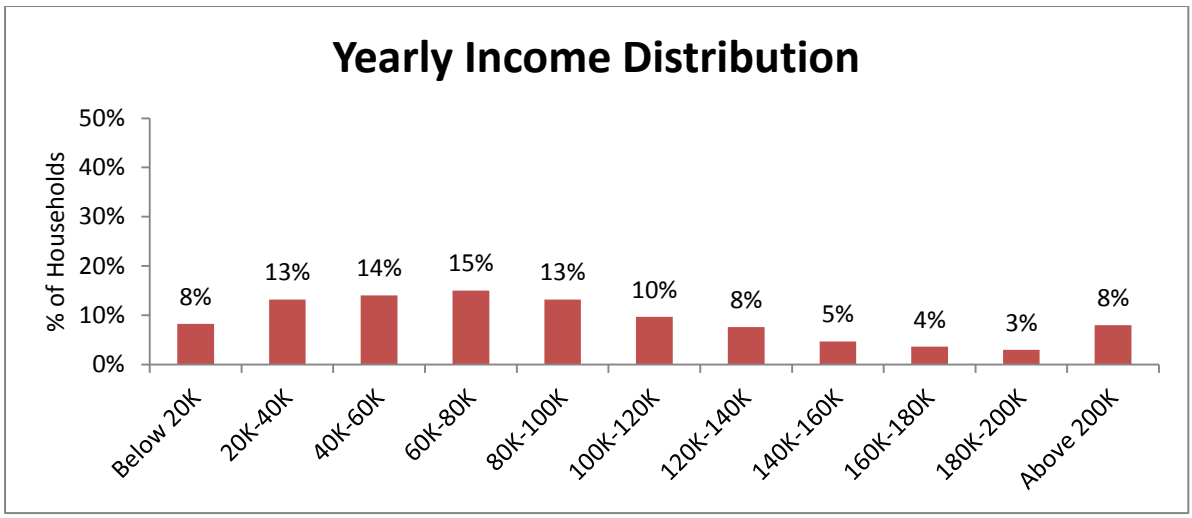
The majority (52%) of the working sample is engaged in casual labour. This category includes individuals who work for daily wages in matchbox factories, cloth mills, construction sites, cement factories, agricultural land and those who work under the government's MNREGA scheme. The second most prevalent occupation involves individuals who cultivate their own agricultural land (12%). 15% of the working population reports being engaged in a secondary occupation.

Income and Expenditure

The average annual income for a household is INR 99,536 and the median annual income for a household is INR 79,910. 63% of the households earn a yearly income below 1 lakh and 8% earns below INR 20000 a year[19]. 8% of the households earn more than INR 2 lakh a year.

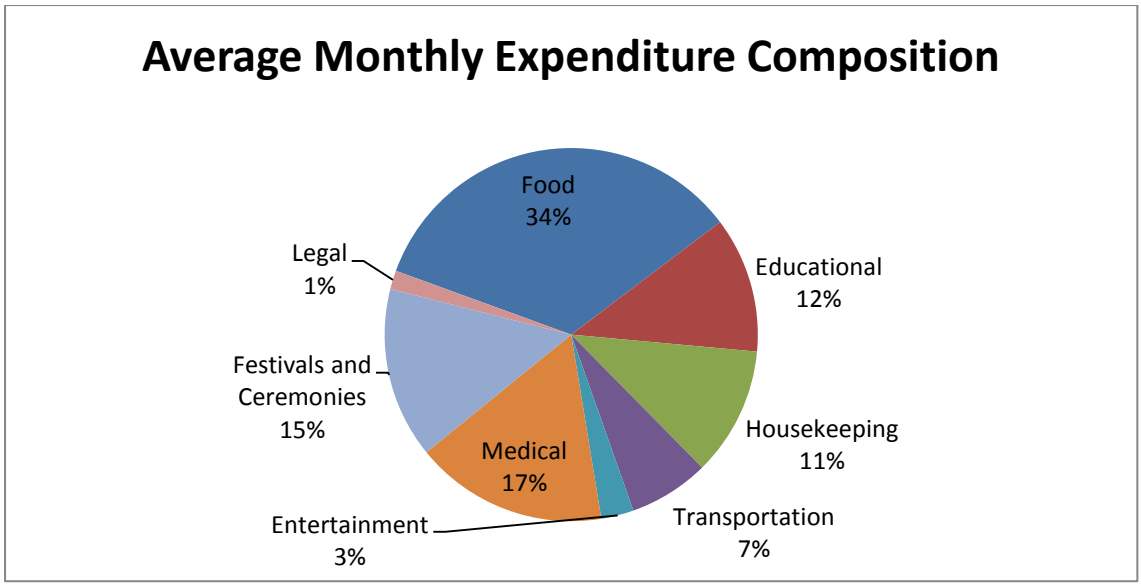
[19] The average annual income for a household was estimated as INR 35,519 in the baseline and INR 98064 in midline. However it needs to be noted that the income data and analysis in the baseline did not include certain income groups as compared to the midline and endline datasets and also had more noise in the data. Thus, readers are cautioned from interpreting the increase in average household incomes from baseline and endline as a rise in household income over time as the two variables are incomparable due to differences in constitution.

Figure 8: Annual Income Distribution of Household Sample



The data indicates that in a month households allocate 34% of their total expenditure on food expenses alone (INR 2,926). Interestingly, households tend to spend more on festivals and ceremonies than educational expenses that unlike the former have long term positive impacts on the household's economic future. This is consistent with recent studies on the economic lives of the poor that estimate that the Indian median rural household spends 10% of its annual budget on festivals (Banerjee, Duflo, 2011).

Figure 9: Average Monthly Expenditure Composition



Financial Inclusion – Savings

44% of the surveyed households report saving money via formal or informal means. Of the households that report to have savings, the average number of formal savings accounts is 1, with 5% of this group having more than 1 savings account.

Households primarily save to prepare for emergencies (63%), social and food security (42% and investment in education (41%). Households also save for social affairs like marriages and

festivals (20%), far more than they save for more productive pursuits like asset building (2%)[20], starting their own business or expanding on an existing business, indicating a tendency to spend more on leisure goods. This is consistent with Banerjee's (2010) finding that extremely poor households spend a large part of their income on festivals.

The 56% households that do not save cite the lack of extra money to save as the primary reason why they don't invest effort on a formal savings account – the remaining attribute it to the lack of saving opportunities closer home, the lack of procedural knowledge to formalize savings and even the lack of interest. Households that do not systematically save typically, in the event that they have extra money, tend to either invest in their existing businesses, pay off their debts, buy jewellery (which is considered a form of investment), and buying essential commodities in large quantities to stock for the future.

Financial Inclusion – Loans

73% of the surveyed households responded positively to having one or more outstanding loans with the average number of outstanding loans being 1.7. On average households owe INR 84,688 and INR 74,181 in the form of formal and informal loans respectively**.** Within the formal sector, commercial banks are the most popular source of credit (31% of total loans taken) followed by cooperatives (10% of total loans taken), self-help groups (9% of total loans taken) and microfinance institutions (5% of total loans taken). The informal sector remains a huge source of loans for households, with moneylenders being the source of 30% of the loans followed by individual sources like relatives, shopkeepers, clients and employers who constitute 12% of the lenders. On average households

The households tend to take on a major proportion of loans to finance household expenses (50%), specifically to smooth household consumption and cash flow, health expenses and social ceremonies like marriages. Furthermore, 15% of the loans were taken for home improvement or repair while only 7% of the loans undertaken were for business purposes.

27% of the surveyed households did not have outstanding loans of any kind. Amongst these households, 92% report not needing a loan.

Household Businesses

Of the households surveyed, 45% report having at least one business with the average number of businesses in a household being 1.24. Among the business owning households, 59% report having agricultural businesses and mostly involve the cultivation of the household's own land. On the other hand, 44% of the group are engaged in animal husbandry. A minor portion of the households are involved in businesses like wholesale grain trade (5%), tailoring (2%) and petty shops/retail trade (1%).

Households have access to a wide variety of sources to start their businesses – formal loans from banks and microfinance institutions, informal loans, social networks and government schemes. Also, some businesses are inherited from previous familial generations. Using household savings or pension (31%) is evidently the most popular mean of acquiring capital in our sample, closely followed by inheritance (29%) and informal loans (19%). Only 1 in 10 businesses used formal loans from banks or MFI's to fund their start-up capital – an

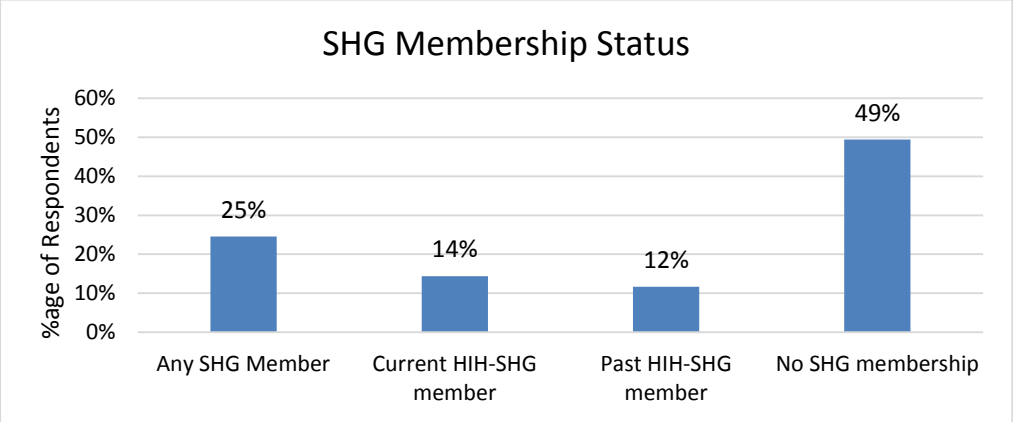
[20] The numbers here indicate the percentage of the households in the total sample which have reported to be saving for each of the mentioned purposes.

important finding in light of our intervention that through business training and loans hopes to induce households to obtain formal loans to start businesses.

SHG Membership

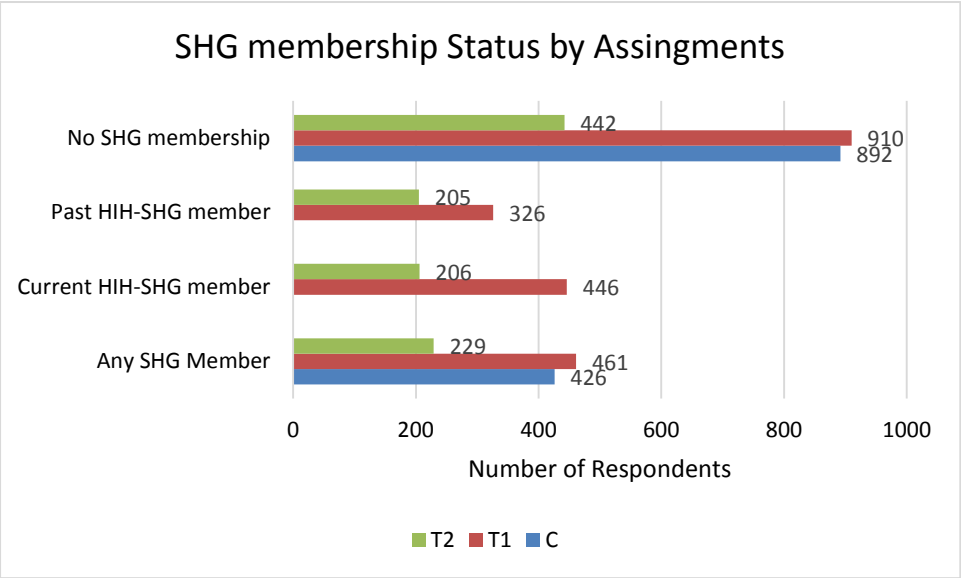
The household survey also collected information on the SHG membership status of the surveyed respondents to assess the total number of households that participated in any SHG across both the treatment and control groups

Figure 10: SHG Membership Status



Across all the households included in the study, a total of 2299 households reported being a part of any SHG (HIH or otherwise) and a total of 2244 households reported not having participated in any SHG membership.

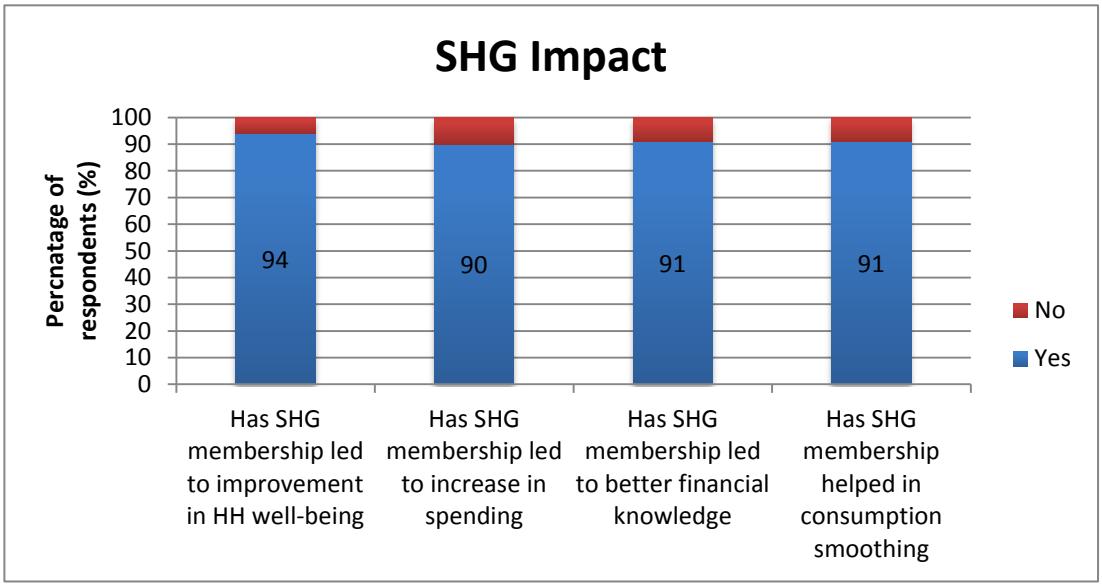
Figure 11: SHG Membership Status by Group



Among group members that were part of SHG but did not belong to HIH specifically, the average size of the SHG was 15.32 members. These groups met and saved on a monthly basis, with an average life span of SHG totalling to 3 years and 11 months. During meetings, individuals saved INR 123.97 on average that accumulated to an average of INR 3526.27 per SHG. Of those that were a member of any SHG, 593 respondents took an internal loan from their SHG and 272 respondents took an external loan through their SHG. Respondents that did not join any SHG stated lack of interest (75%) or lack of time (10%) as the two main reasons for not joining.

All SHG members claimed their involvement in the SHG had positive impacts on their livelihood. Perception of how SHG impacted their livelihood is illustrated in the following graph. Over 90% believed that being involved in an SHG improved their socio-economic wellbeing.

Figure 12: SHG Impact



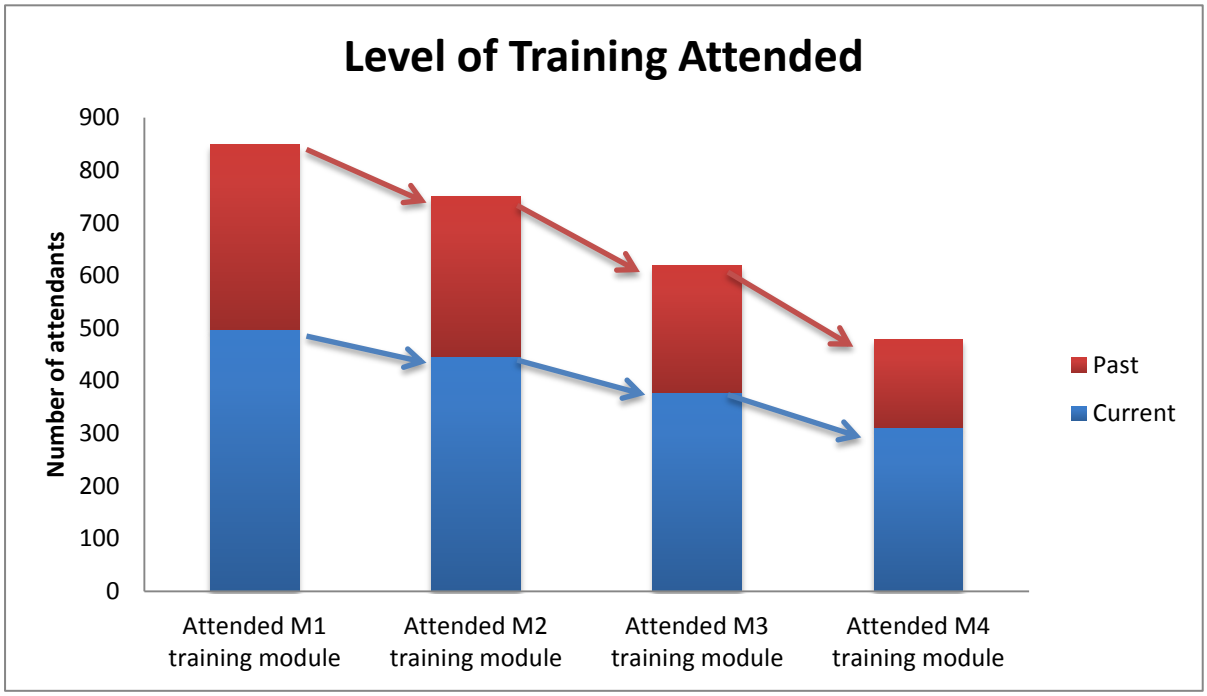
Hand-in Hand SHG Membership

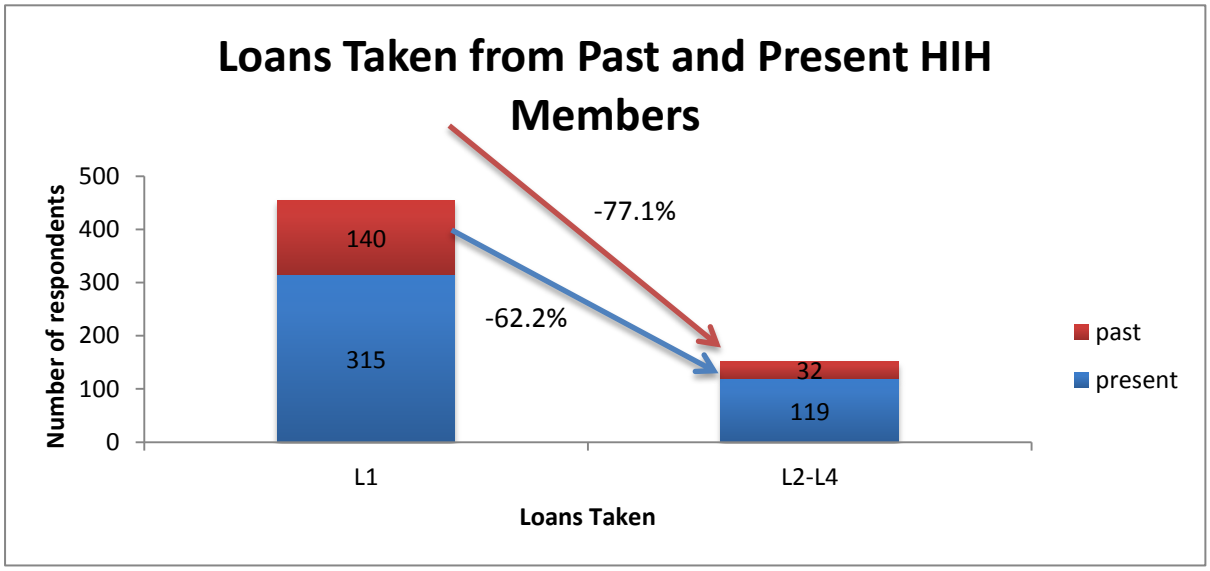
A separate detailed survey was administered among respondents who confirmed having been a part of HIH SHG, either in the past or at the time of interviewing them. This survey provided details about the functioning of the SHG in terms of their savings, loans acquired and the process by which they function on a regular basis. The SHG survey was administered among a total of 652 current HIH SHG members and 531 past HIH SHG members. The average SHG consisted of 14 members.

515, or 79%, of current SHG participants attended at least one training session while 355, or 67%, of past SHG participants did. 497 current members attended M1, with progressively less members attending successive modules. 445, 378 and 311 current members attended M2, M3 and M4, respectively. 351, 305, 241 and 167 of past members attended M1, M2, M3 and M4 respectively. Of the current members who did not attend a training module, half were not aware of the training and 221 could not find the time to attend. Of those that attended a training module, 194 (38%) current members and 75 (21%) of past members attended business training. The most popular type of business training was goat rearing, which 138 current and 75 past SHG members attended. 151 current respondents did not attend business training because they did not own a business and were not interested in starting one. 138 current respondents did not have time to attend training, although nearly half of the training programs lasted less than half a week, and 32 current respondents were not aware of the training.

Figure 14: Level of Training Attended

Figure 13: Loans Acquired from SHG Platform





More individuals took loans with HIH rather than relying on internal loans from their respective SHGs. 434 (67%) current members took a HIH loan while 240 (37%) took an internal loan. Additionally, 172 (64%) past members took a HIH loan and 70 (37%) past members took an internal loan. Current members took 1.35 loans from HIH and 1.33 internal loans on average. Past members took 1.20 loans from HIH and 1.57 internal loans, on an average. The greater access to loans was a primary motivation for households to take part in the SHG program.[21]

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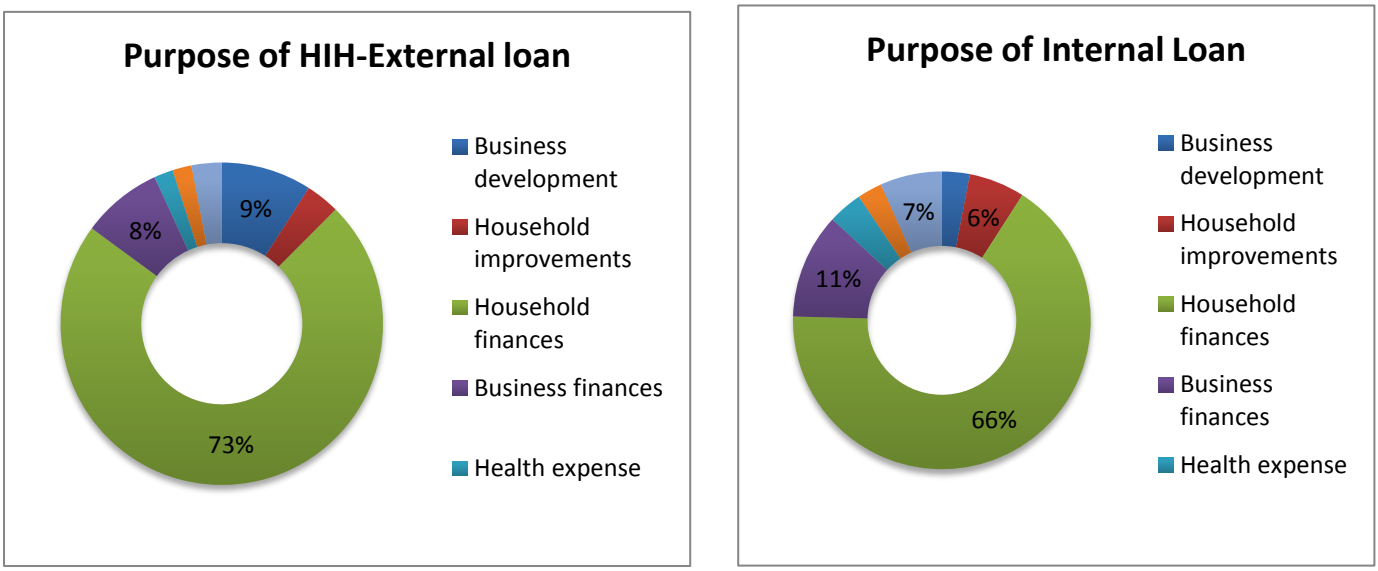
[21] 'Motivation to take part in program' was asked as a question in the 2015 SHG survey as part of the Midline.

Figure 15: Purpose of Internal and External Loan

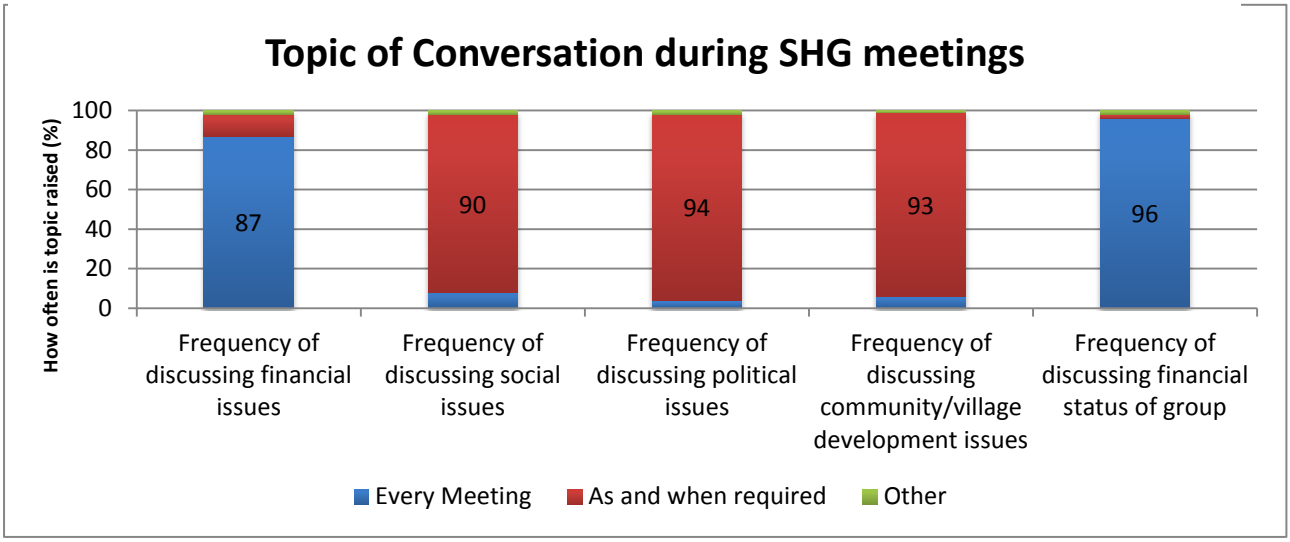


HIH loans had a higher average monthly interest rate of 1.84% compared to 1.33% for internal loans, but the loans were larger, on average, with a longer duration. The average total amount of internal loans taken was INR 11,268 compared to INR 20,261 from HIH. The loan duration for HIH loans was on average 3.22 months longer than internal loans at 14.89 months. Most individuals, both past and current, who took either a HIH loan or an internal loan, took the loan to manage household finances such as paying off debt or managing liquidity issues[22].

Almost all individuals (both past and current HIH SHG members) opted to save with HIH SHG, with average savings of INR 2,363 per year that accumulated to INR 10,178 in total savings per individual and INR 55,000 per SHG on average.

[22] The purpose of the loans taken from the SHG program was generally used for household finances as opposed to business purposes. Given that the households have access to a diverse loan sources, households preferred to use large ticket loans taken for business loans were taken using banks and MFIs. Towards that end, households also have access to agricultural and business input loans like the Kisan Credit Card scheme.

Figure 16: Discussions During SHG Meetings

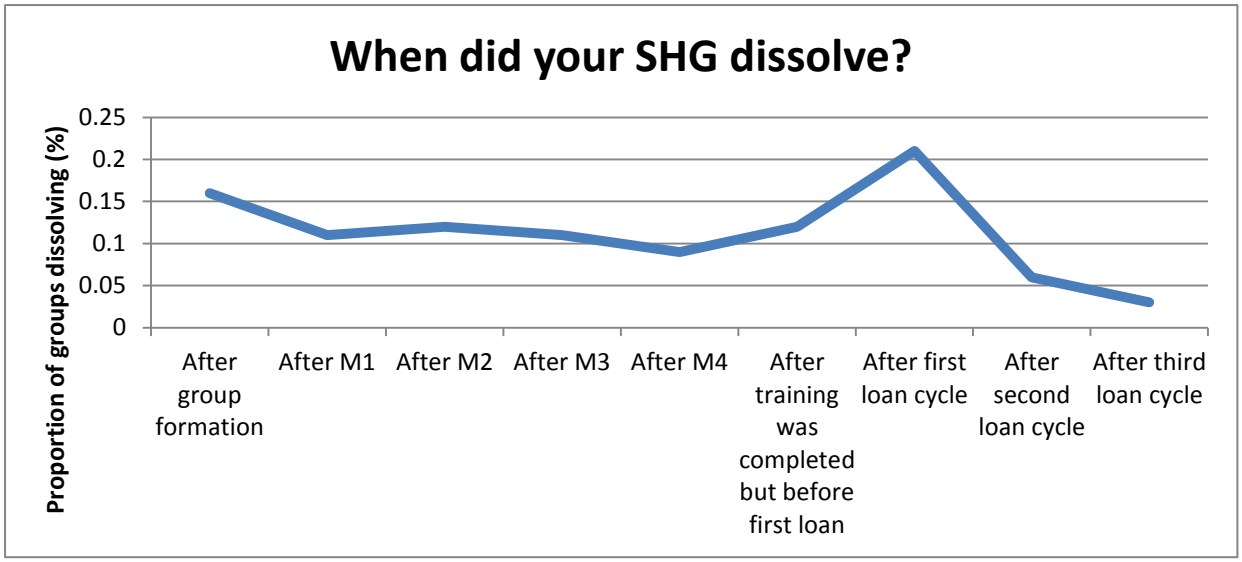


During SHG meetings, the main topic of conversation revolves around financial aspects of the SHG, with financial issues and the financial status of the group being discussed in almost every meeting. Social, political and community/village development issues are discussed as and when needed for the most part. 92% of individuals reported that a HIH representative attended a meeting in the last years. HIH generally supported SHG in maintaining their books of accounts and helped clarify their doubts regarding SHG functions. However, HIH influenced less than half of the members visit banks to facilitate savings. HIH representatives generally left SHGs autonomous, choosing to help resolve group disputes 24% of the time.

For the 531 respondents that were past members of HIH- SHG, with groups being approximately the same size on average with 14.1 members, nearly 80% of respondents left their SHG as their groups dissolved. Primary reasons for group dissolving was lack of cooperation between members (85%), no subsequent follow up from HIH (11%) and members not getting loans when needed (4%).

Although most SHGs which dissolved, did so after the first loan cycle, there is a downward trend in the proportion of SHGs that dissolve as module trainings and loan cycles progress. The most common reason for groups to dissolve was members failing to coordinate among themselves, with 80% of past.

Figure 17: Trend in SHG Dissolution



Impact Evaluation of SHG Program

In this section, we evaluate the impact of the HIH- SHG Program by assessing the difference in the outcome variables of interest that can be attributed to the intervention. In the baseline survey, before proceeding with the intervention, it was confirmed that there was no difference between the treatment and control groups at the onset and that both the groups were similar across a broad range of socio-economic parameters, therefore being comparable with each-other. Adding to this, the data obtained from the endline survey conducted 5 years following the intervention, enables us to look at the crucial variables and assess whether they have improved or digressed over the aforementioned period. Given that the sample groups were identical at the onset, the analysis model assumes that the two samples would have progressed identically in the absence of an intervention. Consequently, any significant differences in the outcomes can be attributed to the intervention. We conduct a difference in difference[23] analysis of the two groups between 2011 and 2016 over the following set of indicators:

- Household savings
- Household loans
- Household income
- Household expenditure
- Women empowerment index

[23] Difference in Difference is a statistical technique used to compare the differences in two groups (control and treatment) over time. For more details, refer to the appendix.

The difference in difference (DID) estimation method allows us to isolate the impact of the program by comparing the average treatment effects over time. To do this, we compared the results of the baseline survey, completed in 2011 to the results of the endline survey, conducted in 2016, across treatment and control groups for the same set of variables.

Also, of the 1137 households selected to be part of the treatment 2, (i.e. the fourth training module) only 311 households received the training[24]. Thus, for the purposes of the analysis of this section the households in the treatment 1 and treatment 2 groups are considered a single treatment group.

Analysis Results- Intention to Treat (ITT) and Treatment on Treated (ToT)

Following section summarizes the results from the impact evaluation analysis by comparing the change in the variables of interest over time across the two groups. This refers to the difference in difference method that takes into account changes in the two groups (treatment and control) over time, therefore providing a robust impact evaluation mechanism. Under this method, we use two kinds of analysis approach- The first one refers to Intention to Treat (ITT) analysis, where we compare the entire treatment group with the control group sample and the second one refers to Treatment on Treated (ToT) analysis, where those who took up the intervention within the treatment group are compared with the entire control group sample. ITT approach simply compares the entire treatment group with the control group as originally designed. Given this approach in mind, we compared 1333 control households with 3023 treatment households under the ITT approach and 1333 control households with 1151 treatment households under the ToT approach. Using the ToT approach allows us to further narrow down our results to the group that took up the intervention and help us establish a causal effect of the program among this specific group. While we do not restrict the analysis to only those who continue to remain in the group at the time of the endline survey, these were households, that in 2011, agreed to be a part of the intervention and were mobilized to form SHGs, and were subsequently provided with training and loans.

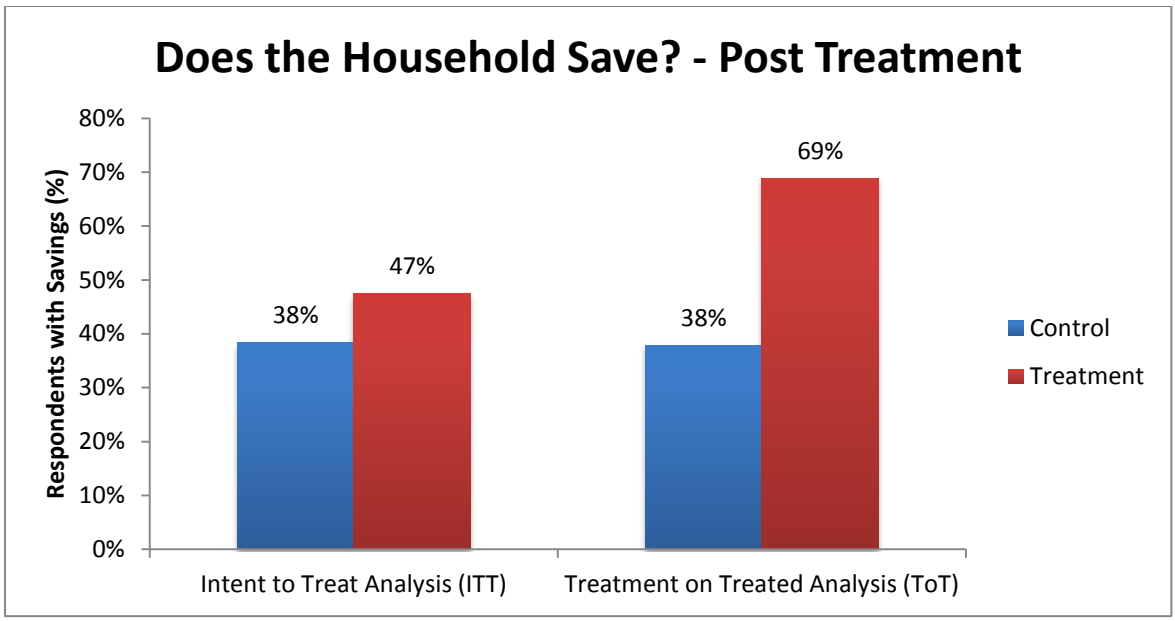
Household Savings

Treatment household are more likely to save compared to control households

In terms of households' savings behaviour, we see a statistically significant difference of 9% points between the control and treatment group, under the ITT approach. On the other hand, using the ToT approach, we see a statistically significant difference of 31% points between the two groups, reflecting stronger effects when only those who take up the intervention are taken into consideration. It can therefore be interpreted that being part of an SHG strongly and positively impacted the SHG members in inculcating savings behaviour and provided a strong platform for savings, which they otherwise had only limited access to.

[24] The details of the take up of the treatment can be refered to in the Limitations section.

Figure 18: Household Savings



Types of Saving Sources

Over time, people showed preference for formal savings compared to informal sources. As well, there was a significant decline in savings with chit funds for treatment group over time.

In terms of the types of savings, we see a considerable shift in the source of savings during the two rounds of survey. During baseline, while savings with bank, post-office and SHG was the most popular form of saving, people also used informal mechanisms to save such as savings with informal sources (which included savings with friends and families) and savings in informal chit funds (a popular source of savings in rural Tamil Nadu). Data trends from endline however, suggest that the SHG channel was the most popular form of saving mechanism for the study households followed by post office and banks. Close to 80% of those who reported saving, did so with an SHG. One point that must be highlighted is the fact that household reporting savings with SHG could also be used as a proxy for savings at banks, since SHGs maintain group bank accounts and therefore fall under the category of formal bank savings, although the medium of this savings was via an 'SHG'[25]. Despite substantial differences in the trends at endline and baseline, there is no statistical significant difference between the source of savings by the two groups (treatment and control), barring savings with Chit funds[26]. Our results suggest that treatment households were less likely to save in informal chit funds compared to control households, indicating formalization of financial services.

[25] Savings with the SHG are considered to be formal savings since the SBLP initiative (mentioned in 'Evidence on Impact of SHG' section) Program undertaken by the Indian Govt. links savings done by SHGs members to group bank accounts.

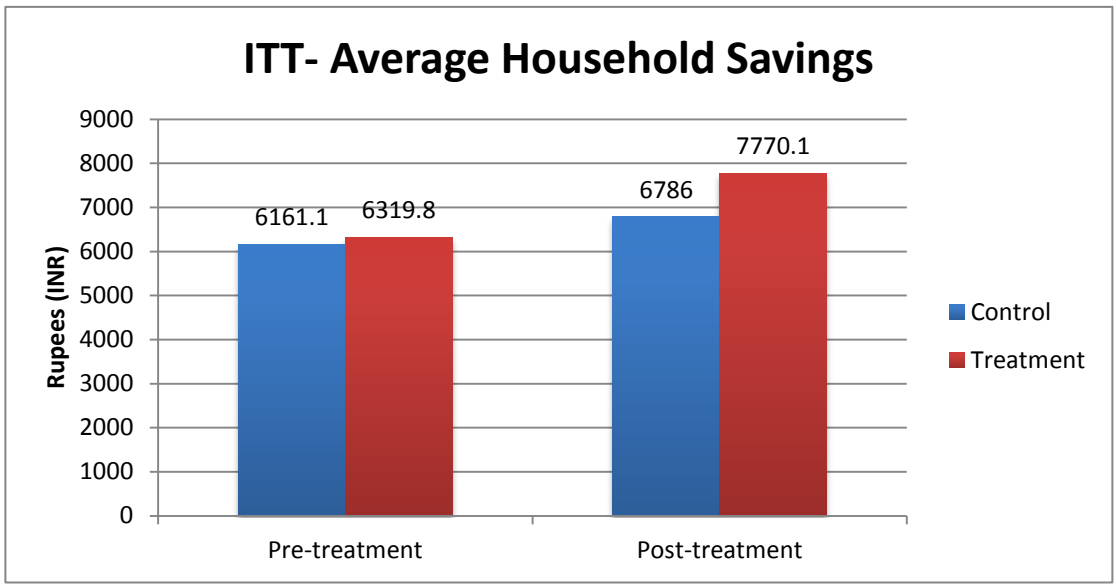
[26] Chit fund is a kind of savings scheme practiced in India. Chit fund schemes are generally unorganised, informal schemes conducted between social networks, friends or relatives. There are also some chit funds conducted by organised financial institutions. The report considers the chit fund savings schemes reported by the household sample to be informal savings.

Average Household Savings (by Treatment and Control Group)

No detectable impact of program on the average amount of savings across two groups

Using the ITT approach, we see that the average amount of household savings[27] increased both in the control group and treatment group following treatment. Total savings increased by 10% for the control sample from INR 6161 to INR 6786 and 23% for the treatment sample from INR 6319 to INR 7770 INR. Despite the difference between the control and treatment group, the difference is not found to be statistically significant.

Figure 19: Average Household Savings by Group



Average Household Savings (by Source of Savings)

While we see substantial variation in the savings amount across the two rounds, there are no significant differences in the average household savings by the various types of savings sources for the two groups, suggesting that the program did not have any statistically significant impact on the amount of savings but rather on the source of savings.

[27] Total amount of savings reported at the time of the survey by each household and averaged by the total number of households

Figure 20: Average Household Savings: Baseline

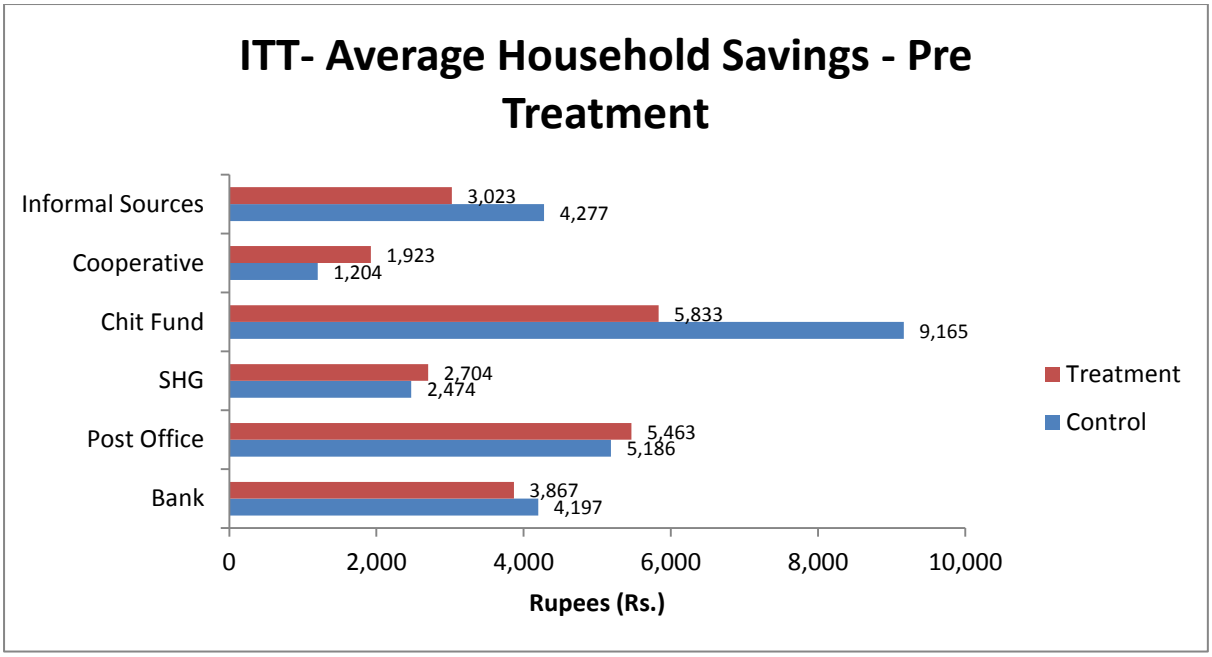
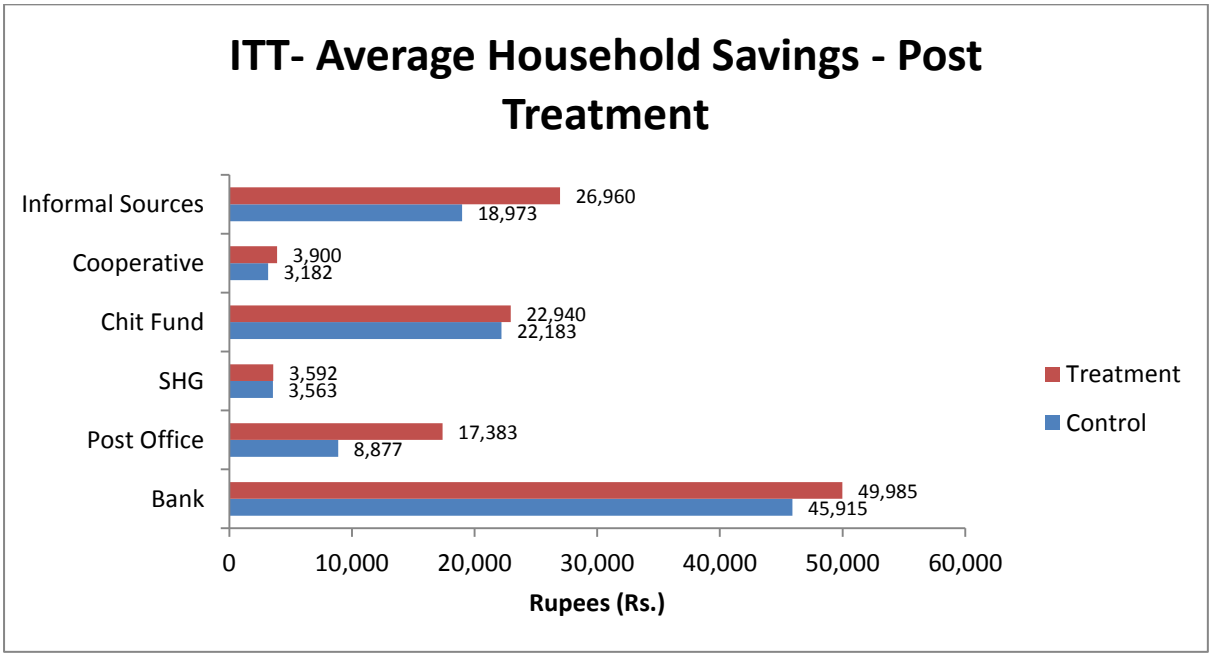


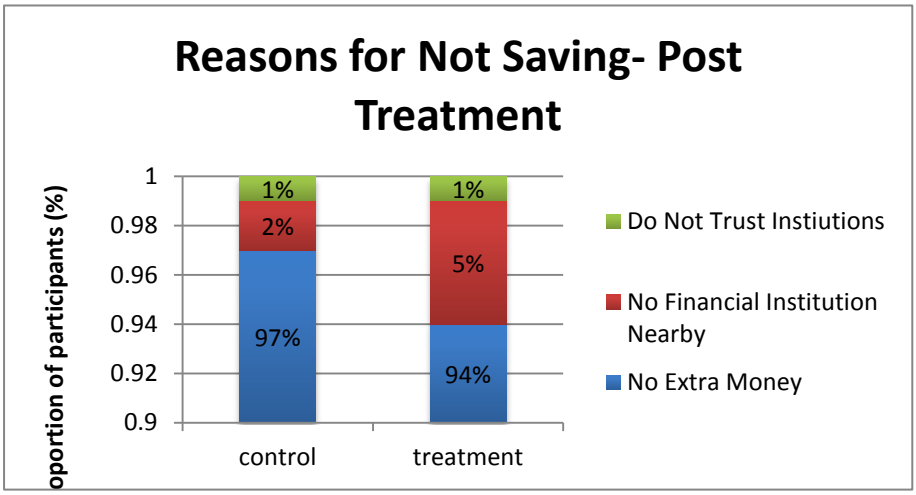
Figure 21: Average Household Savings: Endline



Non-Saving Households

55% of the household during the endline survey reported that they do not save in any channel.

Figure 22: Why Households Don't Save- Endline

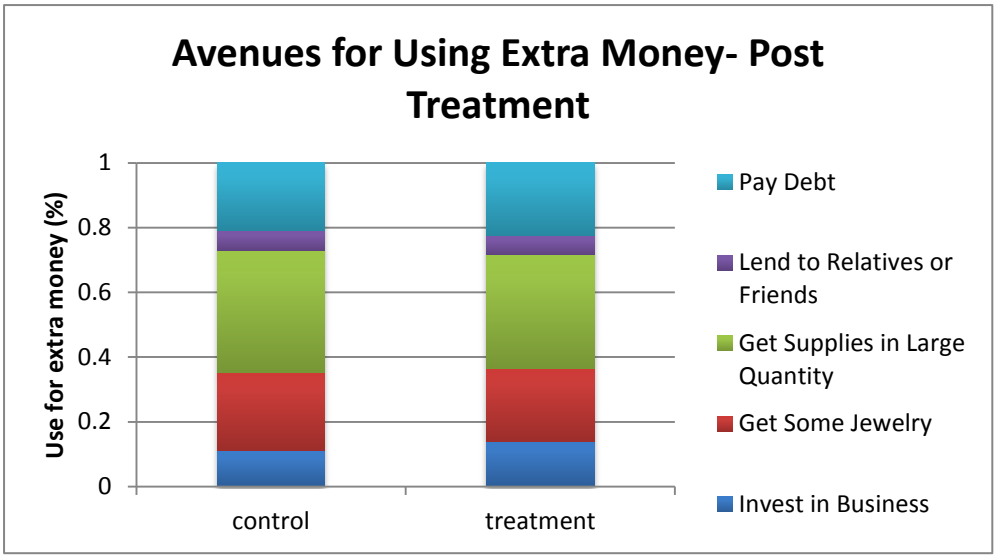


Approximately 55% of households reported that they do not save. Following the intervention, we see in the endline round of survey that there is an increase in the proportion of respondents' that report 'not saving due to not having a financial institution nearby' whereas the proportion with 'no extra money to save' decreased in the treatment group compared to the control group. In the control group 97% of respondents had no extra money to save while 2% were constrained by not having a financial institution nearby. In the treatment group, however, 94% stated they had no extra money to save while 5% could not save due to there being no financial institutions near them. The difference in these proportions between the treatment and control groups is statistically significant at the 95% confidence level.

Treatment households were more likely to make business investments using their surplus cash

In times when the household had extra money, obtaining supplies was the most common expenditure category amongst households. This category represents 38% of the control group and 35% of the treatment group in the endline survey although the difference in proportions between the two groups is not significantly different. The only categories with a significant proportional difference between treatment and control groups post treatment is the proportion of households investing in business and paying debts. Households in the treatment group were 2% more likely to use extra money to pay debts and 3% more likely to invest in business as compared to the control group. Therefore, households with savings in the treatment group used extra money to pay debts and invest in business at the expense of getting supplies in large quantities and buying jewellery, which were activities more common among households in the control group.

Figure 23: Avenues for Using Extra Money-Endline



ToT Analysis

We do not present detailed ToT analysis for the savings section, as some of the data points from baseline (for this section) are inconsistent and could be prone to error. Given that first differences are a robust data analysis mechanism as long as the randomization is done correctly, we have presented in detail the ITT analysis for this section and refrain from showcasing the ToT analysis.

Household Loans

Outstanding Household Loan

Treatment households are more likely to have an outstanding loan compared to control households under the ToT approach

This section outlines the patterns related to loan outstanding of the households and relevant information pertaining to the same. Results suggest that loans are becoming less common within households. Prior to the treatment, 86% and 84% of households in the control and treatment groups respectively had a loan outstanding. After the treatment, 71% and 73% of households in the control and treatment groups respectively had loans outstanding. Using the ITT approach, we see that despite the number of proportion of households with a loan being higher in the treatment compared to the control group, the difference is not statistically significant.

On the other hand, under the ToT analysis, we find that the likelihood of treatment households having an outstanding loan is significantly higher than the control households. The difference in these two groups in terms of take up of loans is 14% points.

Figure 24: Loans Outstanding- ITT

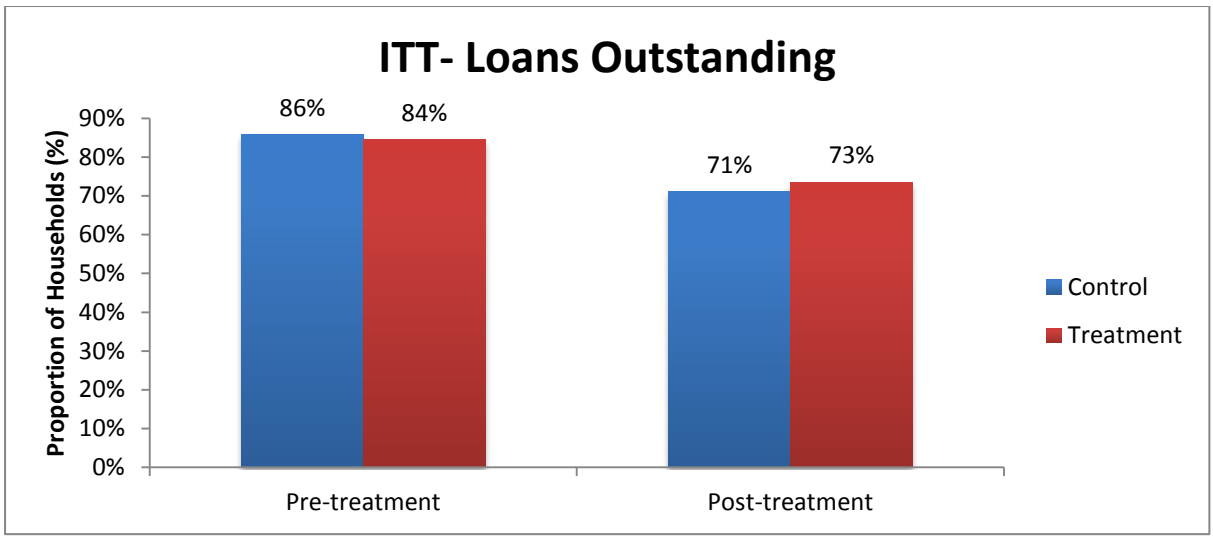
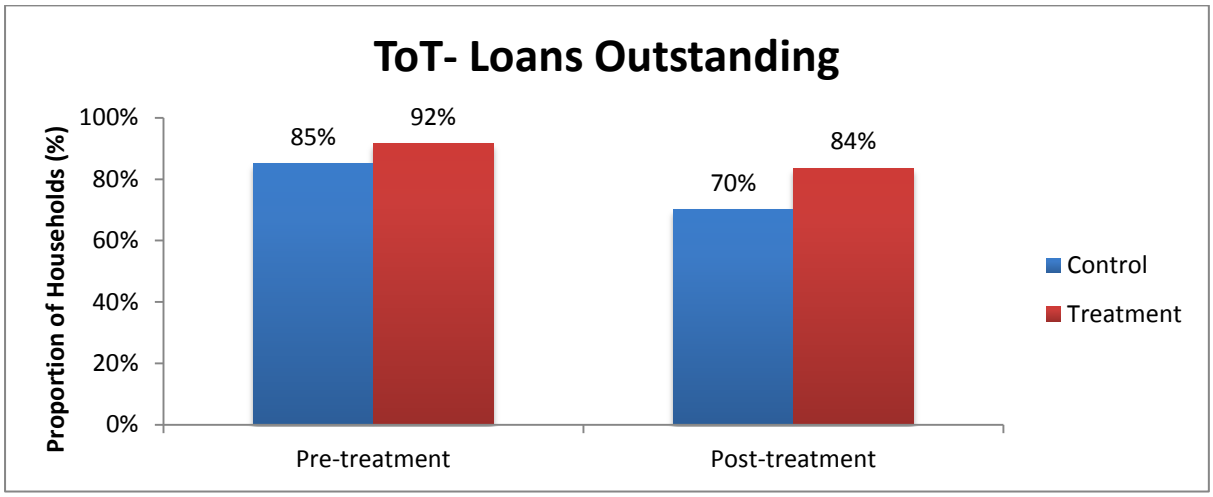


Figure 25: Loans Outstanding- ToT



Number of Loans (By Source of Loans)

Treatment households are more likely to acquire loans from formal sources, suggesting formalization of financial services

In terms of number of loans, we see that in general there is a decline in the number of outstanding loans acquired by the households, however, the average number of loans from formal sources is higher in treatment group compared to control group and is statistically significant. Simultaneously, the number of informal loans has declined from baseline to endline, even though it is not statistically significant. We see the exact same result using the ToT analysis, further strengthening our point. These results suggest further formalization of formal financial services indicating that when provided with access to formal financial services, such as credit and savings, use of formal financial services increases crowding out informal channels of financial services, to some extent.

Figure 26: Number of Loans- ITT

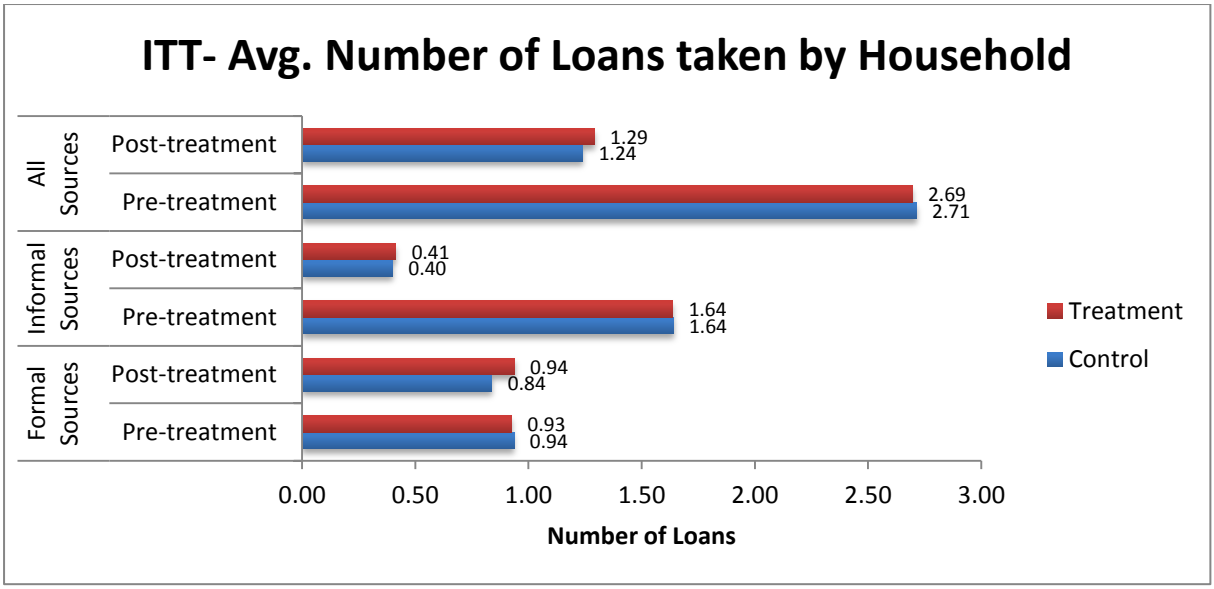
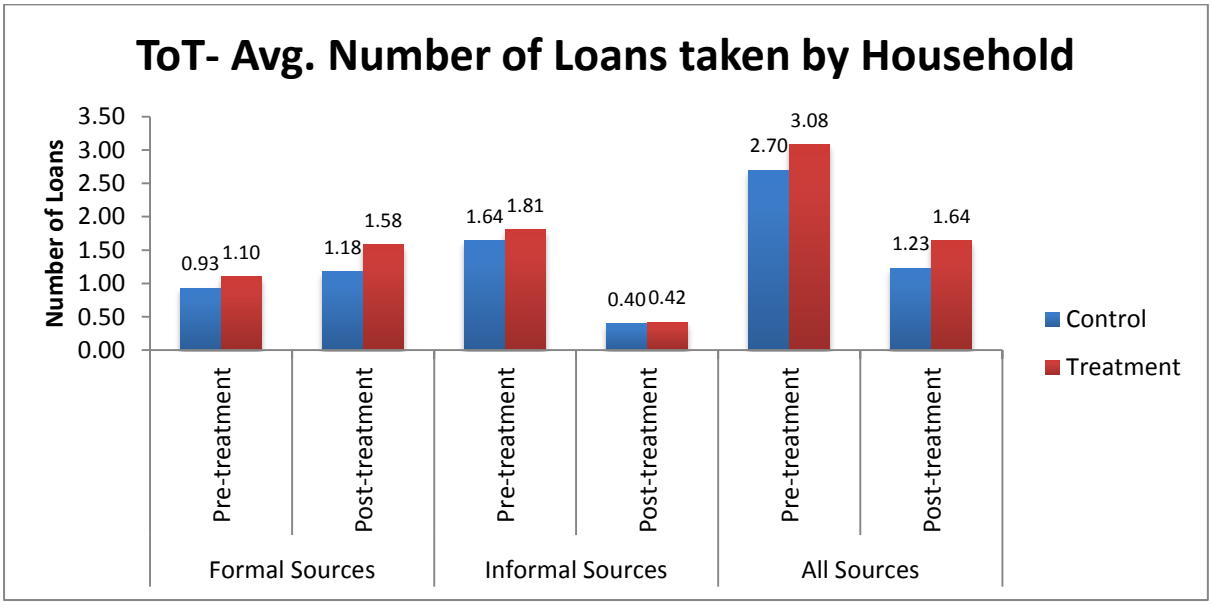


Figure 27: Number of Loans- ToT



Average Loan Size

No detectable impact of program on size of loans

Although the proportion of households with loans outstanding decreased over the study period, the value of loans outstanding increased across the two groups, control and treatment households. This is in line with the average increase in savings and income. However, the difference in average amount of loans from both informal and formal sources across the two groups is not statistically significant under both the ITT and ToT analysis.

Figure 28: Loans Size- ITT

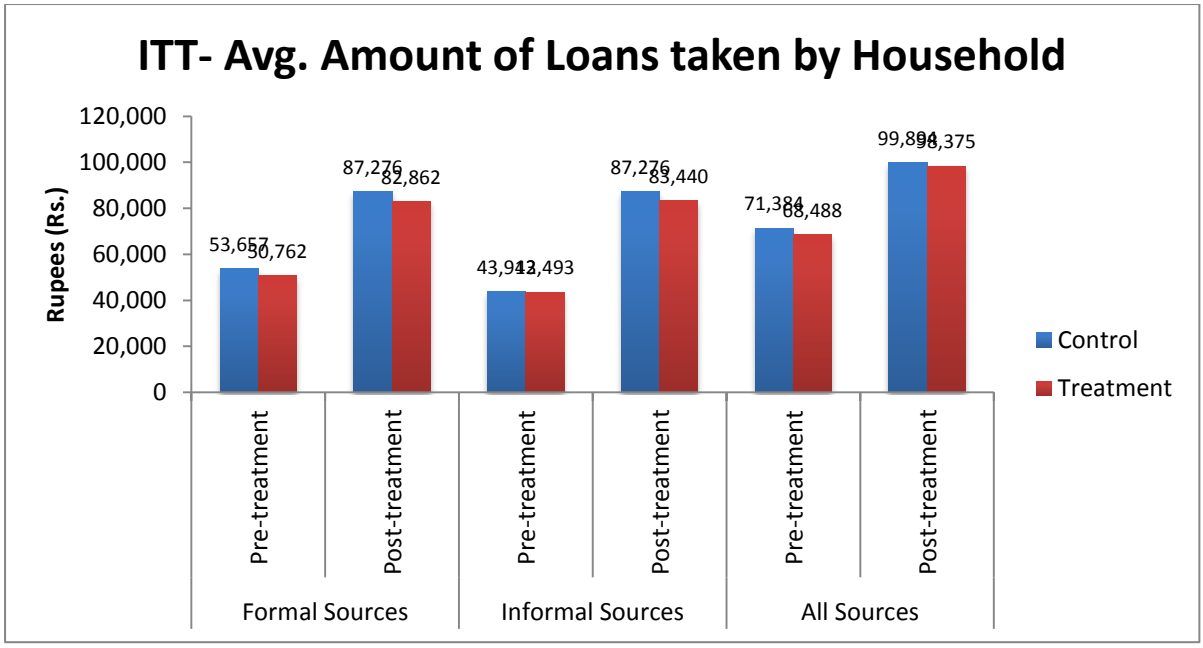
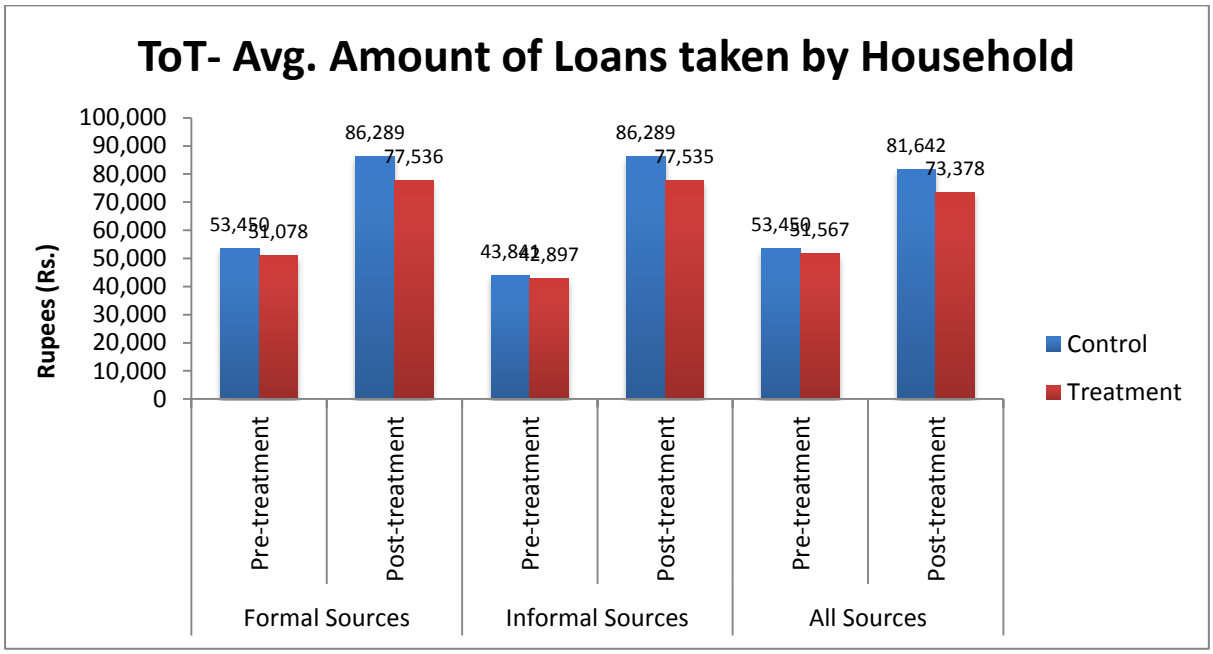


Figure 29: Loan Size- ToT



Household Expenditure

No detectable impact of the program on yearly household expenditure across the two groups

We find no significant difference of the SHG program on the household expenditure patterns among the two groups. Following graphs represent the average yearly expenses incurred by the household for various purposes. Using the ITT approach, we see that the households spent majority of their expenses towards festivals, followed by household/consumption smoothing expenses, medical and educational expenses, in the baseline round of survey. This pattern changes during the endline round, with household expenses being a key expense area, followed by festivals, education and medical expenses. We notice similar trends using the

ToT analysis. While there are substantial changes in the type of expenditure over the two rounds, these changes are not significant. As well, we do not detect any significant difference between the two assignment groups (treatment and control) pertaining to yearly household expenses.

Figure 30: Yearly Household Expenditure- Baseline-ITT

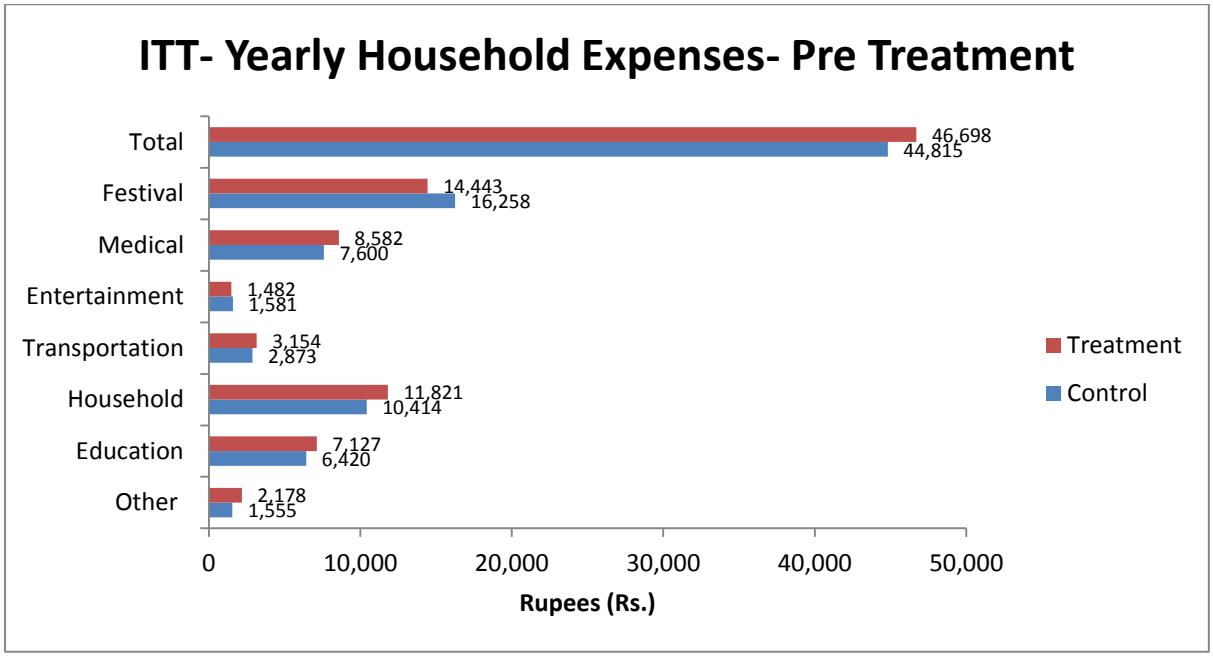


Figure 31: Yearly Household Expenditure- Endline- ITT

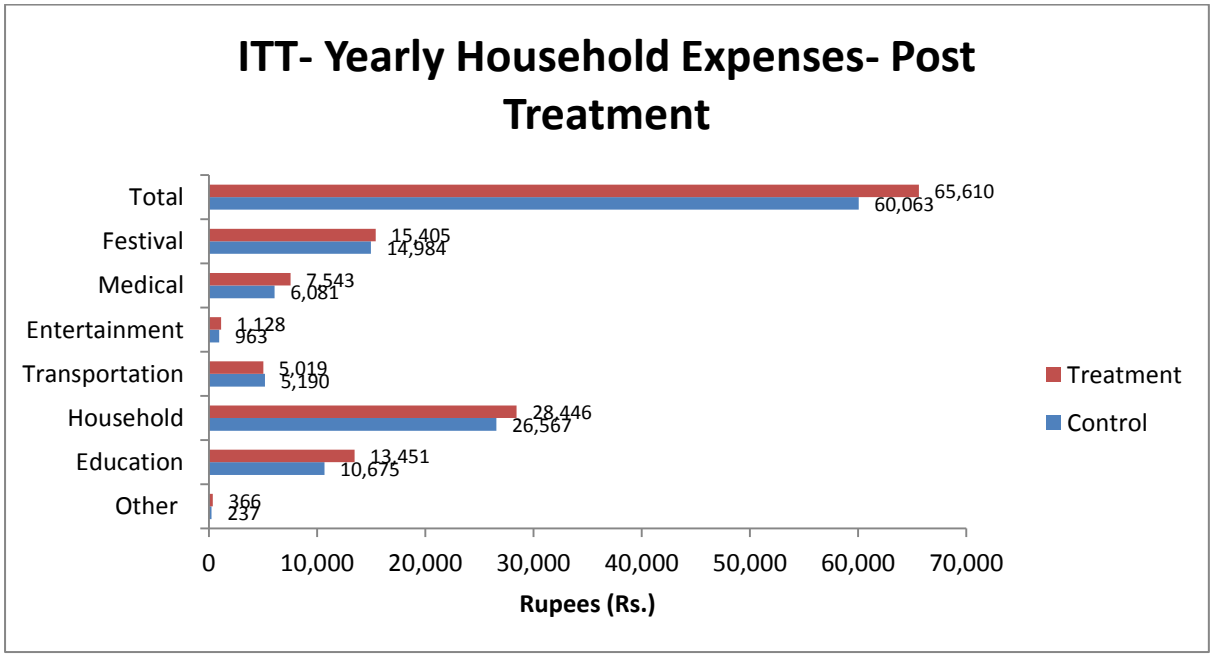


Figure 32: Yearly Household Expenditure- Baseline- ToT

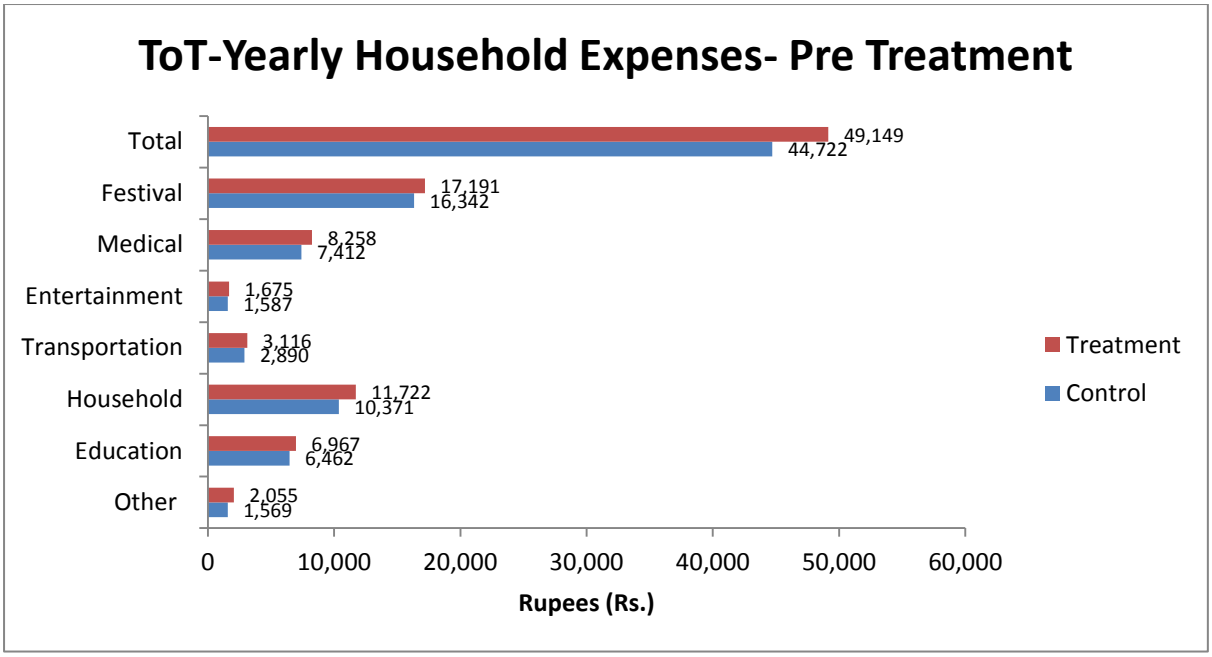
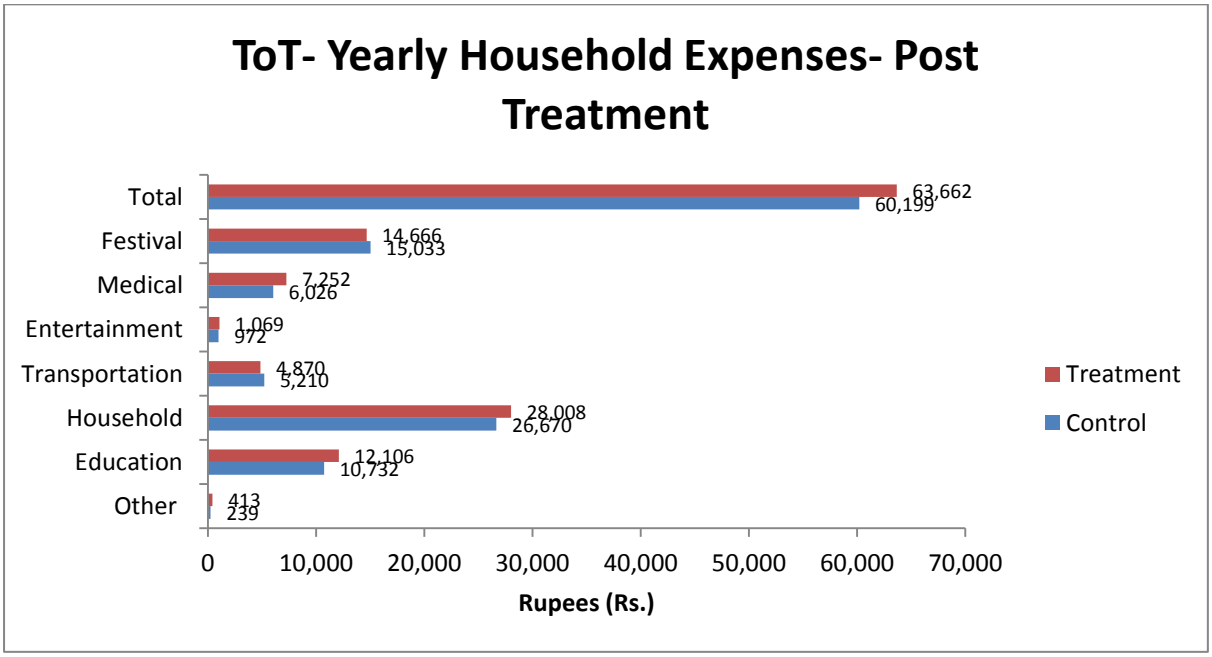


Figure 33: Yearly Household Expenditure- Endline-ToT



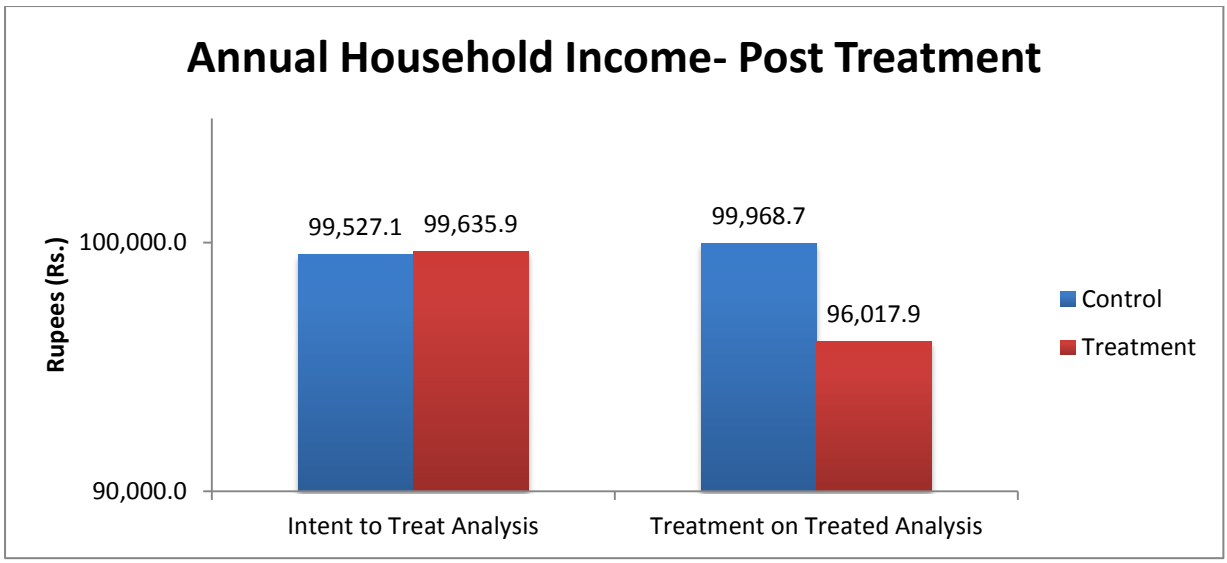
Household Income

Average Annual Household Income

No detectable impact of the program on average annual household income

We find there to be no significant impact of the program on household incomes. Following graph represents annual household income for the two groups using both the ITT and ToT approach. Using both the analysis, we see that while the average annual income across the two groups is different, the difference is not statistically significant, suggesting that the program did not have any impact on the income parameter of the household.

Figure 34: Average Annual Household Income-Endline



Average Annual Household Income (By Source)

No detectable impact of the program on average annual household income categorized by different sources

The following graph depicts average annual household income from various sources. The household reported their average annual income from each source, conditional on them being engaged in/receiving income from that source. While there are differences in income amounts across the two groups (treatment and control), these differences are not statistically significant.

Figure 35: Average Annual Household Income by Source-ITT

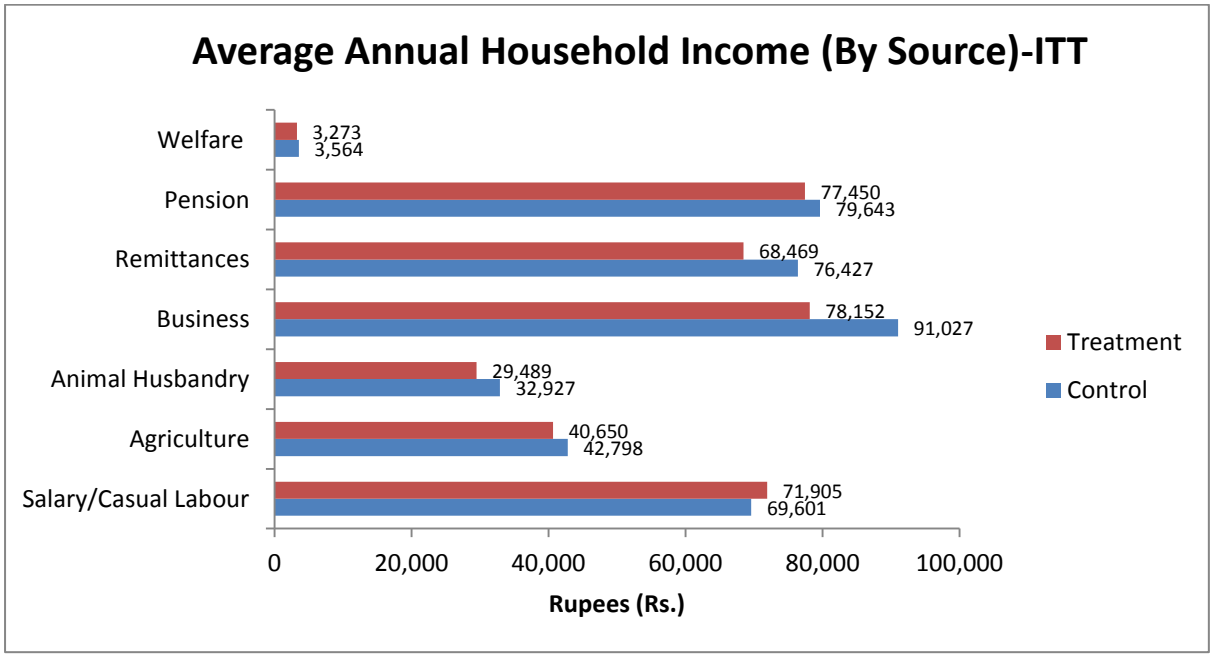
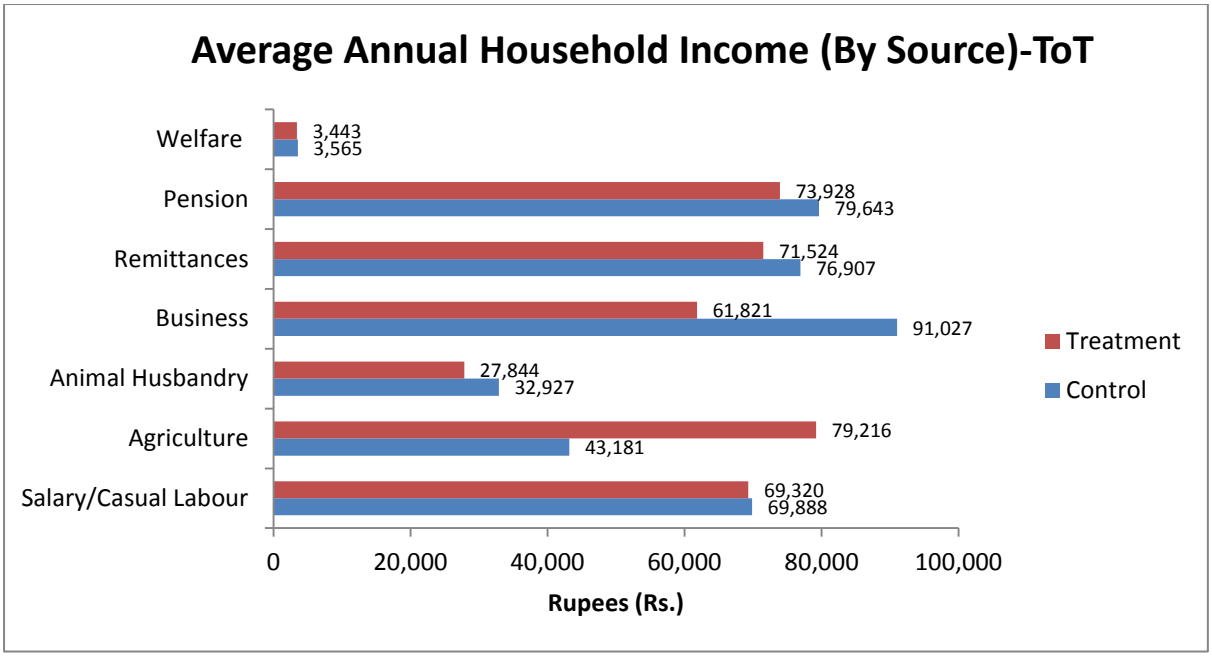


Figure 36: Average Annual Household Income by Source-ToT



Household Businesses

Proportion of Households Owning a Business

No detectable impact of the program on the proportion of households owning a business

Following the program, a decreasing proportion of households are found to be running their own business as compared to the pre-program levels. The proportion of households running their own business decreased by 10 and 11 percentage points in the control and treatment groups respectively. As evidenced by the decreasing trend in both sample groups, the program did not cause a significant impact on the proportion of households that have a member running at least one business. The ToT analysis depicts a similar trend, in that, the proportion of households engaged in businesses across the two groups decreased post intervention, however, the changes in the two groups are not significant.

Figure 37: Business Ownership-ITT

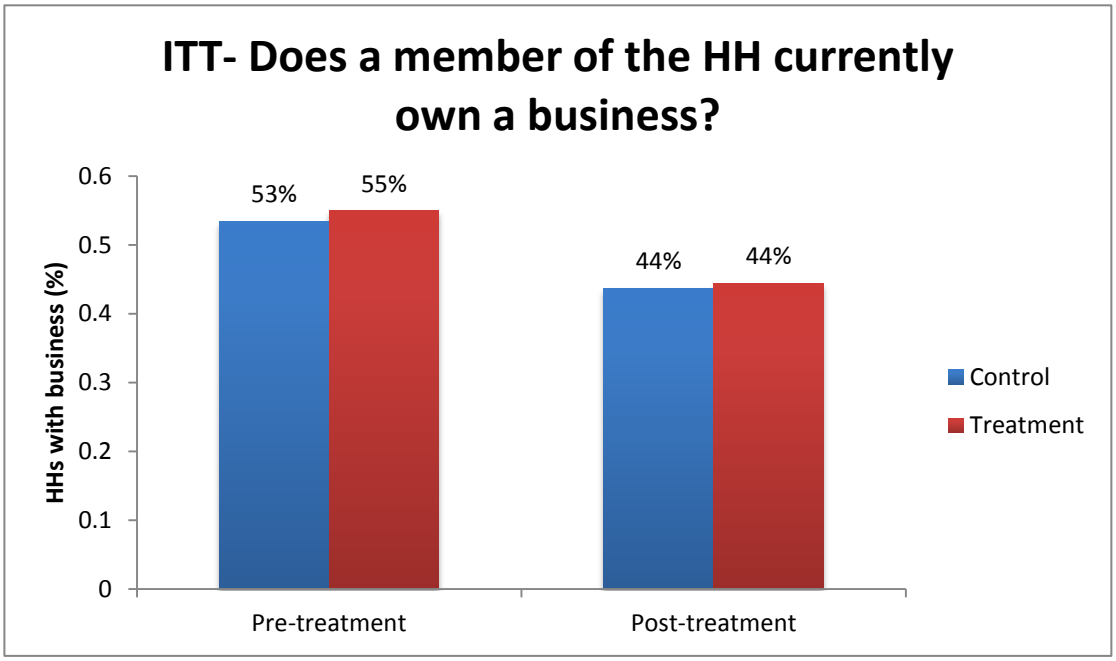
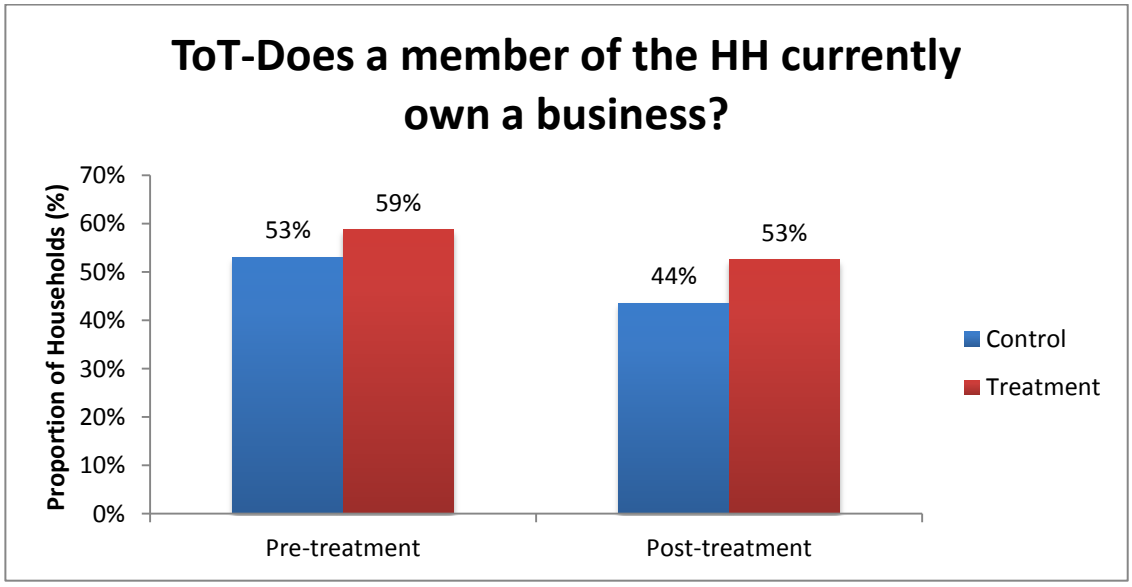


Figure 38: Business Ownership- ToT



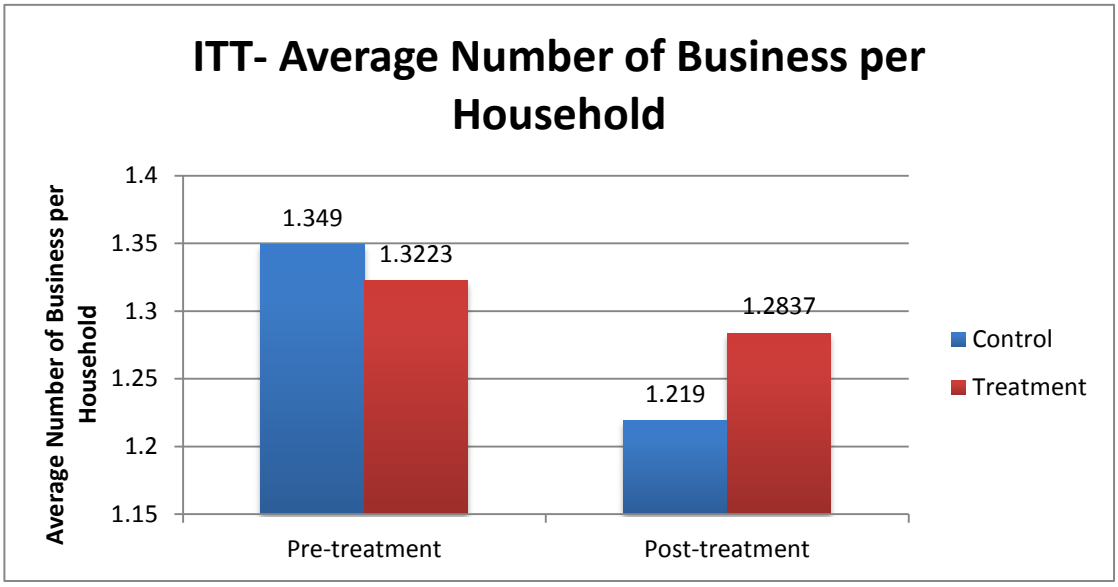
Number of Businesses

No detectable impact of the program on the number of business

Since a decreasing proportion of households have a member running a business, the average number of businesses households own is also decreasing over time. The average number of businesses in households within the control group decreased by 0.13 compared to only 0.039 in the treatment group. Moreover, relative to the control sample, the households in the treatment sample on average ran more businesses, in the two time periods depicted in the graph below. Thus, it can be inferred that the program has helped reduce the effect of the

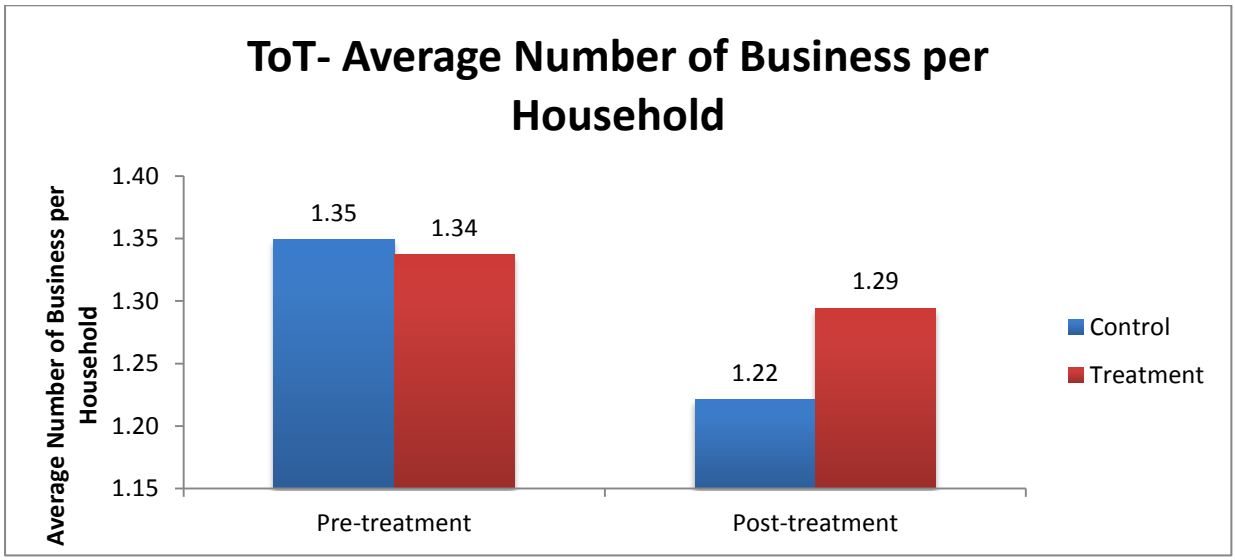
downward trend in entrepreneurship experienced by the households in the time period following the treatment. However, there are no significant differences among the two groups, using the DID approach, explained in the earlier section.

Figure 39: Average Number of Business Per Household-ITT



Using the ToT approach, also gives us similar results, suggesting that there are no differences in the number of businesses across the two groups. The graph also highlights that the number of businesses in general, reduced across two groups, post the intervention phase, even though the decrease in greater for control households.

Figure 40: Average Number of Business Per Household-ToT



Business Profits

Treatment households have higher average profits in 'bad' months compared to control group

Using the ITT analysis, we see no significant differences observed in the profit levels for good or normal months for businesses run by households in the treatment sample vis-a-vie households in the control sample. However, businesses run by households in the treatment sample have significantly higher average profits in a bad month when compared with their counterparts in the control sample. Average profits in bad months for the treatment group is 239 Rs, significantly higher than the control group, indicating that businesses run by treatment households are able to smoothen their profits better than the household businesses run in the control group. On the other hand, ToT analysis does not show any significant differences in the business profits across good, bad and regular months.

Figure 41: Business Profit-ITT

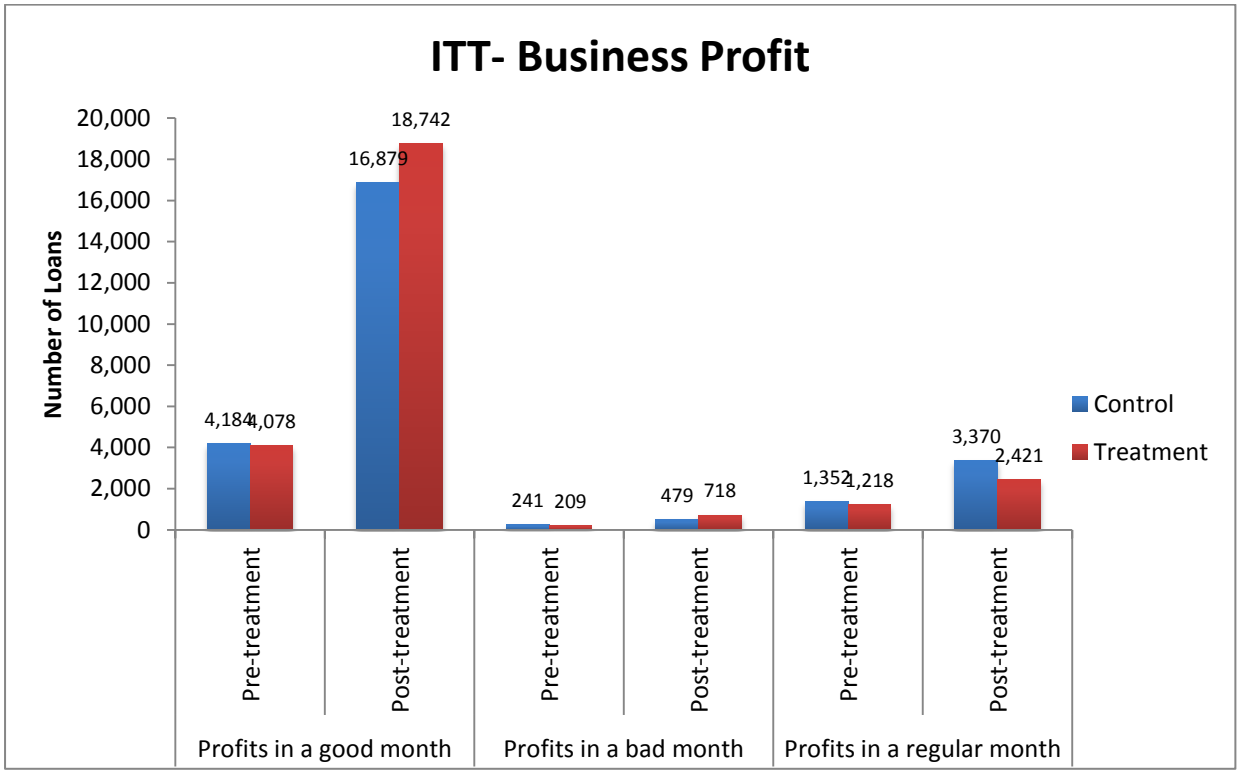
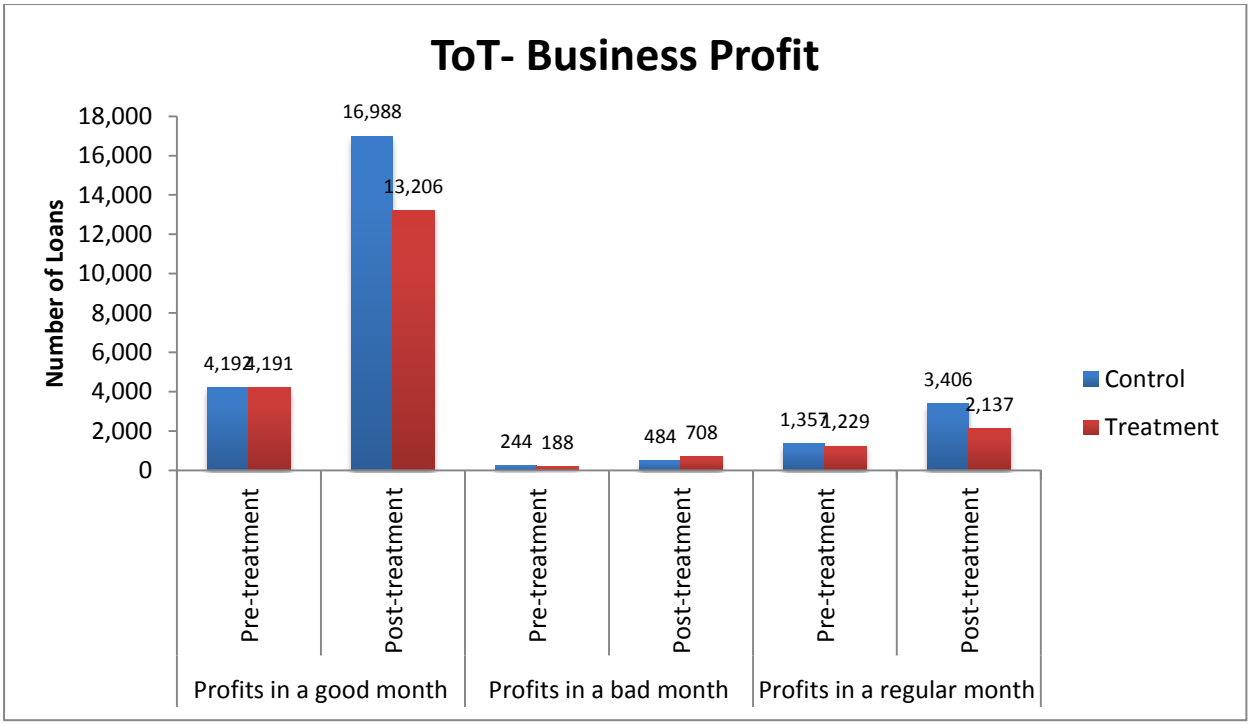


Figure 42: Business Profit- ToT

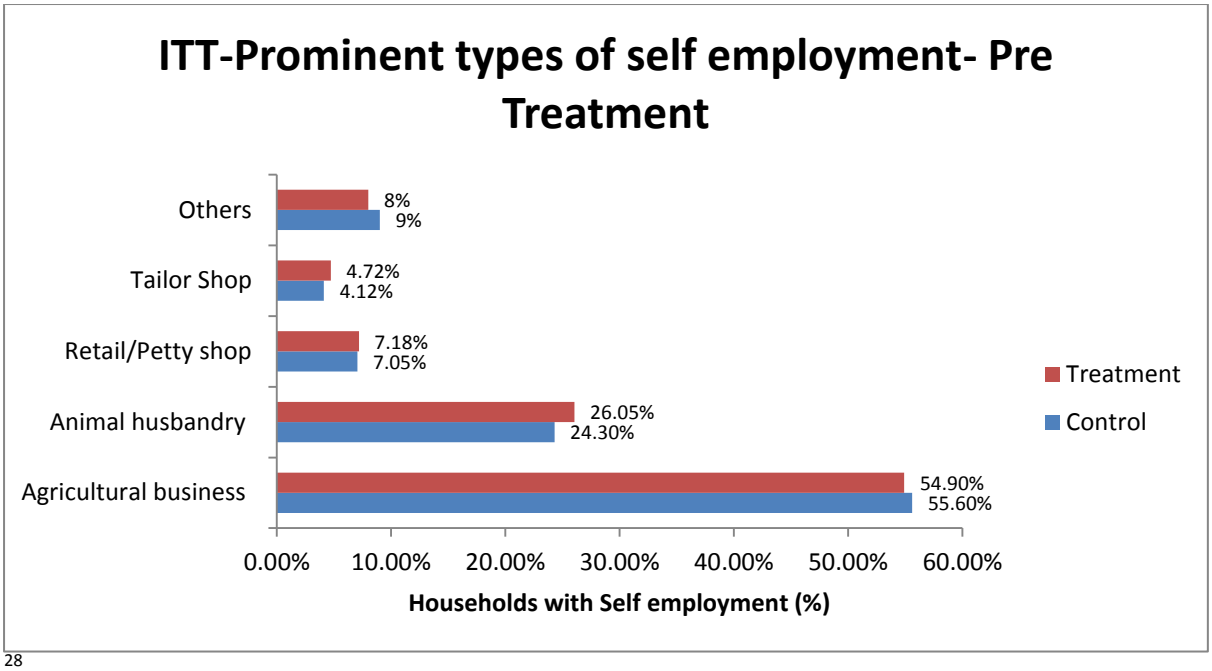


Business Types

No detectable impact of the program on the type of business engaged in, across two groups

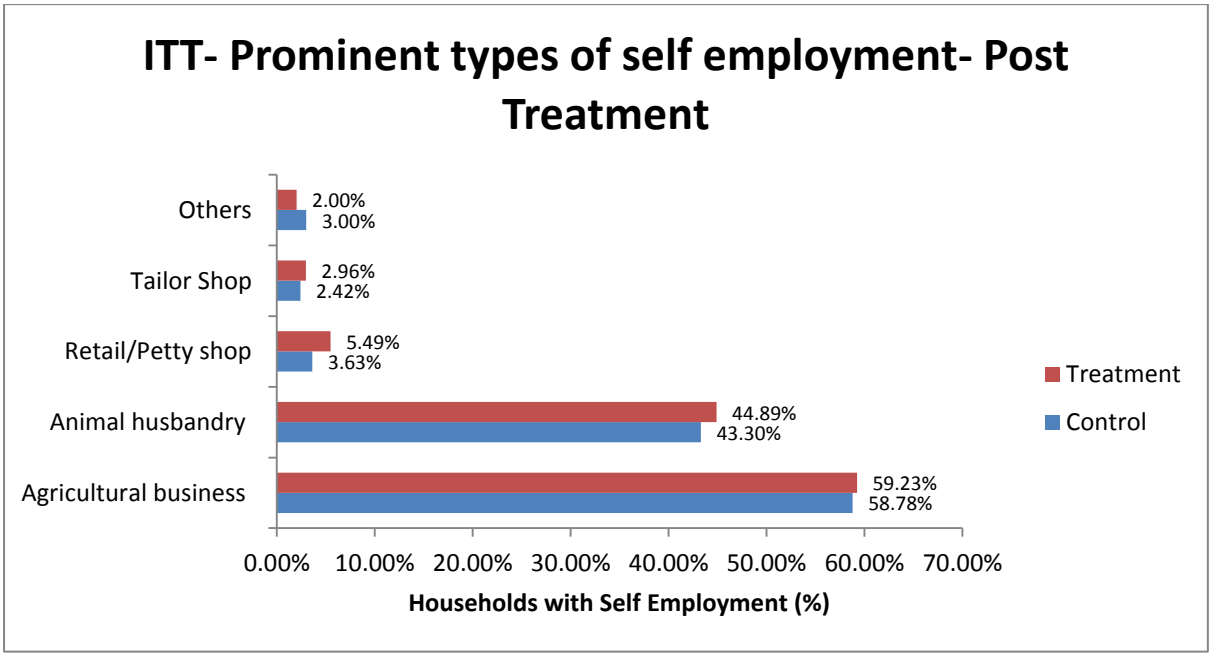
In terms of type of employment, we see that most of the households during the baseline round (pre-intervention) are engaged in farming activities followed by animal husbandry and other types of small scale business activities such as petty shops, tailor shops, etc. While we see similar trends during the post intervention stage, we also notice that a larger proportion of households also expand their business portfolio by engaging in animal husbandry as well. Based on our conversations with our partner, we find that animal husbandry is a profit making business and reaps good returns for the households. A large part of the reason for this was also because the partner was especially invested in training the SHG members towards this business activity. However, there are no statistically significant differences in the type of self-employment engaged in, between the two groups. We see similar trends in the ToT analysis, in that, majority of the study households are engaged in agricultural activities followed by animal husbandry and other small scale business activity. However, there are no significant differences in the business types by the two groups.

Figure 43: Business Types- Baseline-ITT



28

Figure 44: Business Types- Endline-ITT



[28] It must be noted that the bars do not necessarily add to 100 percentage points, since households could have multiple businesses, such that they report being engaged in more than one business

Women Empowerment

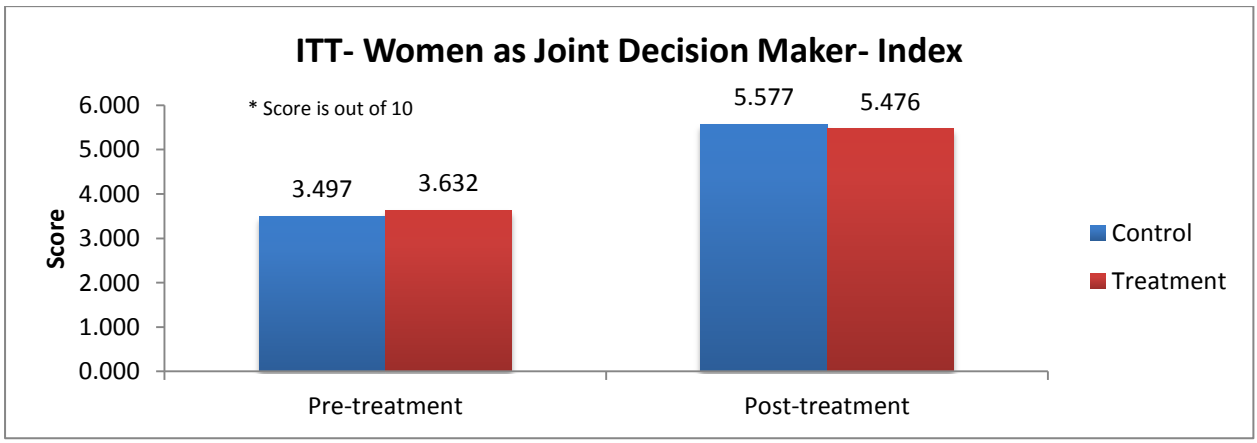
No detectable impact of the program on women's political participation, household decision making, participation in other socio-economic activity or community activity.

For the purpose of our study and this particular analysis, women empowerment is measured in terms of (i) greater participation in political and community activities (ii) household decision making power (iii) ability to use household income for personal expenses and (iv) participation in other socio-economic activities such as visiting bank, meeting panchayat officials, etc. This is because measuring and defining 'women empowerment' is complex and relatively a subjective variable. Therefore, we look at different indicators to determine whether the female member of the households feels empowered, post the SHG program. We administer this section among the female member of the household.

Household Decision Making

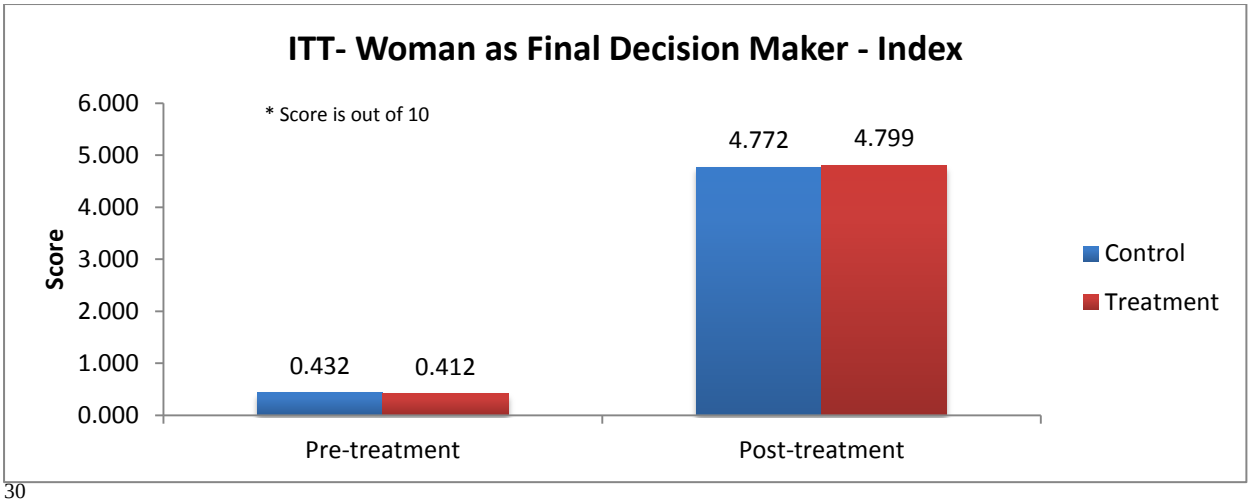
In the following analysis, we measure the level of decision making power and involvement that the female member of the family has in household decision making. This is measured using an index that is created by assessing woman's decision making power in terms of their investment decisions[29]. Our analysis suggests that although the level of power that women have in making household decisions increases over time (between the two rounds), there is no significant difference among the two groups-control and treatment. On an average, both the groups are better off post intervention compared to before intervention, however, we are unable to detect a causal positive effect of the program on the treatment group.

Figure 45: Women as Joint Decision Maker- ITT



[29] Questions pertaining to women's involvement in purchasing food item, children's education, daughter's marriage, children's health expenses, purchase of jewellery, festival & surplus expense and other household expenses are administered to female member of the household. If the female member responds as having stake, the data is coded as 1 and 0 if the female member does not have stake in the decision. This is repeated for all the expenses mentioned above and the score is totalled up for each household to assess female members' decision making power.

Figure 46: Women as Final Decision Maker- ITT

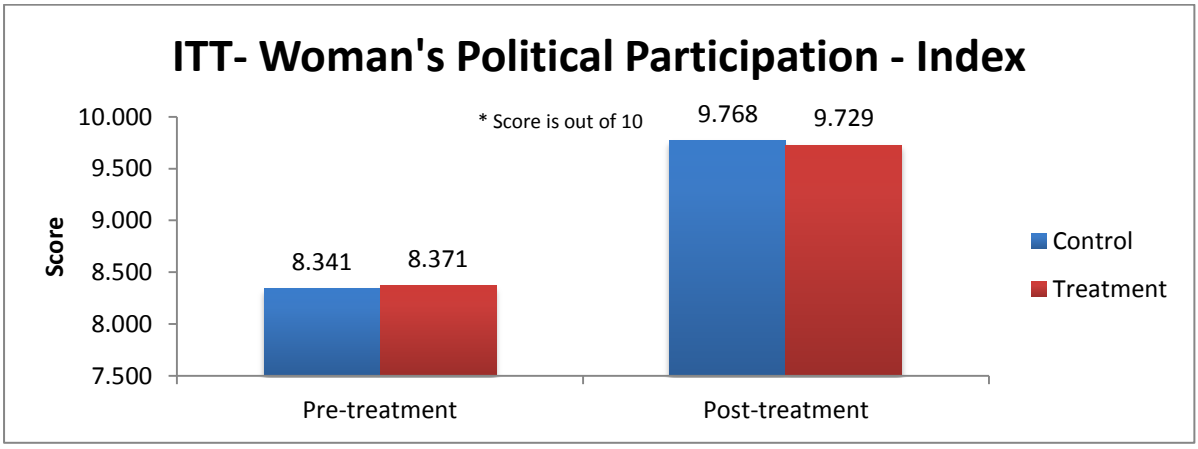


[30]

Political Participation

Using a set of questions (includes questions on whether they vote in local ,state and national elections and personal engagement with local governing bodies) that determine women's level of political participation, we created an index to test whether there were any differences in the two groups, post intervention. Our results suggest no significant differences in the level of political participation for the two groups[31]. It is worthwhile to note that the index scores for both treatment and control groups have risen over time with the increase being statistically significant.

Figure 47: Women's Political Participation-ITT



[30] Female member is said to be a final decision maker in instances when there is conflict of opinion and the female member reports to have the final say in that particular investment decision

[31] The analysis of the midline survey data had indicated a positive effect of the program on the women's political participation which is not visible in the endline survey data. However, the observation of a lack of program effect for the political participation index was validated using the endline survey data for the subsection which comprised the midline sample households.

Participation in Other Socio-Economic Activities

We also asked women about their level of involvement with community activities, visiting Government officials or bank to carry out their own financial transactions to assess the general level of women's involvement outside the domain of their household. While we see some indications of general level of improvement in terms of women's participation over time (from baseline to endline round), we do not detect any significant positive differences among the control and treatment group, reflecting that the program did not have substantial impact on increasing the empowerment levels of women study participants.

Figure 48: Women's Participation in Other Socio-Economic Activities (1)-ITT

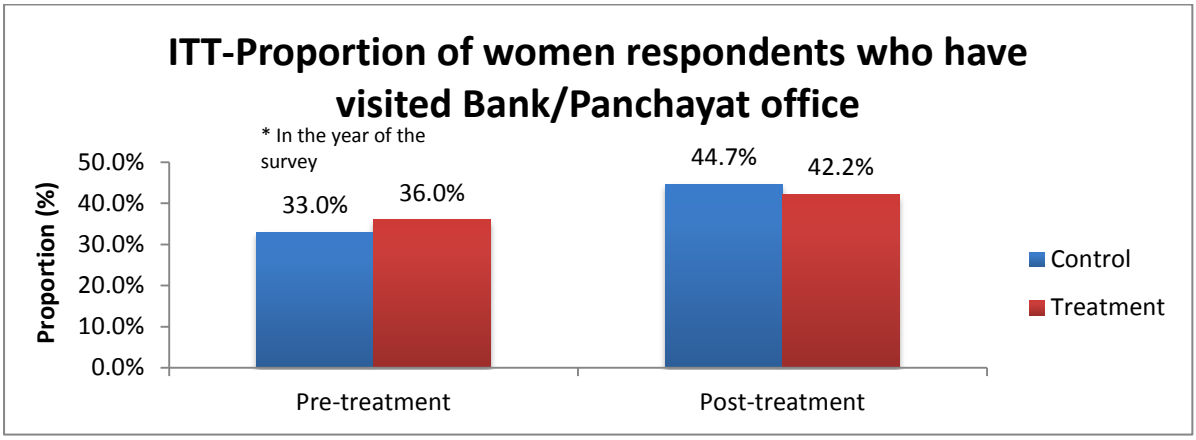
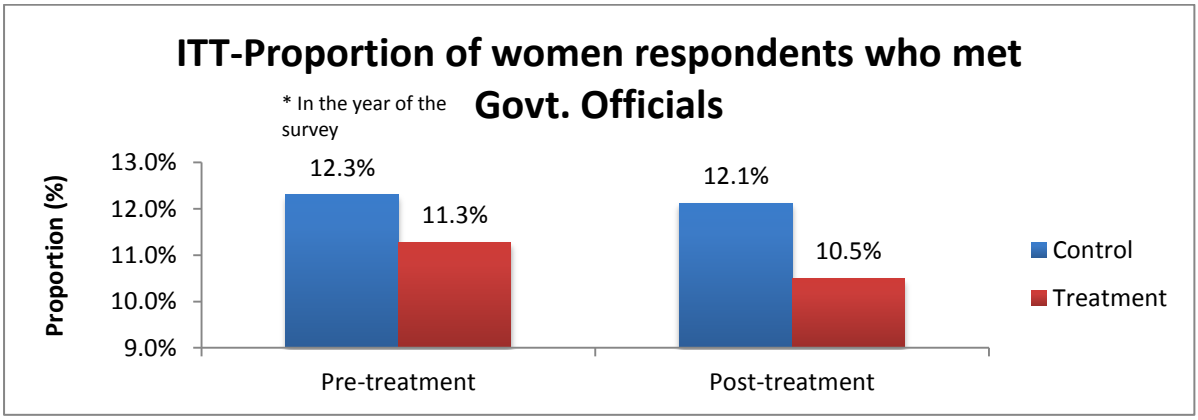


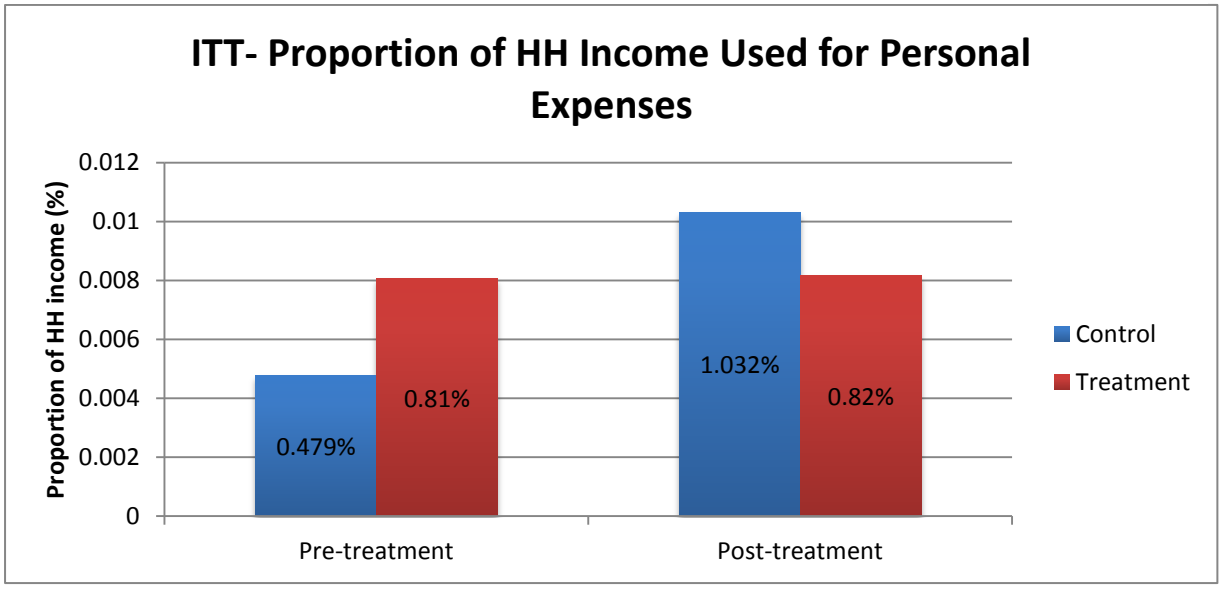
Figure 49: Women's Participation in Other Socio-Economic Activities (2)-ITT



Using Household Income for Personal Expenses

Women are also seen to be using more of household income for their personal expenses across both the groups. Prior to the program, women in the control and treatment groups were using 0.5% and 0.8% of household income on average respectively. However, following treatment, the control group used, on average, 1% of household income while the average of household income used by the treatment group remained constant at approximately 0.8%. Therefore, the treatment did not have a significant impact on the proportion of household income used by women but there is an increasing trend in the amount of household income used by women in general.

Figure 50: Proportion of Women Using Personal Expenses- ITT



ToT Analysis[32]

Using the ToT approach, we measure the impact of the program on women's level of empowerment by analysing variables pertaining to political participation, socio-economic participation and household decision making power and find no significant differences in the empowerment levels across two groups, therefore, suggesting that the SHG program did not directly result in increasing the empowerment levels of female study participants.

Households Types which benefitted most from the program

Households with businesses at the endline as well as households in higher expenditure quartiles (i.e. relatively more rich) were found to contribute positively to the effect of the SHG program, particularly for the savings and loan outcomes.

To ascertain the differential impact of the intervention on various household types, the following control variables were included in the regression specification: Sex and Education of Household Head, Household having a business and the level of poverty based on expenditure (sorted into quartiles and used as a proxy for income).

We present the results of a few selected variables in the table below. The table reflects the following – column 1 shows the isolated program effect controlling for the various household types, columns 2 to columns 5 represents the coefficients for the various control variables which need to be summed with the isolated program effect to obtain the differential effect of the program on different household types.

[32] We do not present the detailed ToT graphs/narrative for this section, as see similar results across all parameters mentioned above. However, the results are added in the appendix section.

It is observed that Households with businesses, households in the higher income quartiles and households with more educated household head are the ones which report saving with Banks. On the other hand household where the head of household is female are influenced by the program such that they are more likely to save with SHGs. Another interesting result is that while in isolation the program does not seem to have an effect on the decision making power of female household members, there is a positive and statistically significant effect of the program for those households with female household heads, i.e. the SHG program helps make the decision making power of female members in these households more secure.

The program effect of increasing the likelihood of households having outstanding loans is found to be statistically significant for households which are in the higher expenditure quartiles and for households which report having a business. Also households with businesses were found to have fewer informal loans as compared to households without any business a result which was statistically significant.

Finally, households having more educated heads and households having businesses were found to have a positive impact on the total yearly expenditure as well as the yearly expenditure on education for these households in addition to positive impact of the program (albeit the latter not being statistically significant)

Table 1: Program Effect by Household Type

Variables	Isolated Program Effect	Control Variables			
		Education of Household Head	Female Household Head	Expenditure Quartile	Household has Business
Household saves with Bank	-0.0217 (-0.65)	0.0357*** (6.27)	0.00514 (0.43)	0.0271*** (5.30)	0.0325* (2.53)
Household saves with SHG	0.0213 (0.47)	-0.0277*** (-4.21)	0.0824*** (5.31)	0.00902 (1.35)	0.0586*** (3.60)
Decision Making power of female household members	-0.240 (-0.99)	-0.166*** (-4.72)	4.060*** (41.24)	0.0448 (1.16)	-0.542*** (-5.90)
Household has outstanding loans	0.0245 (1.30)	-0.00338 (-0.61)	-0.0172 (-1.46)	0.0312*** (6.34)	0.0390*** (3.49)
Number of informal loans	0.0193 (0.23)	-0.126*** (-8.09)	-0.0460 (-1.24)	0.0979*** (6.77)	-0.0931* (-2.58)
Yearly Education Expenditure	2203.2 (1.89)	1542.0*** (5.73)	-660.1 (-1.20)		3790.0*** (6.11)
Total Yearly Expenditure	3510.5 (0.89)	5638.2*** (5.14)	-4956.6* (-2.10)		9515.7*** (4.70)

Note:
t statistics in parentheses
** p<0.05, ** p<0.01, *** p < 0.001*

Households Characteristics influencing SHG participations

The table given below presents the results of regressing some of the household characteristics on whether the household is part of any SHG program. This regression allows us to predict which types of households would be more amenable to taking up SHG membership.

Table 2: Household Characteristics influencing SHG membership

	Is household part of any SHG?
Education of Household Head	0.00296 (0.39)
Female Household Head	0.0944*** (5.50)
Expenditure Quartile	0.0170* (2.16)
Household has Business	0.0524** (2.89)
Constant	0.194*** (4.74)

Note:
t statistics in parentheses
** p<0.05, ** p<0.01, *** p < 0.001*

It is concluded that female led households, households with businesses and households in the higher expenditure quartiles are more likely to participate in SHG programs as compared to their alternates.

Limitations of the Study

The HIH-IFMR study spanned over a timeline of 7 years, with three rounds of data collection at regular intervals along with implementation of the SHG program after the first round of data collection. However, the study faced several challenges on the ground that might have impacted its ability to detect results in instances where there was truly an impact. In this context, it is important to note the impact evaluation results from the study in the context of its study limitations and not at its face value.

Local Context

The local conditions in terms of political and socio-economic context might not have been conducive at the time of implementation of the intervention. The project period coincided with the microfinance crisis in 2010-11[33]. The crisis caused MFIs and SHGs difficulties in accessing Bank Loans over the 2011 to 2013 time period, which in turn lead to a decreased disbursement of loans by these organisations in the aforementioned period. Consequently, the market was not very conducive in acquiring micro credit from banks adversely affecting the program by reducing its capacity to disburse micro loans to program participants. Secondly, Tamil Nadu experienced a marked increase in proliferation of the SHG movement during the project period. The state saw an increase from 378,000 SHGs with 6 million members in 2008 to over 556,000 SHGs with 8 million members in 2012. The improvement has been reflected in better take-up of microfinance and saving group programs by the people and has seen the state improve in its financial inclusion index scores over the years. In particular, the Tamil Nadu Government in partnership with World Bank initiated a state-wide SHG program under the name '*Pudhu Vazhvu*', which contaminated the study design as several households in the control group gained access to SHG program albeit courtesy of World Bank[34]. As mentioned in the SHG section, a total of 426 households in the control group and 690 households in the treatment group reported being part of a non-program SHG, which might have led to under-estimation of the effect of the SHG program on the overall well-being of study households.

Low Take-up Rate

The intervention of the study was spread across three dimensions- group formation, training and loan disbursement. HIH India was required to implement the intervention in treatment areas, post the baseline survey, beginning Nov 2011. Unfortunately, the take up rate of the SHG program was considerably low. Several meetings with HIH officials suggested that the reasons for lower than expected take up rate ranged from lack of willingness to become a SHG member to competition in the geographical area by other private MFIs and Government agencies who were also offering similar programs. As noted above, the timeline for the implementation of the program implementation was very close to the time when the

[33] The microfinance crisis of 2010-11 come about as a consequence of restrictive regulatory changes and surge in non-repayments by clients, which greatly reduced or stopped lending operations to microfinance institutions in India for the 2010 to 2013 period. An understanding of the crisis can gleaned from the article in the following link: https://www.cgap.org/sites/default/files/CGAP-Focus-Note-Andhra-Pradesh-2010-Global-Implications-of-the-Crisis-in-Indian-Microfinance-Nov-2010.pdf

[34] World Bank Poverty Reduction Project: http://www.worldbank.org/en/news/feature/2014/07/21/tamil-nadu-empowerment-and-poverty-reduction-project

microfinance crisis occurred, which led to a general negative perception about the microfinance industry in India. We believe that this might have had an effect on the general willingness of last mile consumers to take up the product as well as willingness of commercial banks and other financial institutions to fund MFIs. Given these challenges, group formation, training and loan disbursement progressed at an extremely slow rate. At the time of the endline survey, the status of intervention, as self-reported by the study participants is given in Table 1. The low take up of the interventions is another source of possible underestimation of the estimated effects of the SHG program.

Table 3: Take-Up Rate of SHG Program

Intervention Status	Number	% of Treatment Sample (N= 3482)	% of Group Formation Sample (N=1183)
Group Formation	1183	34%	100%
Training- M1	497	14%	42%
Training- M2	445	13%	37%
Training- M3	378	11%	31%
Training- M4	311	27% (considering only T2 sample)	26%
Loan Disbursement	434	12%	36%

Timeline of the Study

Due to the challenges faced on the ground in terms of implementation of the study, the timeline of the study was extended. The intervention period was expanded so as to provide additional time to HIH India to implement its intervention and to reach to as many potential households as possible for inclusion in the SHG program. This expansion in the timeline of the study created some challenges in terms of the study design and is a possible source of bias.

- Attrition- The total sample size for the study was 5061 households. However, at the time of endline survey, we were able to survey only 4356 households due to either being unable to track the remaining households or due to lack of consent obtained from the study households. This led to a total attrition rate of 14%, further decreasing the statistical power of the study. However, a simple regression of attrition on the assignment status of household tells us that attrition is not dependant on the treatment or control status of the study households and therefore does not create an attrition bias in the study.

Statistical Power of the Study

Due to low take up rate of the intervention and the attrition in the sample size from 5061 households to 4356 households, the impact measured on outcomes of interest could be an under-estimate[35].

[35] The impact measured could be an underestimate since the ability to detect a significant effect of the program when there is in fact a true effect reduces.

Conclusion and Policy Implications

Overall results from the study suggest that the SHG program is a powerful tool in mobilizing rural women to save and acquire loans from formal sources, thus bringing them into the ambit of formal financial services and inching closer towards the goal of financial inclusion for all. SHGs act important platforms for achieving financial inclusion for rural women belonging to low income households. Results also indicate towards the fact that a holistic SHG program comprising of not just group formation and loan disbursement but also training that caters to developing the business expertise of group members, helps in increasing the likelihood of SHG members starting or expanding an already existing business and using their savings and loans for further investments in their business, thereby promoting self-employment and entrepreneurial activities.

Using the Intention to Treat (ITT) analysis, comparing the treatment and control group for outcome variables of interest, we find the largest effect of the program on the savings pattern of the households. We see that treatment households are more likely to save than their control counterparts. Overall, control households are likely to save less due to lack of extra money for savings purposes, while treatment households are likely to save less in instances when there is no formal financial institution nearby reflecting that treatment households might be better off in terms of smoothening their income across different productive uses. Additionally, we see a positive effect on the monthly expenditure for the treatment group wherein treatment group on an average spend higher compared to the control group. We do not see any statistically significant impact of the SHG program on other variables of interest such as household income, households' business profile, loans and women empowerment, using the ITT analysis.

We also conduct the Treatment on Treated (ToT) analysis, comparing the group that actually took up the intervention within the treatment group with the entire control group for outcome variables of interest. We find many more positive significant results using this approach as we restrict the sample to only those households that took up the SHG program. Using this approach, we find positive statistically significant impact of the program on the treatment group in terms of the likelihood to save, savings for productive purposes, likelihood to obtain loans and number of loans, likelihood to own a business and the total number of business. This suggests that among those that actually took up the intervention, the SHG program had positive effects on their financial behaviour and their ability to engage in self-employment. On the other hand, the ToT analysis does not find statistically significant results of the impact of the SHG program on expenditure pattern, asset portfolio and income of households and women empowerment indicators of the household survey. It must be noted however, that we did find anecdotal evidence on the positive externalities that the SHG program had in empowering women and increasing their socio-economic welfare, however, we couldn't quantify the impact on the same in the way our study defines these parameters.

We also found that, of the study sample the relatively well-off households (i.e featured in higher expenditure quartiles) and households which ran businesses benefited from the SHG program particularly in the form of improved likelihood to take loans, decrease dependence on informal loans along with other savings outcomes. Moreover, well-off households that were led by women and had businesses were also observed to be more likely to participate in SHG programs.

The inability to detect statistically significant impact on some of the parameters mentioned above also hinge on the limitation of the study, as detailed in the previous section. The challenges pertaining to the unsuitable local context, low take up rate and attrition point towards the fact that there were external factors that played an important role in underestimating the effects of the SHG program. Our research also found SHGs dissolving over the period of the study due to factors associated with group composition and willingness to comply to group rules and structure. This indicates a strong need for close monitoring and supervision of the groups in the activities they perform, such as, group meetings, financial transactions within the group, book-keeping and discussing socio-economic challenges that the groups face. Furthermore, most of the households dropping out from the program occurred before the first loan cycle with drop-outs decreasing as the SHG matured, indicating the importance of early hand holding and involvement from the SHG organisation. While these observations raise questions on the sustainability of the model, as on-going supervision is costly for the Self-Help Group Promoting Institutions (SHPIs) to manage, a fine balance in this context will need to be maintained by the SHPIs. One way of doing this could be to track those groups that are more new compared to other groups that are more mature in terms of the number of years they have completed since being formed and the quality of the groups. A potential vulnerability index could also be created by the SHPIs to score groups on this parameter and assess those groups that seem more likely to fall out or dissolve. Broadly, dissolution of SHG members could prove to be costly for the SHPIs, given the time and effort they invest in building and training them.

Significant strides have been made by the Indian Government in the past and more recently in the space of revitalizing the SHG movement in India. One such initiative has been for the Government to digitize SHGs,[36] wherein the financial information of the SHGs are recorded digitally and SHG accounts are digitized with the objective of integrating SHG members within the national financial inclusion agenda and improving the quality of interface between SHG members and banks for efficient delivery of banking services to SHG members. Initiatives such as these have significant implications on SHG programs such as those presented in this study. Digitization of SHG accounts have the power to promote transparency among groups, reduce delays in financial transactions and improve the data quality of SHG records,[37] all of which could have significant bearings on the working and functioning of the group and in turn on the impact it creates on broad socio-economic parameters such as increase in income, business creation and expansion, empowerment of women and active use of formal financial services.

[36] NABARD's SHG Digitization Initiative called as E-Shakti- https://eshakti.nabard.org/

[37] Digitizing SHGs in India (Sharma & Chatterjee, 2016)- https://cfi-blog.org/2016/09/12/digitizing-self-help-groups-in-india/

SHGs largely being a platform for rural women with limited opportunities, should also be motivated and persuaded to actively participate in livelihood promotion activities that are commonly offered on this platform by SHPIs, NGOs and other Governmental agencies[38] so as to not just use the group for making formal financial transactions, but also engage in building other channels for their livelihood promotion through self-employment or participating in other training activities that enhance their skillsets. SHPIs can play a vital role here and if motivated in the right direction, SHGs could have a lasting impact in creating sustainable livelihoods for the rural poor. In this context, hand-holding of SHGs, providing them with adequate training to create a sustainable livelihood opportunity is of paramount importance in creating positive impacts of SHGs.

The SHG movement has come a long way, since its beginning, in impacting lives and creating positive externalities in the communities at large. While challenges remain in terms of the sustainability, quality and the progress of SHGs, it can be said beyond doubt that the SHG sector is moving in the right direction with the right goal in mind, that of financial inclusion for all.

[38] NRLM being an example of one such scheme- http://aajeevika.gov.in/

Appendix A: First Differences for Full (ITT) and Reduced (ToT) Sample- Endline

	Full Sample			Reduced Sample		
	Treatment Difference	Constant	Observations	Treatment Difference	Constant	Observations
Household Income						
Total Income	108.8 (0.03)	99527.1*** (28.12)	4329	-3950.8 (-0.85)	99968.7*** (28.24)	2445
Salary Income	2303.7 (0.79)	69602.1*** (29.38)	4016	-567.1 (-0.17)	69887.5*** (29.53)	2307
Agricultural Income	-2147.8 (-0.31)	42798.1*** (7.96)	828	36035.44	43180.8*** (7.95)	443
Animal Husbandry Income	-3438.0 (-0.66)	32926.7*** (7.09)	502	-5082.1 (-0.95)	32926.7*** (7.08)	326
Business Income	-12874.9 (-0.68)	91027.0*** (5.07)	351	-29206.4 (-1.55)	91027.0*** (5.05)	194
Income from Sale of Asset	24714.3 (0.25)	111000 (1.56)	9	80666.7 (0.44)	111000 (1.37)	5
Payment for some injury or work-related accident/ Insurance payments received	31875	30000 (.)	7	-3333.3 (-0.87)	30000 (.)	4
Rent/Lease of property (house and land.	8522.5 (0.64)	14637.5 (1.55)	32	-7212.5 (-0.68)	14637.5 (1.46)	12
Rent/Lease of Assets	-19040.0 (-0.32)	105000 (1.93)	12	20500.0 (0.27)	105000 (1.79)	7
Remittance from HH members	-7958.0 (-0.88)	76427.0*** (9.45)	611	-5383.6 (-0.51)	76907.1*** (9.41)	353
Remittance from Non HH members	-8145.8 (-0.58)	35833.3** (2.73)	66	-11560.6 (-0.80)	35833.3* (2.67)	29
Pension Income	-2192.2 (-0.13)	79642.5*** (5.24)	132	-5714.4 (-0.24)	79642.5*** (5.19)	61
Welfare Income	-290.5 (-0.58)	3563.6*** (7.77)	1887	-122.0 (-0.20)	3564.6*** (7.66)	1069
Inheritance	20300 (0.65)	26666.7 (2.22)	6	23783.3 (0.51)	26666.7 (2.10)	5
Other Income	-1159.5 (-1.04)	2923.1** (2.76)	958	-1782.3 (-1.66)	2938.6** (2.75)	547
Household Businesses						
Type of business						
Agricultural business	0.0159 (0.55)	0.257*** (11.38)	4335	0.0467 (1.33)	0.256*** (11.24)	2448
Animal husbandry	0.0174 (0.79)	0.189*** (10.04)	4335	0.0785** (3.09)	0.188*** (9.91)	2448
Fisheries	-0.00269 (-	0.00302	4335	-0.00217 (-	0.00305	2448

	0.89)	(1.00)		0.69)	(1.00)	
Retail/Petty shop	0.00938* (2.10)	0.0159*** (4.90)	4335	0.00600 (1.05)	0.0160*** (4.90)	2448
Wholesale dealer (Rice/Grain Dealer)	-0.00151 (-1.44)	0.00151 (1.44)	4335	-0.00152 (-1.43)	0.00152 (1.43)	2448
Mill owner	-0.0000911 (-0.10)	0.000755 (1.00)	4335	-0.000762 (-1.00)	0.000762 (1.00)	2448
Cycle/auto repair shop	-0.000514 (-0.43)	0.00151 (1.43)	4335	-0.00152 (-1.43)	0.00152 (1.43)	2448
Fruit vendor	-0.0000911 (-0.10)	0.000755 (1.00)	4335	-0.000762 (-1.00)	0.000762 (1.00)	2448
Vegetable vendor	0.000664 (1.42)	-3.69e-17 (-1.80)	4335	0.000880 (1.00)	-5.78e-17*** (-6.92)	2448
Chicken/meat shop	0.000996 (1.75)	-8.40e-17*** (-3.36)	4335	0.000880 (1.01)	-7.38e-17*** (-8.87)	2448
Sounds Service	0.00166* (2.26)	-5.05e-17 (-1.57)	4335	0.00264 (1.74)	-5.57e-17*** (-3.87)	2448
Laundry/Ironing Service	-0.00160 (-1.16)	0.00227 (1.75)	4335	-0.00141 (-0.89)	0.00229 (1.75)	2448
Carpentry	0.000150 (0.11)	0.00151 (1.43)	4335	-0.000644 (-0.47)	0.00152 (1.43)	2448
Barber	-0.00151 (-1.42)	0.00151 (1.42)	4335	-0.00152 (-1.42)	0.00152 (1.42)	2448
Tailor Shop	0.00304 (0.84)	0.0106*** (3.77)	4335	0.00958 (1.80)	0.0107*** (3.77)	2448
Car rental	0.0000589 (0.04)	0.00227 (1.77)	4335	0.00123 (0.57)	0.00229 (1.77)	2448
Milk vending	0.000814 (0.59)	0.00151 (1.42)	4335	0.00112 (0.61)	0.00152 (1.42)	2448
Number of Businesses owned	0.0380 (1.27)	1.220*** (50.07)	1963	0.0733* (1.99)	1.220*** (49.59)	1168
Profit: The Last Month	-886.1 (-0.91)	4448.0*** (4.95)	1960	-1843.0 (-1.88)	4494.7*** (4.95)	1167
Profit: A Good Month in the past year	1862.5 (0.59)	16879.1*** (6.44)	1949	-3781.7 (-1.27)	16987.5*** (6.42)	1156
Profit: A Bad Month in the past year	238.7* (2.20)	479.0*** (6.83)	1950	223.4 (1.54)	484.0*** (6.84)	1157
Profit: A Regular Month in the past year	-949.1 (-0.63)	3370.4* (2.29)	1951	-1268.8 (-0.81)	3406.2* (2.29)	1157
<u>Household Expenditure</u>						
Total educational expenses in the past 1 year	2776.1* (2.41)	10675.0*** (13.20)	2480	1373.0 (1.00)	10731.7*** (13.12)	1435
Total House expenses in the past 1 year	1878.6 (0.70)	26567.4*** (12.72)	4334	1337.7 (0.42)	26669.9*** (12.67)	2448
Total transportation expenses in the past 1 year	-170.3 (-0.52)	5189.8*** (17.62)	4331	-340.2 (-0.89)	5210.3*** (17.58)	2447
Total entertainment expenses in the past 1 year	165.3 (1.15)	962.8*** (9.04)	4331	97.15 (0.55)	971.6*** (9.07)	2447
Total medical expenses of the HH in the past 1 year	1462.7** (2.64)	6080.7*** (15.60)	4331	1226.1 (1.68)	6026.2*** (15.56)	2447
Total expenses on festival/ceremonies in the past 1 year	421.7 (0.37)	14983.2*** (16.43)	4331	-367.1 (-0.26)	15032.8*** (16.35)	2447
Other expenses in the past 1 year	129.5 (0.65)	236.7 (1.54)	4330	173.5 (0.72)	238.9 (1.54)	2447
Total expenses incurred by the HH in the past 1 year	5547.5 (1.62)	60062.9*** (22.88)	4334	3463.3 (0.79)	60198.1*** (22.77)	2448
<u>Loans & Insurance</u>						
No. of Outstanding loans	0.113 (1.88)	1.241*** (24.75)	4329	0.426*** (5.98)	1.231*** (24.81)	2446

Total amount of loans taken by household	-4415.2 (-0.74)	99894.0*** (20.06)	3183	-8703.7 (-1.23)	99237.1*** (19.80)	1888
Total amount of formal loans taken by household	-3837.1 (-0.59)	87276.6*** (15.78)	2520	-8753.6 (-1.21)	86289.6*** (15.55)	1555
Total amount of informal loans taken by household	-3837.1 (-0.59)	87276.6*** (15.78)	2520	-8753.6 (-1.21)	86289.6*** (15.55)	1555
No. of Insurance policies	0.0258 (0.93)	0.727*** (31.99)	4324	0.0944** (2.97)	0.725*** (31.83)	2444
Household Savings						
Household saves	0.0909** (2.73)	0.384*** (13.68)	4327	0.310*** (8.12)	0.379*** (13.69)	2445
No. of saving accounts	0.00595 (0.28)	1.083*** (64.06)	1941	0.00716 (0.27)	1.085*** (63.11)	1280
Age of olders saving account (years)	-0.181 (-0.70)	2.979*** (13.03)	1936	0.0278 (0.10)	2.923*** (12.97)	1278
Total household savings	1147.1 (0.83)	6786.0*** (8.70)	1940	-1373.6 (-1.28)	6686.2*** (8.49)	1279
Saving Purpose						
Social Security	0.0318 (0.94)	0.254*** (8.97)	1936	0.0830* (2.19)	0.252*** (8.70)	1278
Food Security	0.0555 (1.53)	0.382*** (12.73)	1937	0.114** (2.79)	0.383*** (12.45)	1279
Education	0.00958 (0.32)	0.413*** (16.45)	1936	0.0370 (1.13)	0.409*** (16.19)	1278
Medical Expenses	-0.00163 (-0.05)	0.411*** (13.34)	1938	0.0339 (0.89)	0.407*** (13.03)	1278
Marriage	0.00688 (0.31)	0.177*** (9.63)	1937	0.0259 (1.03)	0.177*** (9.37)	1278
Festivals	-0.0357 (-1.17)	0.240*** (8.80)	1936	0.00251 (0.07)	0.238*** (8.66)	1278
Emergencies	-0.0616 (-1.89)	0.675*** (25.02)	1939	0.164436	0.675*** (24.43)	1280
Agriculture	0.00829 (0.85)	0.0295*** (3.60)	1936	0.0160 (1.52)	0.0262*** (3.37)	1278
Asset Building	0.0201** (2.98)	0.00787* (2.07)	1937	0.0233* (2.51)	0.00605 (1.77)	1279
Self Respect	0.00549 (0.48)	0.0295** (3.07)	1936	0.0147 (1.11)	0.0262** (2.82)	1278
Business expansion	0.0127** (3.25)	0.00197 (1.02)	1936	0.0121* (2.25)	0.00202 (1.02)	1278
Start a new business	0.00140 (1.41)	2.58e-17** (3.25)	1936	0.00128 (1.00)	-1.66e-17*** (-3.75)	1278
Reasons for not saving						
We do not have extra money to save	0.049416	0.972*** (157.14)	2413	0.069122	0.972*** (156.99)	1181
There is no institution close to where	0.0261** (2.95)	0.0233*** (4.42)	2392	0.0418** (2.69)	0.0233*** (4.41)	1168
We do not trust the institution	0.00995 (1.62)	0.0135*** (3.47)	2391	0.0148 (1.36)	0.0135*** (3.47)	1167
Do not know the procedure to open a Savings account	0.0122	0.00737* (2.53)	2391	-0.00454 (-1.11)	0.00737* (2.52)	1167
If not saving, use for extra money				0.197*** (4.98)	0.272*** (12.29)	1457
Invest in business	0.0735** (2.75)	0.273*** (12.36)	2829			
Get jewelry	0.0292 (0.89)	0.532*** (19.30)	3326	0.173*** (4.40)	0.529*** (19.19)	1800
Get supplies in large quantity (rice, sugar, etc)	-0.0123 (-0.49)	0.781*** (39.30)	3612	0.0907*** (3.55)	0.780*** (39.06)	2014
Lend to relatives or friends	0.00425 (0.18)	0.162*** (8.60)	2569	0.0899* (2.27)	0.161*** (8.57)	1284

Pay debt	0.0582 (1.87)	0.468*** (18.13)	3250	0.229*** (6.20)	0.466*** (18.04)	1756
Women Empowerment						
Proportion of HH income used for personal needs	41.85 (0.88)	400.1*** (10.08)	4284	60.62 (1.01)	399.9*** (9.98)	2426
Proportion of own income used for personal needs	13.91 (0.58)	234.2*** (11.03)	4270	29.78 (1.09)	234.1*** (10.94)	2420
Voted in State Elections	-0.000877 (-0.22)	0.988*** (310.37)	4286	0.00349 (0.83)	0.988*** (307.59)	2427
Voted in National Elections	-0.00259 (-0.72)	0.991*** (342.17)	4288	-0.00137 (-0.32)	0.991*** (339.05)	2428
Voted in Panchayat Elections	-0.00505 (-0.98)	0.983*** (241.67)	4289	-0.00342 (-0.52)	0.983*** (239.54)	2429
Visited Panchayat office/revenue department/office in past year	-0.0249 (-0.93)	0.447*** (20.17)	4284	0.0197 (0.64)	0.442*** (20.26)	2428

Appendix B: Difference-in-Difference for Full Sample (ITT)

Household Expenditure	-1 Total educational expenses in the past 1 year	-2 Total House expenses in the past 1 year	-3 Total transportation expenses in the past 1 year	-4 Total entertainment expenses in the past 1 year	-5 Total medical expenses of the HH in the past 1 year	-6 Total expenses on festival/ceremonies in the past 1 year	-7 Other expenses in the past 1 year	-8 Total expenses incurred by the HH in the past 1 year
Time	4254.7***	16153.4***	2316.5***	-618.1***	-1519.5**	-1274.7	-1318.1**	15247.9***
	-5.09	-7.71	-7.21	(-3.52)	(-3.09)	(-0.92)	(-2.60)	-5.22
Treatment	706.3	1407.2	280.9	-99.25	981.9	-1815.3	622.9	1883.4
	-1.15	-1.44	-1.14	(-0.61)	-1.71	(-1.33)	-0.85	-0.83
Difference-in-Differences	2069.8	471.5	-451.2	264.5	480.8	2237	-493.3	3664.1
	-1.78	-0.17	(-1.20)	-1.27	-0.67	-1.34	(-0.66)	-0.93
Constant	6420.3***	10414.0***	2873.2***	1580.9***	7600.2***	16257.9***	1554.8**	44815.0***
	-13.3	-18.72	-15.63	-11.14	-20.01	-13.91	-3.13	-26.07
Observations	5544	8669	8666	8666	8666	8666	8665	8669

Business	-1 Does a member of the HH currently own a business?	-2 Number of businesses in HH	-3 Profit in best month	-4 Profit in worst month	-5 Profit in regular month
Time	-0.0975***	-0.130***	12694.6***	237.9**	2017.7
	(-4.98)	(-4.06)	-4.8	-2.85	-1.35
Treatment	0.0157	-0.0267	-106.2	-32.08	-134.1
	-0.57	(-0.77)	(-0.22)	(-0.72)	(-0.52)
Difference-in-Differences	0.00765	0.0647	1968.8	270.8*	-815
	-0.34	-1.73	-0.62	-2.25	(-0.53)
Constant	0.534***	1.349***	4184.4***	241.1***	1352.7***
	-23.64	-44.2	-10.1	-6.52	-5.6
Observations	8658	4303	4039	4546	3331

Loans	-1 Household has Outstanding loans	-2 No. of Outstanding loans	-3 No. of Formal Loans Outstanding	-4 No. of Informal Loans Outstanding	-5 Total amount of loans taken by household	-6 Total amount of formal loans taken by household	-7 Total amount of informal loans taken by household	-8 No. of Insurance policies
Time	-0.146***	-1.473***	-0.0974*	-1.239***	28510.3***	33619.3***	43364.5***	-0.521***
	(-8.97)	(-14.74)	(-2.28)	(-18.00)	-6.44	-6.88	-7.75	(-14.28)
Treatment	0.0127	-0.0185	-0.00986	-0.00198	-2895.6	-1944	-419.4	0.0735
	-0.74	(-0.13)	(-0.15)	(-0.02)	(-0.57)	(-0.36)	(-0.13)	-1.71
Difference-in-Differences	0.0237	0.132	0.109*	0.0159	-1519.5	-1893.1	-3417.8	-0.0478
	-1.25	-1.13	-2	-0.19	(-0.29)	(-0.33)	(-0.53)	(-1.07)
Constant	0.857***	2.713***	0.936***	1.639***	71383.7***	53657.3***	43912.1***	1.248***
	-58.53	-21.79	-17.45	-20.32	-16.83	-11.03	-17.97	-35.84
Observations	8641	8641	8670	8670	6912	4872	5390	8657

Savings	-1 Total household savings	-2 Bank: Saving amount	-3 Post Office: Saving amount	-4 MFI: Saving amount	-5 SHG: Saving amount	-6 Chit Fund: Saving amount	-7 Cooperative: Saving amount	-8 Informal Sources: Saving amount
Time	624.9	41718.1***	3691.4	1008.8	1089.2*	13018.8	1977.5	14695.2*
	-1012.7	-4.89	-1.77	-0.41	-2.35	-1.12	-1.05	-2.01
Treatment	158.7	-330.3	277.9	-2845	229.8	-3331.8	718.3	-1254
	-912.7	(-0.26)	-0.19	(-1.94)	-0.55	(-1.31)	-0.71	(-0.84)
Diff-in-Diff	984.1	4399.9	8228	781.5	-201	4088	0	9241.5
	-1394.5	-0.31	-1.34	-0.31	(-0.35)	-0.31	(.)	-0.56
Constant	6161.1***	4196.9***	5185.6***	4066.2**	2474.3***	9164.5***	1204.2***	4277.3**
	-710.2	-3.63	-4.07	-2.8	-8.62	-3.7	-5.45	-3.07
Observations	4518	1371	770	70	2408	168	231	203

Savings Sources	-9 Does HH save in Bank	-10 Does HH save in Post Office	-11 Does HH save in MFI	-12 Does HH save in SHG	-13 Does HH save in Chit Fund	-14 Does HH save in Cooperative	-15 Does HH save in Informal Sources
Time	-0.494***	-0.0821**	-0.00937	0.484***	-0.0308**	-0.108***	-0.0631***
	(-17.68)	(-3.23)	(-1.10)	-13.24	(-3.29)	(-4.89)	(-4.25)
Treatment	0.00857	0.026	-0.00552	0.01	0.0217	-0.029	-0.0101
	-0.27	-0.97	(-0.74)	-0.21	-1.89	(-1.22)	(-0.65)
Difference-in-Differences	-0.0206	-0.0378	0.0208*	0.0186	-0.0266*	0.0311	0.00485
	(-0.62)	(-1.27)	-2.02	-0.41	(-2.15)	-1.31	-0.28
Constant	0.533***	0.198***	0.0172*	0.313***	0.0406***	0.108***	0.0788***
	-20.59	-9.06	-2.48	-8.07	-4.82	-4.89	-5.99
Observations	4625	4625	4625	4627	4625	4625	4625

Women Empowerment	-1 Are women involved in HH decision making: Index	-2 Women as final decision makers in HH: Index	-3 Political Participation by Women: Index	-4 Visited panchayat office/revenue department/office in past year	-5 Met with a Govt. official in the past year
Time	2.080***	4.346***	1.427***	0.117***	-0.00174
	-10.67	-26.82	-10.5	-4.68	(-0.07)
Treatment	0.135	-0.0202	0.0301	0.0296	-0.0102
	-0.78	(-0.37)	-0.2	-1.1	(-0.51)
Difference-in-Differences	-0.236	0.0476	-0.0696	-0.0544	-0.00601
	(-0.98)	-0.24	(-0.45)	(-1.76)	(-0.21)
Constant	3.497***	0.432***	8.341***	0.330***	0.123***
	-24.99	-9.41	-63.81	-15.15	-6.99
Observations	8672	8672	8672	8618	8621

Appendix C: Difference-in-Difference for Reduced Sample (ToT)

	-1	-2	-3	-4	-5	-6	-7	-8
Household Expenditure	Total educational expenses in the past 1 year	Total House expenses in the past 1 year	Total transportation expenses in the past 1 year	Total entertainment expenses in the past 1 year	Total medical expenses of the HH in the past 1 year	Total expenses on festival/ceremonies in the past 1 year	Other expenses in the past 1 year	Total expenses incurred by the HH in the past 1 year
Time	4269.8***	16298.6***	2320.4***	-615.0***	-1386.0**	-1309.2	-1330.1**	15476.2***
	-5.05	-7.72	-7.16	(-3.47)	(-2.90)	(-0.93)	(-2.60)	-5.3
Treatment	504.5	1350.9	225.6	88.31	846.1	848.7	485.5	4426.8
	-0.71	-1.3	-0.78	-0.42	-1.18	-0.45	-0.46	-1.5
Difference-in-Differences	868.6	-13.13	-565.7	8.841	380	-1215.7	-311.9	-963.6
	-0.63	(-0.00)	(-1.32)	-0.04	-0.4	(-0.53)	(-0.29)	(-0.19)
Constant	6461.9***	10371.3***	2889.9***	1586.6***	7412.2***	16342.0***	1569.0**	44721.8***
	-13.25	-18.53	-15.64	-11.09	-19.65	-13.86	-3.12	-26
Observations	3196	4896	4895	4895	4895	4895	4895	4896

Business	-1 Does a member of the HH currently own a business?	-2 Number of businesses in HH	-3 Profit in best month	-4 Profit in worst month	-5 Profit in regular month
Time	-0.0953***	-0.128***	12795.8***	239.6**	2049.2
	(-4.80)	(-4.05)	-4.79	-2.84	-1.36
Treatment	0.0564	-0.0118	-0.79	-56.29	-128.5
	-1.81	(-0.30)	(-0.00)	(-1.13)	(-0.45)
Difference-in-Differences	0.0328	0.0852	-3780.9	279.7	-1140.3
	-1.26	-1.93	(-1.25)	-1.8	(-0.71)
Constant	0.531***	1.349***	4191.7***	244.4***	1357.0***
	-23.5	-44.46	-9.94	-6.53	-5.58
Observations	4892	2521	2410	2686	1985

Loans	-1 Household has Outstanding loans	-2 No. of Outstanding loans	-3 No. of Formal Loans Outstanding	-4 No. of Informal Loans Outstanding	-5 Total amount of loans taken by household	-6 Total amount of formal loans taken by household	-7 Total amount of informal loans taken by household	-8 No. of Insurance policies
Time	-0.149***	-1.476***	-0.104*	-1.237***	28192.4***	32838.9***	42447.8***	-0.523***
	(-9.09)	(-14.66)	(-2.43)	(-17.84)	-6.3	-6.68	-7.53	(-14.23)
Treatment	0.0649***	0.387*	0.174*	0.173	-1883.3	-2372.3	-943.7	0.115*
	-3.67	-2.33	-2.15	-1.57	(-0.34)	(-0.39)	(-0.28)	-2.17
Difference-in-Differences	0.0743***	0.0391	0.238**	-0.158	-6820.4	-6381.3	-7809.9	-0.021
	-3.46	-0.28	-3.13	(-1.59)	(-1.15)	(-1.02)	(-1.11)	(-0.39)
Constant	0.856***	2.707***	0.930***	1.639***	71044.7***	53450.7***	43841.8***	1.248***
	-58.04	-21.62	-17.26	-20.13	-16.63	-10.86	-17.76	-35.46
Observations	4881	4881	4896	4896	4047	2951	3202	4891

Savings	-1 Bank: Saving amount	-2 Post Office: Saving amount	-3 MFI: Saving amount	-4 SHG: Saving amount	-5 Chit Fund: Saving amount	-6 Cooperative: Saving amount	-7 Informal Sources: Saving amount
Time	41699.1***	3632.5	324.1	828.1*	13018.8	6007.2***	14624.4
	-4.88	-1.73	-0.12	-2.26	-1.1	-19.7	-1.98
Treatment	-2316.7	-118.2	-3488.9	19.97	-4933.7	-11.47	-1854
	(-1.94)	(-0.06)	(-2.03)	-0.05	(-1.90)	(-0.03)	(-1.21)
Diff-in-Diff	-25398.3*	4478.4	1307.8	495.7	-7499.6	0	-13418.5
	(-2.02)	-0.97	-0.49	-0.97	(-0.59)	(.)	(-1.79)
Constant	4215.9***	5244.5***	4750.9**	2510.8***	9164.5***	1204.2***	4348.1**
	-3.62	-4.06	-2.8	-8.74	-3.65	-5.41	-3.07
Observations	805	417	47	1619	80	133	125

Savings Sources	-9 Does HH save in Bank	-10 Does HH save in Post Office	-11 Does HH save in MFI	-12 Does HH save in SHG	-13 Does HH save in Chit Fund	-14 Does HH save in Cooperative	-15 Does HH save in Informal Sources
Time	-0.496***	-0.0791**	-0.00688	0.481***	-0.0310**	-0.110***	-0.0623***
	(-17.56)	(-3.07)	(-0.83)	-13.01	(-3.27)	(-4.89)	(-4.16)
Treatment	0.0172	0.0178	-0.0031	0.0755	0.0115	-0.0438	-0.00346
	-0.47	-0.6	(-0.41)	-1.38	-0.91	(-1.73)	(-0.19)
Difference-in-Differences	-0.0447	-0.0779*	0.0244*	0.0223	-0.0165	0.0451	-0.00372
	(-1.16)	(-2.39)	-1.98	-0.41	(-1.21)	-1.78	(-0.19)
Constant	0.537***	0.198***	0.0149*	0.311***	0.0411***	0.110***	0.0785***
	-20.59	-8.96	-2.25	-7.94	-4.82	-4.89	-5.91
Observations	2841	2841	2841	2842	2841	2841	2841

Women Empowerment	-1 Are women involved in HH decision making: Index	-2 Women as final decision makers in HH: Index	-3 Political Participation by Women: Index	-4 Visited panchayat office/revenue department/office in past year	-5 Met with a Govt. official in the past year
Time	2.088***	4.317***	1.420***	0.116***	-0.00176
	-10.61	-26.95	-10.34	-4.61	(-0.07)
Treatment	0.531*	0.0199	0.0929	0.0796*	0.0102
	-2.5	-0.3	-0.5	-2.34	-0.45
Difference-in-Differences	-0.359	0.43	-0.044	-0.0599	-0.0214
	(-1.26)	-1.85	(-0.24)	(-1.56)	(-0.65)
Constant	3.471***	0.428***	8.346***	0.326***	0.123***
	-24.92	-9.22	-63.06	-15.17	-6.89
Observations	4896	4896	4896	4876	4876

Appendix D: Summary Statistics for SHG Survey

For Current SHG Members

	Obs.	Mean	S.D.	Min	Max
Current HIH SHG Member	1185	0.55	0.50	0.00	1.00
Current HIH SHG Size	652	14.03	2.92	0.00	26.00
SHG Role					
Member	650	0.88	0.33	0.00	1.00
Leader	650	0.10	0.30	0.00	1.00
Treasurer	650	0.02	0.14	0.00	1.00
Book-Keeper	650	0.00	0.04	0.00	1.00
Group Formation Age in Years	652	4.34	2.19	1.08	8.75
Group Joining Age in Years	652	4.31	2.17	1.08	8.75
Attended any training session	652	0.79	0.40	0.00	1.00
Attended M1 training module	518	0.96	0.19	0.00	1.00
Attended M2 training module	518	0.86	0.35	0.00	1.00
Attended M3 training module	518	0.73	0.45	0.00	1.00
Attended M4 training module	518	0.60	0.49	0.00	1.00
Reason for not attending module training					
I was not aware of any training	134	0.47	0.50	0.00	1.00
I was aware but could not find time	134	0.43	0.50	0.00	1.00
I was aware but not interested in social activities	134	0.07	0.26	0.00	1.00
Others	134	0.02	0.15	0.00	1.00
Attended business training	518	0.38	0.49	0.00	1.00
Type of business training attended					
Goat Rearing	194	0.71	0.45	0.00	1.00
Dairy Farming	194	0.11	0.31	0.00	1.00
Vegetable Cultivation	194	0.02	0.12	0.00	1.00
Tailoring	194	0.07	0.26	0.00	1.00
Mat Weaving- Bedding	194	0.01	0.07	0.00	1.00

Mat Weaving- Door Mat	194	0.03	0.17	0.00	1.00
Organic Farming	194	0.06	0.23	0.00	1.00
Duration of business training					
Less than one week	193	0.44	0.50	0.00	1.00
One to three weeks	193	0.28	0.45	0.00	1.00
One month	193	0.22	0.42	0.00	1.00
More than one month	193	0.05	0.22	0.00	1.00
Reason for not attending business training					
I do not own a business and am not interested in starting one	320	0.39	0.49	0.00	1.00
I do not own a business and don't need training	320	0.08	0.27	0.00	1.00
No time to attend training	320	0.43	0.50	0.00	1.00
Was not aware of training session	320	0.10	0.30	0.00	1.00
HIH Loan					
Loan taken from HIH	652	0.67	0.47	0.00	1.00
Number of loans borrowed from HIH	434	1.35	0.62	1.00	4.00
Total Loan Amount	432	20261.57	12423.08	5000.00	80000.00
Loan Duration in Months	427	14.89	4.65	3.33	36.00
Loan Monthly Interest Rate	432	1.84	2.00	0.51	25.00
Total Principal Amount Paid	424	12877.32	8991.40	313.00	49000.00
Purpose for HIH Loans					
Start a new business	567	0.04	0.20	0.00	1.00
Acquire new assets for an existing business	567	0.03	0.17	0.00	1.00
Acquire new assets for households	420	0.02	0.14	0.00	1.00
To buy stocks/material for business	567	0.02	0.16	0.00	1.00
Solve cash flow problems for the households	567	0.67	0.47	0.00	1.00
Solve cash flow problems for the business	568	0.05	0.21	0.00	1.00
Repay old business debt	567	0.03	0.17	0.00	1.00
Repay old household debt	567	0.05	0.22	0.00	1.00
Health expense	537	0.02	0.13	0.00	1.00
Marriage	537	0.01	0.11	0.00	1.00

Other ceremonies	537	0.01	0.07	0.00	1.00
Home improvements/repair	537	0.01	0.11	0.00	1.00
Education	567	0.03	0.17	0.00	1.00
Home construction	537	0.01	0.11	0.00	1.00
Jewellery purchase	147	0.01	0.12	0.00	1.00
Regular consumption	420	0.00	0.05	0.00	1.00
To give a loan to someone else	420	0.00	0.05	0.00	1.00
Internal SHG Loans					
Internal loan taken from SHG	652	0.37	0.48	0.00	1.00
No. of internal loans taken by SHG	240	1.33	0.69	0.00	5.00
Total internal loan amount	223	11268.16	9753.81	1000.00	55000.00
Internal loan duration in months	232	11.67	10.24	0.00	84.00
Internal loan monthly interest rate	219	1.81	0.66	0.20	6.00
Total principal amount paid	215	7103.68	6870.32	7.00	60000.00
Purpose for SHG Internal Loan					
Start a new business	218	0.01	0.10	0.00	1.00
Acquire new assets for an existing business	277	0.01	0.12	0.00	1.00
Acquire new assets for households	218	0.04	0.19	0.00	1.00
To buy stocks/material for business	218	0.02	0.13	0.00	1.00
Solve cash flow problems for the households	286	0.65	0.48	0.00	1.00
Solve cash flow problems for the business	285	0.04	0.19	0.00	1.00
Repay old business debt	277	0.04	0.19	0.00	1.00
Repay old household debt	285	0.08	0.27	0.00	1.00
Health expense	285	0.07	0.25	0.00	1.00
Marriage	285	0.02	0.13	0.00	1.00
Other Ceremonies	218	0.01	0.12	0.00	1.00
Home Improvement/Repairs	277	0.01	0.12	0.00	1.00
Education	277	0.02	0.15	0.00	1.00
Home Construction	218	0.01	0.10	0.00	1.00
Other Investments	218	0.00	0.07	0.00	1.00

Savings with HIH SHG	652	0.97	0.17	0.00	1.00
Individual Savings in the past one year	632	2363.55	6331.06	0.00	108800.00
Total Individual Savings	632	10178.59	23396.17	100.00	288000.00
Total Savings of SHG	631	54947.77	55384.22	300.00	896000.00
Savings Frequency	ref.				
Fortnightly	632	0.00	0.07	0.00	1.00
Monthly	632	1.00	0.07	0.00	1.00
Saving Instalment Amount	625	112.28	36.25	50.00	300.00
Failed to Save Instalment Amount	632	0.05	0.22	0.00	1.00
SHG Member finding it difficult to save	632	0.03	0.17	0.00	1.00
SHG Books of Accounts					
Responsible for maintaining books of accounts					
Leader	652	0.98	0.12	0.00	1.00
Representative	652	0.01	0.09	0.00	1.00
Animator	652	0.00	0.04	0.00	1.00
Other Member	652	0.01	0.08	0.00	1.00
Able to update books of accounts	652	0.36	0.48	0.00	1.00
Updating Books of Accounts Frequency					
Daily	652	0.00	0.04	0.00	1.00
Weekly	652	0.00	0.06	0.00	1.00
Fortnightly	652	0.00	0.04	0.00	1.00
Monthly	652	0.99	0.08	0.00	1.00
Reconciliation of passbook done on a monthly basis	652	0.98	0.15	0.00	1.00
Savings Logistics					
Visited bank for financial transactions	652	0.27	0.45	0.00	1.00
Time taken to visit the bank in minutes	179	50.09	43.75	1.00	180.00
Total expense to visit the bank	179	25.43	18.20	5.00	60.00
Number of times visited bank to make transactions	178	6.74	8.32	0.00	50.00
Visited ATM for financial transactions	652	0.03	0.18	0.00	1.00
Taken help from BC for financial transactions	652	0.09	0.29	0.00	1.00

Reason for not visiting the bank					
Other reasons	473	0.00	0.05	0.00	1.00
Not asked by other members	473	0.51	0.50	0.00	1.00
Asked but refused due to lack of time	473	0.32	0.47	0.00	1.00
Asked but refused due to no permission from family	473	0.03	0.16	0.00	1.00
Not able to handle bank formalities	473	0.14	0.34	0.00	1.00
SHG Meetings					
Meeting Frequency					
Fortnightly	652	0.01	0.09	0.00	1.00
Monthly	652	0.99	0.11	0.00	1.00
Quarterly	652	0.00	0.06	0.00	1.00
Once in a year	652	0.00	0.04	0.00	1.00
Activities during group meeting					
Collection of Savings	652	0.96	0.20	0.00	1.00
Action on internal loans	652	0.02	0.15	0.00	1.00
Action on external loans	652	0.02	0.13	0.00	1.00
Discussion on SHG Member's Business	652	0.00	0.06	0.00	1.00
Discussion on Political Issues	652	0.00	0.04	0.00	1.00
Group Dynamics					
Frequency of discussing financial issues					
Every Meeting	652	0.87	0.33	0.00	1.00
Every 2nd meeting	652	0.01	0.08	0.00	1.00
Every 3rd meeting	652	0.00	0.07	0.00	1.00
Once in a year	652	0.01	0.08	0.00	1.00
As and when required	652	0.11	0.31	0.00	1.00
Frequency of discussing social issues					
Every Meeting	652	0.08	0.28	0.00	1.00
Every 2nd meeting	652	0.00	0.04	0.00	1.00
Every 3rd meeting	652	0.01	0.10	0.00	1.00
Once in a year	652	0.00	0.04	0.00	1.00

As and when required	652	0.90	0.30	0.00	1.00
Frequency of discussing political issues					
Every Meeting	652	0.04	0.20	0.00	1.00
Every 2nd meeting	652	0.00	0.07	0.00	1.00
Every 3rd meeting	652	0.00	0.04	0.00	1.00
Once in six months	652	0.00	0.04	0.00	1.00
Once in a year	652	0.00	0.06	0.00	1.00
As and when required	652	0.94	0.23	0.00	1.00
Frequency of discussing community/village development issues					
Every Meeting	652	0.06	0.23	0.00	1.00
Every 2nd meeting	652	0.00	0.04	0.00	1.00
Every 3rd meeting	652	0.00	0.07	0.00	1.00
Once in a year	652	0.01	0.09	0.00	1.00
As and when required	652	0.93	0.26	0.00	1.00
Number of members attending the meeting	649	12.16	4.87	0.00	50.00
Missed meetings in the past year	652	0.23	0.42	0.00	1.00
Frequency of discussing financial status of group					
Every meeting	652	0.96	0.20	0.00	1.00
Every 2nd meeting	652	0.01	0.12	0.00	1.00
Based on member's request	652	0.00	0.07	0.00	1.00
Not planned	652	0.02	0.13	0.00	1.00
Never shared	652	0.00	0.07	0.00	1.00
Frequency of resolution of queries					
Immediately	652	0.80	0.40	0.00	1.00
In the next meeting	652	0.17	0.37	0.00	1.00
Within a week	652	0.02	0.15	0.00	1.00
Within two weeks	652	0.00	0.07	0.00	1.00
Within a month	652	0.01	0.10	0.00	1.00
Within a year	652	0.00	0.04	0.00	1.00
Awareness of group related information					

Internal loan taken by other members	652	0.84	0.36	0.00	1.00
HIH loan taken by other members	652	0.08	0.28	0.00	1.00
SHG account bank balance	652	0.06	0.24	0.00	1.00
Member fails to save	652	0.01	0.11	0.00	1.00
Member fails to pay instalment	652	0.00	0.04	0.00	1.00
SHG related disputes in the last one year	652	0.05	0.23	0.00	1.00
Interaction with HIH					
HIH official attended meeting in last one year	652	0.92	0.27	0.00	1.00
HIH help with maintaining books of accounts	652	0.88	0.32	0.00	1.00
HIH help with doubts regarding SHG functions	652	0.88	0.33	0.00	1.00
HIH help with resolving group dispute	652	0.24	0.43	0.00	1.00
HIH help with visiting the bank	652	0.49	0.50	0.00	1.00

Appendix E: Summary Statistics for SHG Survey

For Past SHG Members

	Obs.	Mean	S.D.	Min	Max
Past HIH SHG Member	1185	0.45	0.50	0.00	1.00
Past HIH SGF Size	446	14.10	3.10	3.00	23.00
SHG Role					
Member	531	0.94	0.24	0.00	1.00
Leader	531	0.05	0.21	0.00	1.00
Treasurer	531	0.01	0.10	0.00	1.00
Book-Keeper	531	0.01	0.09	0.00	1.00
Group Formation Age in Years	533	6.10	1.47	1.08	13.08
Group Joining Age in Years	533	6.08	1.47	1.08	11.42
Attended any training session	533	0.67	0.47	0.00	1.00
Attended M1 training module	355	0.99	0.11	0.00	1.00
Attended M2 training module	355	0.86	0.34	0.00	1.00
Attended M3 training module	355	0.68	0.47	0.00	1.00
Attended M4 training module	355	0.47	0.50	0.00	1.00
Reason for not attending module training					
I was not aware of any training	178	0.73	0.45	0.00	1.00
I was aware but could not find time	178	0.23	0.42	0.00	1.00
I was aware but not interested in social activities	178	0.03	0.17	0.00	1.00
Others	178	0.01	0.11	0.00	1.00
Attended business training	355	0.21	0.41	0.00	1.00
Type of business training attended					
Goat Rearing	75	0.72	0.45	0.00	1.00
Dairy Farming	75	0.15	0.36	0.00	1.00
Vegetable Cultivation	75	0.04	0.20	0.00	1.00
Tailoring	75	0.01	0.12	0.00	1.00
Mat Weaving- Bedding	75	0.04	0.20	0.00	1.00
Organic Farming	75	0.04	0.20	0.00	1.00
Duration of business training					
Less than one week	75	0.68	0.47	0.00	1.00

One to three weeks	75	0.01	0.11	0.00	1.00
One month	75	0.13	0.34	0.00	1.00
More than one month	75	0.16	0.37	0.00	1.00
Reason for not attending business training					
I do not own a business and am not interested in starting one	279	0.56	0.50	0.00	1.00
I do not own a business and don't need training	279	0.04	0.20	0.00	1.00
No time to attend training	279	0.34	0.47	0.00	1.00
Was not aware of training session	279	0.06	0.24	0.00	1.00
HIH Loan					
Loan taken from HIH	533	0.32	0.47	0.00	1.00
Number of loans borrowed from HIH	172	1.20	0.43	1.00	3.00
Total Loan Amount	172	14046.51	6413.45	5000.00	33000.00
Loan Duration in Months	166	12.33	2.99	4.00	25.00
Loan Monthly Interest Rate	172	1.67	0.45	1.00	3.17
Total Principal Amount Paid	172	13524.82	6485.39	24.00	33000.00
Purpose for HIH Loans					
Start a new business	204	0.02	0.16	0.00	1.00
Acquire new assets for an existing business	172	0.01	0.11	0.00	1.00
Acquire new assets for households	172	0.01	0.08	0.00	1.00
Solve cash flow problems for the households	206	0.73	0.44	0.00	1.00
Solve cash flow problems for the business	204	0.02	0.16	0.00	1.00
Repay old business debt	204	0.05	0.23	0.00	1.00
Repay old household debt	204	0.05	0.23	0.00	1.00
Health expense	172	0.03	0.17	0.00	1.00
Marriage	172	0.02	0.15	0.00	1.00
Home Improvement/Repairs	172	0.03	0.18	0.00	1.00
Education	204	0.01	0.12	0.00	1.00
To buy stocks/material for business	32	0.03	0.18	0.00	1.00
Lease new land	32	0.03	0.18	0.00	1.00
Internal SHG Loans					
Internal loan taken from SHG	652	0.37	0.48	0.00	1.00
No. of internal loans taken by SHG	240	1.33	0.69	0.00	5.00

Total internal loan amount	223	11268.16	9753.81	1000.00	55000.00
Internal loan duration in months	232	11.67	10.24	0.00	84.00
Internal loan monthly interest rate	219	1.81	0.66	0.20	6.00
Total principal amount paid	215	7103.68	6870.32	7.00	60000.00
Purpose for SHG Internal Loan					
Start a new business	204	0.02	0.16	0.00	1.00
Acquire new assets for an existing business	172	0.01	0.11	0.00	1.00
Acquire new assets for households	172	0.01	0.08	0.00	1.00
Solve cash flow problems for the households	206	0.73	0.44	0.00	1.00
Solve cash flow problems for the business	204	0.02	0.16	0.00	1.00
Repay old business debt	204	0.05	0.23	0.00	1.00
Repay old household debt	204	0.05	0.23	0.00	1.00
Health expense	172	0.03	0.17	0.00	1.00
Marriage	172	0.02	0.15	0.00	1.00
Home Improvement/Repairs	172	0.03	0.18	0.00	1.00
Education	204	0.01	0.12	0.00	1.00
To buy stocks/material for business	32	0.03	0.18	0.00	1.00
Lease new land	32	0.03	0.18	0.00	1.00
Savings with HIH SHG	533	0.77	0.42	0.00	1.00
Individual Savings in the past one year	408	4157.27	11950.13	0.00	120000.00
Total Individual Savings	n/a	n/a	n/a	n/a	n/a
Total Savings of SHG	408	26045.44	29049.03	100.00	162000.00
Savings Frequency	ref.				
Weekly	408	0.01	0.10	0.00	1.00
Fortnightly	408	0.00	0.07	0.00	1.00
Monthly	408	0.99	0.12	0.00	1.00
Saving Installment Amount	407	97.18	19.08	1.00	200.00
Failed to Save Installment Amount	408	0.01	0.12	0.00	1.00
SHG Member finding it difficult to save	408	0.01	0.11	0.00	1.00
Reason for not attending module training					
I was not aware of any training	178	0.73	0.45	0.00	1.00
I was aware but could not find time	178	0.23	0.42	0.00	1.00
I was aware but not interested in social activities	178	0.03	0.17	0.00	1.00

Others	178	0.01	0.11	0.00	1.00
Attended business training	355	0.21	0.41	0.00	1.00
SHG Books of Accounts					
Responsible for maintaining books of accounts					
Leader	533	0.98	0.15	0.00	1.00
Representative	533	0.02	0.12	0.00	1.00
Animator	533	0.00	0.04	0.00	1.00
Other Member	533	0.01	0.07	0.00	1.00
Able to update books of accounts	533	0.24	0.43	0.00	1.00
Updating Books of Accounts Frequency					
Weekly	509	0.01	0.10	0.00	1.00
Fortnightly	509	0.00	0.06	0.00	1.00
Monthly	509	0.98	0.13	0.00	1.00
Quarterly	509	0.00	0.04	0.00	1.00
Reconciliation of passbook done on a monthly basis	533	0.83	0.37	0.00	1.00
Savings Logistics					
Visited bank for financial transactions	533	0.11	0.31	0.00	1.00
Time taken to visit the bank in minutes	55	35.95	39.65	0.30	120.00
Total expense to visit the bank	49	27.12	18.20	5.00	100.00
Number of times visited bank to make transactions	56	6.71	6.56	0.00	25.00
Visited ATM for financial transactions	533	0.02	0.15	0.00	1.00
Taken help from BC for financial transactions	533	0.03	0.17	0.00	1.00
Reason for not visiting the bank					
Not asked by other members	473	0.57	0.50	0.00	1.00
Asked but refused due to lack of time	473	0.32	0.47	0.00	1.00
Asked but refused due to no permission from family	473	0.02	0.14	0.00	1.00
Not able to handle bank formalities	473	0.09	0.29	0.00	1.00
SHG Meetings					
Meeting Frequency					
Weekly	508	0.01	0.10	0.00	1.00
Fortnightly	508	0.01	0.08	0.00	1.00
Monthly	508	0.98	0.13	0.00	1.00

Once a year	508	0.00	0.04	0.00	1.00
Activities during group meeting					
Do not know	533	0.09	0.29	0.00	1.00
Other activity	533	0.01	0.07	0.00	1.00
Collection of savings	533	0.87	0.34	0.00	1.00
Action on internal loans	533	0.03	0.16	0.00	1.00
Action on external loans	533	0.00	0.06	0.00	1.00
Updating books of accounts	533	0.00	0.06	0.00	1.00
Discussion on social issues	533	0.00	0.04	0.00	1.00
Discussion on village development	533	0.00	0.04	0.00	1.00
Group Dynamics					
Frequency of discussing financial issues					
Every Meeting	530	0.76	0.43	0.00	1.00
Every 2nd meeting	530	0.01	0.08	0.00	1.00
Every 3rd meeting	530	0.01	0.09	0.00	1.00
Once in a year	530	0.00	0.06	0.00	1.00
As and when required	530	0.22	0.42	0.00	1.00
Frequency of discussing social issues					
Every Meeting	528	0.06	0.24	0.00	1.00
Every 2nd meeting	528	0.01	0.10	0.00	1.00
Every 3rd meeting	528	0.00	0.06	0.00	1.00
Every 6th months	528	0.00	0.04	0.00	1.00
Once a year	528	0.01	0.11	0.00	1.00
Frequency of discussing political issues					
Every Meeting	530	0.03	0.18	0.00	1.00
Every 2nd meeting	530	0.00	0.06	0.00	1.00
Every 3rd meeting	530	0.01	0.08	0.00	1.00
Once in six months	530	0.00	0.04	0.00	1.00
Once in a year	530	0.00	0.06	0.00	1.00
As and when required	530	0.95	0.22	0.00	1.00

Frequency of discussing community/village development issues					
Every Meeting	530	0.03	0.18	0.00	1.00
Every 2nd meeting	530	0.01	0.09	0.00	1.00
Every 3rd meeting	530	0.00	0.06	0.00	1.00
Once in a year	530	0.00	0.04	0.00	1.00
As and when required	530	0.01	0.09	0.00	1.00
Number of members attending the meeting	519	12.20	4.22	1.00	41.00
Missed meetings in the past year	533	0.18	0.39	0.00	1.00
Frequency of discussing financial status of group					
Every meeting	532	0.83	0.37	0.00	1.00
Every 2nd meeting	532	0.01	0.10	0.00	1.00
Based on member's request	532	0.00	0.06	0.00	1.00
Not planned	532	0.13	0.33	0.00	1.00
Never shared	532	0.03	0.17	0.00	1.00
Frequency of resolution of queries					
Immediately	525	0.83	0.37	0.00	1.00
In the next meeting	525	0.13	0.33	0.00	1.00
Within a week	525	0.02	0.15	0.00	1.00
Within two weeks	525	0.00	0.04	0.00	1.00
Within a month	525	0.01	0.10	0.00	1.00
Within three months	525	0.00	0.04	0.00	1.00
Awareness of group related information					
Internal loan taken by other members	533	0.70	0.46	0.00	1.00
HIH loan taken by other members	533	0.08	0.28	0.00	1.00
SHG account bank balance	533	0.17	0.38	0.00	1.00
Member fails to save	533	0.03	0.18	0.00	1.00
Member fails to pay installment	533	0.01	0.09	0.00	1.00
SHG related disputes in the last one year	533	0.17	0.37	0.00	1.00
<u>Interaction with HIH</u>					
HIH official attended meeting in last one year	517	0.76	0.43	0.00	1.00

HIH help with maitaining books of accounts	533	0.73	0.45	0.00	1.00
HIH help with doubts regarding SHG functions	533	0.70	0.46	0.00	1.00
HIH help with resolving group dispute	533	0.24	0.43	0.00	1.00
HIH help with visiting the bank	533	0.26	0.44	0.00	1.00

Appendix F: Strategy for analysis

The Randomised Controlled Trial Approach

A randomised control trial randomly selects households from the sample to be treated. Treated households can then be compared to a control group that was not treated, to discern the impact of a program. To see the impact of the program across a set of outcome variables of interest, we conduct an analysis at two levels:

- Simple difference : outcome differences between treatment and control households
- Difference in difference: Outcome differences between treatment and control households over time

We map the changes of the following variables of interest:

- Household yearly income
- Household monthly expenditure
- Household business ownership
- Household savings
- Household loans
- Women empowerment index

These essentially represent facets of the household's lifestyle that it was hypothesized the program could theoretically have an impact on.

Simple Difference/Regression Method

The purpose of this analysis is to estimate the average treatment effect i.e. we see if we can detect a difference in outcome variables between treatment and control households in the midline survey. We calculate the following:

$$\beta = Treatment_{2016} - Control_{2016}$$

In order to do so, we estimate the following regression:

$$Y = \propto + \beta Treatment + \in$$

Where,

Y = Outcome variable

α= Constant (average of Y for the control group)

β= coefficient for treatment group – the effect of receiving the intervention on the outcome variable

T= a binary variable that takes the value 1 if the household is in a "treatment" panchayat and 0 if it isn't.

Difference in Difference Method and Regression

The difference in difference (DID) method allows us to isolate the program effect. We compare average treatment effects over time, to account for changes that may have affected both the treatment and control groups over time. The assumption is that since the groups are statistically identical, in the absence of the program, the two groups would have progressed in identical trajectories. We compared the results of the baseline survey, completed in 2011 and compared them to the results of the endline survey, conducted in 2016, across treatment and control groups for the same set of variables. The DID method estimates the program effect (β) in the following manner:

$$\beta = (Treatment_{2016} - Control_{2016}) - (Treatment_{2011} - Control_{2011})$$

This is calculated by estimating the following regression:

$$Y = a + d \times Year_{2016} + q \times Treatment + b \times Year_{2016} \times Treatment + e$$

$$Treatment = \begin{cases} 1 \text{ if individual is in treatment group} \\ 0 \text{ if individual is in control group} \end{cases}$$

$$Year_{2016} = \begin{cases} 1 \text{ if endline data} \\ 0 \text{ if baseline data} \end{cases}$$

Where,

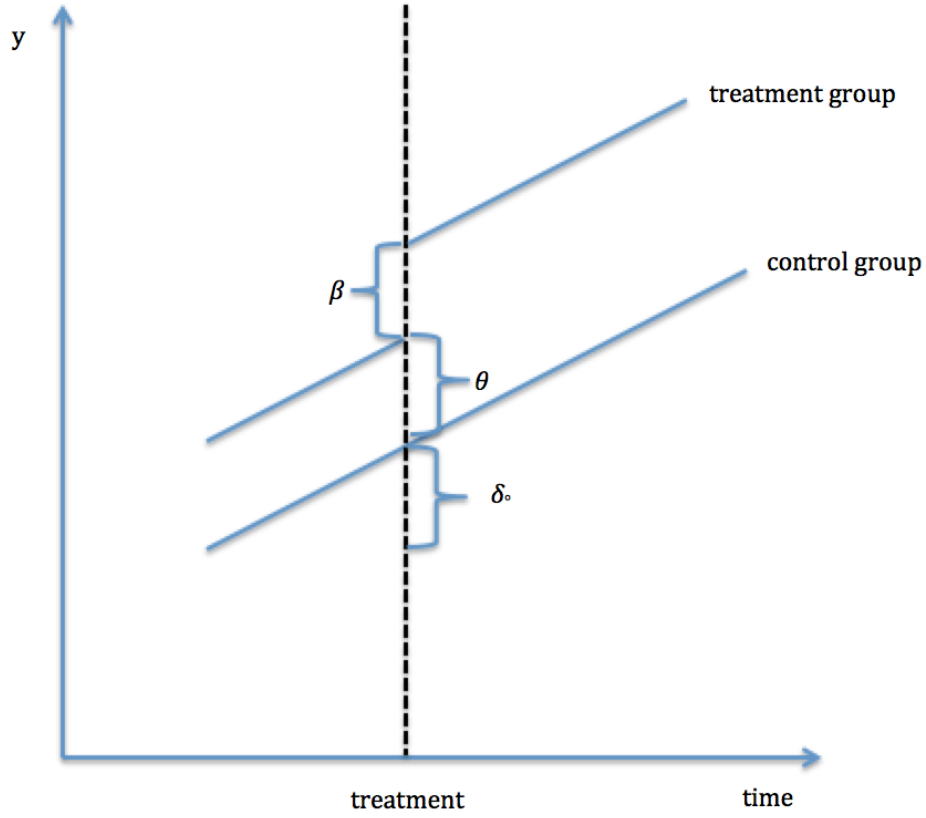
Y= outcome variable

α = constant value that is the mean of the control group in the reference time period – 2011

Year_{2016} = is a dummy variable that takes the value 1 if the sample value was recorded in 2016 and value 0 if the sample value was recorded in 2011. d represents the change of in the outcome variable that can be attributed purely to time.

Treatment = is a variable that takes the value 1 if the household is a treatment household and 0 if it is a control household. q represents the difference between the control and treatment group means in the reference time period – 2011

$\beta(\text{Year}_{2016} * \text{Treatment})$ = is an interaction variable between the year of the sample value and whether the household is control or treatment. The coefficient of interest in this regression is β that yields to us the effect of the program, known as the treatment effect.



The graph above clearly illustrates what each coefficient in the difference-in-differences regression represents.

θ - It represents the initial difference between the treatment and control group for the variable of interest, y prior to treatment. When the randomisation is executed perfectly θ will equal 0.

δ_0 - It represents the change in the variable of interest due to time. If the common trends assumption holds, the change in the treatment and control group would have been equivalent without the treatment.

β - It represents the additional increase in the variable of interest due to the treatment thus isolating the treatment effect.

Appendix G: Note on Sampling and Power Calculations

Sampling

The study districts and panchayats were chosen in areas where HiH-India had set up their operations. Within these panchayats a list of prospective villages was suggested by HiH-India taking into account their logistical considerations. From the list provided, the research team randomly chose the sample villages; furthermore the final list of sample households was randomly selected from a list of households for each of the villages. These households had agreed to be part of the study when approached by Hand in Hand India and provided their details, which were included in the household lists for their respective village. Following an initial baseline, the households were randomly assigned to the control and treatment group with the assignment done at the panchayat level.

Minimum Detectable Effect

Given the sample size, we now compute the minimum effect size that the sample has the ability to detect. In order to measure this effect size, we chose four variables of interest: household savings, loans, whether the household has a business or not and monthly household expenditure. We used the data from the baseline survey conducted in 2011.

For each variable, we have calculated the population mean or average, standard deviation and inter cluster correlation (ρ). The level of significance tested is 5% and the 68% of the population is assigned to the treatment group.

Assuming a power of 80% (the likelihood that 80% of the time if the intervention has an impact, it can be detected with the given sample), we calculate the minimum detectable effect. The table below presents the calculations.

Table 4: Calculating the Minimum Detectable Effect

Variables	Household savings (INR)	Household loans (INR)	Business ownership	Monthly household expenditure (INR)
Mean	3,364.11	54,426.90	0.53	3,668.68
Standard deviation	15454.61	87878.81	0.50	4,148.89
Inter cluster correlation	0.03	0.06	0.13	0.03
Minimum Detectable effect*	2,489.67	15,124.04	0.10	665.26
Standardized MDE**	0.16	0.17	0.19	0.16

*The MDE with standard cluster errors is calculated for the baseline sample at a power of 80%.

** The standard MDE is calculated by dividing the absolute MDE by the standard deviation

This table indicates that given the sample size, we can detect a true and significant effect of 16% change in household savings over time. The table can be read similarly for the other variables of interest.