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Can Women's Self-Help Groups Contribute to Sustainable Development?

Evidence of Capability Changes from Northern India

Paul Anand
Swati Saxena
Rolando Gonzalez
Hai-Anh H. Dang

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Abstract

This paper investigates a women's self-help group program with more than 1.5 million participants in one of the poorest rural areas of Northern India. The program has four streams of activity in micro-savings, agricultural enterprise training, health and nutrition education, and political participation. The paper considers whether there is any evidence that program membership is associated with quality of life improvement. Using new data on a variety of self-reported capability indicators from members and non-members, the paper estimates propensity score matching models and reports evidence of differences in some dimensions as well as significant benefits to those from the most disadvantaged groups—scheduled castes and tribes. The paper considers robustness and concludes that for some dimensions, there is evidence that the program has contributed to sustainable development through improvements in the quality of life.

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Paul Anand
Swati Saxena
Rolando Gonzalez
Hai-Anh H. Dang*

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*Anand (paul.anand@open.ac.uk; corresponding author) is professor with Open University and London School of Economics; Dang (hdang@worldbank.org; corresponding author) is an economist in the Analytics and Tools Unit, Development Data Group, World Bank; Saxena (swati1107@gmail.com) is director of research at the NGO that developed the data. We are particular grateful to colleagues at the World Bank for comments on the paper and related discussions on quality of life measurement, particularly Jeni Klugman, Uppamanyu Datta, Dean Joliffe, Jed Friedman and Franciso Ferreira and Santhakumar Sundaram. We are also grateful to James Heckman and Amartya Sen for supporting the project of which this is part and to the Leverhulme Trust for funding questionnaire design on which the paper draws. Finally, we also thank workshop participants in Delhi and Tokyo for a number of useful comments, the Oxford Foundation for Knowledge Exchange and Knowledge for Change (KCP) program for additional funding, and Columbia University in New York for hosting the write-up of the paper.

1. Introduction

Sustainable development goals (SDGs) represent a significant broadening of the view that development is just about financial poverty reduction towards a more wholistic vision covering a range of priorities including gender equality and quality of life. (UNDP 2017). These priorities have become a focus for international development work and speak directly to the human centered, multi-dimensional vision of economic and social development argued for by Sen (1999), Nussbaum (2000), Martinetti (1994), Kanbur and Basu (2009) and many others who, from a theoretical perspective, emphasize the importance of empowerment, inclusion, and capability expansion in the process of economic growth, which others have stressed (see for instance Klugman et al (2014), Langer et al (2015), Team and Doss (2011)) must also be gender sensitive. Women's self-help groups in India provide an interesting and concrete example of an intervention that is both well aligned with theoretical ideas about development as a process of capability expansion and contributes to policy priorities of gender empowerment such as SDG 5. There has been some rigorous research on self-help groups but as they continue to evolve in their conception and design, it is important to update the evaluation picture: this paper offers such an update.

One of the earliest studies of self-help groups in India is a paper based on field work conducted in in 2001-03 by Garikipati (2008) who found that loans procured by women were diverted to general household purposes though later work has tended to report less pessimistic findings. Swain and Varghese (2009), for example, found evidence that longer SHG membership and NGO training were both positively associated with the creation of new assets. Subsequently, studies have looked at empowerment in different ways including social, political and psychological terms and reported on a growing

range of additional training services offered by SHG hosts. One of, if not the, most technically sophisticated studies to date, Datta's (2015) assessment of the JEEVikA program in Bihar, finds that economically and socially marginalized groups can benefit significantly from SHG membership through a reduction in reliance on high cost sources of borrowing, as well as increased participation of women in household decision-making.[1] In addition, there is also evidence of SHG impacts on other aspects of human development. Saha et al. (2013), for instance, use national data, from a district level household survey, to show that the uptake of maternal health services is greater in villages where an SHG is present. Furthermore, a study by Deininger and Liu (2013) that characterizes the State of Andra Pradesh *Indhira Kranthi Patham (IKP)* as focusing on twin goals of financial improvement and empowerment, finds that social capital was enhanced, that program members had higher savings and were more able to move freely within their village and interact within their caste. Protein and energy intake, and consumption also increased though the authors importantly noted that this might well reflect agricultural aspects of the program as much as income or asset changes.[2, 3] A more recent experimental paper study finds little impact on empowerment of a micro-borrowing scheme although as its authors accept, Banerjee et al (2015 p27), the

[1] Datta's study is perhaps the closest to ours though there are two significant differences. JEEVikA is funded by the World Bank and operates by saturation and so offers a best-case but difficult to replicate study of self-help. From a methodological perspective, his paper depends on recall: while he argues plausibly for the approach, no such requirements were made of subjects in this study.

2 For relevant background research on female empowerment, see Brody et al (2015), Doepke (2014), Ganle (2015), Prennushi and Gupta (2014) and Tromlmlerova (2015). Garikipati (2008) is interesting in the current context for the use of vulnerability and empowerment indicators, which are used in a study that concludes that women might be disempowered if loans are used for purposes by male household members. In our pilot work, this concern did not emerge as a significant issue – rather women tended if anything to have stories which showed how men came to support the program when they could see the potential benefits for the household that it brought.

3 Further related discussions of self-help groups can be found in Alemu et al (2018) Fafchamps and Ferrara (2012), Hasan (2017), Parida (2010), Seebohm (2013), Vinahagamoorthy (2017) and Weber (2014).

organization examined was primarily a lending organization not involved in lines of activity that seek to address empowerment or human development as many self-help groups in India now do. Finally, a discussion paper by Pandey et al (2019) provides evidence that arguably pulls in two directions: in their evaluation of the National Rural Livelihoods Mission in India, the authors find that more women transition into work compared with a retrospective control, that access to lower interest rates has been expanded, and that some but not all moments of the income distribution have risen. As Brody et al (2017) conclude, in their systematic review there is clearly a need for further research, given the relative scarcity of rigorous evaluation and sometimes contradictory results reported and so in this paper, we contribute to the literature in the following ways.

First, we evaluate a self-help program in terms of its impact on women's quality of life using *15 capability indicators* developed on the basis of self-reported survey results to provide a quality of life assessment corresponding to what Sen (1985) calls (dis-) advantage. Our use of capability indicators has some conceptual overlap with empowerment measures (particularly broader definitions which go beyond empowerment as decision-making ability) and this is the first time these capability indicators have been used in a low or middle income country program evaluation.[4] Second, we offer a quasi-experimental research design based on propensity score matching models (PSM) which we go on to combine with evidence of length of time in program and show that at least some of the PSM results can be accounted for by the amount of time a woman has been in the program. Related and finally, we discuss the

[4] Greco et al (2018) have recently reported on the testing of psychometrics of a capability index in Malawi and were the first to do so. See also Kanbur (2016) on problems arising from the need for direct measures of potential and their confusion with other indicators.

program as one comprising several strands of activity which could work through diverse pathways to produce changes in what women are able to do. While our data do not allow us to trace the pathways from mechanisms to outcomes, they do nonetheless help make it clear why programs with multiple strands might impact diverse aspects of life quality and contribute to understanding why, as a result, these programs have grown in popularity with women in India.

The remainder of the paper is structured as follows. In section 2, we briefly discuss the Indian SHG movement by way of background before offering a description of the SHG program investigated in this paper. Section 3 then presents the main methods and data used. Discussed first is the estimation of average treatment effects (ATEs), using propensity score matching (PSM) before moving on to a consideration of the capability data developed through a program administration survey. Section 4 provides information about the data gathered and presents some descriptive results. In section 5, we present the main ATE results together with some additional results to consider robustness. Finally, in section 6 we offer some concluding remarks that consider the empirical and methodological contributions as well as the conceptualization of self-help and some topics for future research related to limits of the current research design.

2. Self-Help for Empowerment and Human Development

2.1 SHGs in India – Some Background

The policy environment in India has been supportive of SHGs and the ideas of micro-finance, at least since the late 1960s when banks were required to earmark funds for poverty alleviation and development programs, and they have evolved rapidly as a result. Research into early initiatives, for example, Harper (2002) suggested that

priority should shift to the improvement of access to financial services and this has been reflected in the design of policies to support poor women in agriculture as a result. It was also found that the main priorities of the poor included the development of opportunities to amass financial surpluses and access easy to use financial services for micro enterprises and to access to loans for consumption needs, as they emerged. This has required a change in thinking about the poor, not just as consumers but also as potential managers and entrepreneurs, which in turn has contributed to the need for multi-faceted SHG programs, comprising a range of human development initiatives including training for skill development, literacy, health, schooling, and gender sensitivity training.

Some of the most successful experiences of SHGs have been in Southern India. Notable among them are APMAS (Mahila Abhivruddhi Society, Andhra Pradesh) that even gives quality-rating services and has a research and advocacy wing (Reddy and Manak, 2005) and Kudumbashree in Kerala that is a poverty eradication initiative focused on micro finance, community and local self-government institutions. Elsewhere, in Western India (mainly Gujarat), the Self Employed Women's Association (SEWA) has sought to organize women workers for full employment and to make them self-reliant, both economically as well as in decision making. For the most part, these organizations are regional and in some cases, place particular emphasis on the types of person supported, and/or issues addressed, as in the case of Pradan, based in Rajasthan mainly, which focuses on forest-based livelihoods and natural resource management, working with poor *adivasis* (forest dwellers and tribal people). Most of this recent experience not been subject to rigorous evaluation, a fact that helps to motivate this study.

2.2 SHGs in the Mahila Vikas Pariyojana (MVP)[5]

The MVP program studied in this paper is a sizeable initiative, within the general Indian SHG context, that promotes various aspects of human development using micro-savings and empowerment both as an end, and as part of a program that includes contributions to enterprise training and development, maternal health and nutrition education and political involvement. Based within the state of Uttar Pradesh the program has involved over 1.5 million women in the 15 years since its inception.[6] Our discussion of the initiative considers two aspects, namely the operation of the SHGs themselves and the infrastructure that serves to design, maintain and evolve the groups.[7]

At the core of the program are SHGs comprising some 10 to 20 women from similar socio-economic backgrounds that meet on a monthly or more frequent basis. Groups tend to be initiated by the program host moving into a new area where she seeks out women who appear to be among the least advantaged in an area. Each SHG once formed then determines by mutual agreement a fixed amount of money that all members will save each month. Regular meetings focus on the collection of these savings that are recorded in a ledger that is circulated for all group members to inspect. Requests for loans from the savings pooled each month are considered and, in some cases, women will give notice of future requests in support of some planned investment or expenditure. As of March 2017, some 136,160 SHGs had been formed across more than half (49) of the districts of Uttar Pradesh. As a result, well over 1.5 million women have participated in the program to date.

[5] In English its full title is *The Rajiv Gandhi Trust Women's Development Project.*
[6] RGCT (2017).
[7] Here we emphasize that self-help is facilitated and structured where each group is, in effect, a social franchise. Greaney et al (2016) also highlight the importance of not seeing self-help in terms that ignore facilitating structures and organizations.

The regular monthly meetings, which sit at the heart of SHGs, provide an opportunity to take part in functional activities (mainly financial and educational) in a peer environment that also encourages the expression of mutual support. Relatively few women have left the program since its inception, and younger members are known to ask about the existence of similar programs if moving into urban areas.[8] From the outset, the program was designed to build on the social infrastructure developed around micro-finance, in order to contribute to human development in a variety of ways. Enterprise training and development is a natural complement to savings programs for investment in agricultural settings. At the time of its fieldwork to develop the data used here, the program was in the early stages of rolling out information about the methods and value of rapid composting as an environmentally sustainable farming method. In principle, the technique, developed in the late 1970s by scientists in the United States, is both low cost and potentially well suited to current global interests in the need for sustainable agricultural practices but is unlikely to be something that the SHGs would have come across without access to some central collective research capacity.

In addition to financial and agricultural training, the women in these SHGs have important needs for information and advice around maternal health services and personal hygiene. This has given rise to a strand of activity within the SHGs related to the provision of basic information, generally delivered by members themselves, sometimes after training by specialists. This is both inherently important to SHG members but may also complement activities aimed at improving life quality. Finally,

[8] It is not possible to quantify program exits clearly, as women may reduce the frequency of their meeting attendance, but rarely deregister completely.

it is worth noting that the program has recently started to explore ways in which political involvement can be encouraged so that women not only use their votes, but also put themselves forward in local elections and are ultimately able to articulate more clearly issues of a collective nature that are of particular concern to them. A summary of these strands and linkages can be found in the lower part of Figure 1.

It is important to highlight that much of the self-help education activity that is valuable for health, agriculture and political participation is quite distinct from the micro-finance activity. In some cases, the savings are small and might not be expected to have much impact on consumption, investment or income. On the other hand, the educational activities related to income generation, health and civic participation are facilitated in that the meetings might not take place if they did not also have a financial purpose.

This visual summary suggests an hourglass relation in which SHG's interactions with inputs from the external environment are mediated by the SHG host. Particularly in interventions that include education and training for human development that goes beyond micro-finance, the hosting remit may be an important determinant of how SHGs evolve over time.

In this case, the program can be seen as emphasizing human development, by using mechanisms that rely on and reinforce female empowerment (for example using program members themselves to deliver educational services where possible). In the cultural environment, where the program is located, there are significant cultural limits on what women are expected to do independently, so encouraging and enabling a

woman to leave home and attend regular meetings with other women can itself be a process that takes several months. The program sees this as an important first step in helping them to increase their involvement in decision-making concerning both their own lives and those of their children.

While we cannot with our data and analysis identify particular pathways, it is nonetheless worth summarizing the main mechanisms by which this program (and other multi-stream self-help initiatives) can be expected to impact quality of life. Impacts on real income have been discussed in the literature and thought to be modest. This could be because there has been a focus on earnings whereas in fact the main impact on real incomes is through substantial reductions in the costs of borrowing. Second, it is clear that the program is involved in education (life-long learning) in the areas of agricultural science, rural business development, nutrition and maternal health. While the first two are likely to impact life quality through earnings, the latter target health which is both intrinsically valuable but also an enabler for virtually all other activities. These are standard human development pathways but there may also be social factors at work: regular meetings of women in similar position may help to build social networks and encourage acts of mutual support as we noted in the introduction. Finally, there is growing recognition of the importance of psychological processes[9] that are relevant. It could be that the routine of regular monthly meetings helps women act persistently and as Duckworth (2007) has shown, this is an important predictor of performance in many work related settings. In addition, such meetings could help to instill the kind of mindset that is involved in coordination tasks and described by Sugden (1993) as thinking as a

[9] Gamson (1992) provides a useful overview and highlights collective identity, solidarity, the mesh between cognition and culture (consciousness) and micro-mobilization acts of organizing, divesting and reframing as being important. These processes are clearly present and relevant to self-help groups in India although political alignment tends to be with independents.

team. In this case, each woman's actions are not just for herself but also performed for other members of the group, as a contribution to a collective effort and an encouragement to help activate others in the group.

3. Methods

3.1 Propensity Score Matching

For this program, there are no benchmark data for a comparison group. Furthermore, areas have been targeted for SHG programs on the basis of local area deprivation characteristics. We test hypotheses of the form E [Capability | Program Involvement] > E [Capability | No Program Involvement] against the null hypothesis of equality. That is, in most cases SHG program participants have higher capability indicators than those who did not participate in the program. [10]

To obtain estimates of the counterfactual outcomes that would have occurred in the absence of program involvement, we use propensity score matching models of the kind that have been used widely in development and elsewhere (e.g. Rosenbaum and Ruben (1983), Cox-Edwards and Rodriguez-Oreggia (2009) and Becerril and Abdulai (2010)). In general, the propensity score matching approach finds for individuals in the program a best match from among the program non-participants and calculates the outcome difference for that individual compared with their match. The best match can be one or more individuals, which are respectively obtained using nearest neighbor (NN) and kernel-based (KB) matching methods.

[10] As Anderson (2014) negative impacts or unintended consequences are rarely studied though in principle our empirical results are able to identify such findings – which in the case of health limitations we think is an important consequence of greater movement and activity outside the house.

Our results focus on the reporting of average treatment effects, ATE, and a closely related statistic generally known as the average treatment effect for those treated, ATT. As their names suggest, the ATE offers the program's general impacts on the population, while the ATT offers the program's specific impacts on the program participants only. To formally define these, let i=1,2,…,n be a sample of treated and control subjects, $Yi(0)$ will be the outcome of the control group and $Yi(1)$ will be the outcome of the treated group; if T is an indicator variable denoting the treatment received, equal to zero (T=0) for control subjects and equal to one (T=1) for treated subjects, for each subject the effect of treatment is $Yi(1)-Yi(0)$ and the ATE will be $\mathbb{E}[Yi(1)-Yi(0)]$ (Imbens, 2004). The ATT can be defined as $\mathbb{E}[Yi(1)-Yi(0)|T=1]$. To assess the robustness of results to alternative model specifications, we estimate both ATE and ATT statistics using two methods of matching and for a number of sub-groups as well as for the entire sample. We also implement robustness checks on the bounds of the estimates using the Rosenbaum bounds. We also seek to assess the statistical quality of these models by looking at the extent to which the distribution of co-variates is independent of program membership, that is the extent to which the models are balanced, after matching.

3.2 Capability Indicators

Because female empowerment is an integral part of the program it is natural to ask whether it has had an impact on the capabilities of SHG members. Within development there is a long tradition of using responses to questions about decision-making as relevant evidence (e.g. Goetz and Gupta (1996)), but in recent years a literature has developed that seeks to broaden the coverage of capabilities assessed in such surveys.

Much of this work developed as an alternative to econometric work that used latent class techniques to infer capabilities in the absence of direct measures (see for instance Martinetti (1994) and Krishnakumar and Ballon (2008)). However, some direct capability indicators are routinely collected in household surveys and, in this paper, we draw on data that ultimately derive from and extend such questions. More precisely, the 15 capability indicators used in this study are versions of a general quality of life measure developed in a sequence of papers by Anand et al (2009, 2011), Lorgelly et al (2015) and Simon et al (2013) for use with general populations and in health assessments. The Simon et al (2013) measure is in effect a short form version of the OCAP instrument developed by Anand et al (2009), which implemented the normative list proposed by Nussbaum (2000) justified on the basis of an Aristotelian approach to human flourishing.[11, 12] The data used in this paper draw on questions in an Indian adaptation of the Simon et al (2013) version as well as pilot work in Uttar Pradesh and can be seen as a short form, capability based measure of life quality informed by theory and consultation.[13]

In this program, most capability indicators could be positively impacted with three exceptions. First, additional involvement in agricultural activities and leaving the house more often than before could cause program members to report that health constraints

[11] The list is useful because while it shares common features with several other such lists, it is relatively comprehensive and therefore provides a useful starting point for mapping out life quality of life issues without making any claims about what a state should do about them.

[12] OCAP comprises some 50 items and so to produce a short form version, Lorgelly et al (2015) developed a consultation process based on focus group interviews. The refinement developed subsequently by Simon et al (2013) drew also on this shortened version produced by Lorgelly and colleagues and produced psychometric data for capability indicators in Vergunst et al (2017).

[13] It is worth noting that this approach could be seen as an alternative to those studies that follow a tradition in development of measuring empowerment in terms of agency – see for example recent work by Alkire et al (2013). Our approach helps to identify the areas of life in which a person's capabilities have changed and therefore offers a complement to measures of agency or empowerment that focus on delivering an overall judgement about whether someone is empowered or otherwise.

are limiting more than non-members. In the second place, aspects of life quality more associated with the environment than the individual should be relatively similar for members and non-members (if our controls are reasonable matches) as the program does not specifically target the physical or social environment. Third, and finally. there may be factors in operation that seek to cancel each other out – for example, when it comes to worry and stress, social activities might reduce isolation whereas financial activity, particularly borrowing money, might contribute to increasing stress. As a result, while we are generally looking for evidence of capability expansions, it is important to recognize that some aspects of life quality might not be impacted (positively). The potential negative impact of empowerment programs on aspects of life quality has been recognized elsewhere – see for example van Kempen (2009). As this empowerment intervention encourages women to be aware of their opportunities and the treatment of women in their communities, it is perfectly possible that they may as a result become more aware of certain risks. And it is worth noting that there was no evidence of comprehension difficulties at the pilot stage: there are no psychometric results for this setting at present though a recent study by Vergunst et al. (2017) provides evidence on response reliability within a high income population. Our indicators are close to those used in that study but incorporate some minor modifications following an Indian piloting process.[14]

4. Data and Descriptive Results

The data used for this study come from a sample of approximately 6,000 observations collected from women across all the 32 districts where the program is present. Three-

[14] There are some similarities also with the capability indicators used in Tesoriero (2006), though he does not include data on controls and focusses his discussion on what he describes as modest contributions to community strengthening.

quarters of the sample derive from women who had been SHG members while the remaining quarter were from women who were not program members but had similar profiles in terms of wealth, caste and location.[15] SHG members were selected at random and, where a woman could not be not be reached, the next woman on the SHG member list was contacted. Non-SHG members were selected to be close matches for those already interviewed from the same or adjacent villages to minimize bias related to regional variations across the state. Surveyors were trained to interview participants in settings when they were alone and to assure interviewees of anonymity. In addition, respondents were told in the consent protocol that interviews would take approximately one hour and that it was acceptable to decline to answer at any point. The data used in this paper were collected and recorded by trained surveyors, working from script in interviews carried out between March and August of 2017. Summary descriptive statistics for variables used in this study can be found in Table 1.[16]

In addition, and by way of context, we also present data on the average family size of SHG members, as well as house construction type and income compared with controls (see Table 2a, 2b, 2c). By caste, ages are broadly similar though there is some evidence that family sizes and material living standards (as indicated by income and house type) are slightly lower for SHG members. If the controls were materially better off, our analysis might be regarded as somewhat conservative.[17]

[15] To obtain a balance of experience across SHG members, the sample was further divided in equal proportions into those who had been members for less than three years, three to five years and more than five years (i.e. 1,500 observations in each category). Because the program targets the poorest women, non-members tended, on average, to have slightly higher incomes than SHG members.

[16] The consent protocol and written summary of instructions to the surveyors are available from the authors on request. PSM analysis uses dichotomized indicators.

[17] The difference might not be entirely surprising, as the program seeks to target for participation those who are worst off. Income data are often missing, not surprisingly, so the household type is perhaps a better indicator of household asset values. The propensity score

Table 3 presents, in addition for SHG members in our sample, data on length of time in program and current monthly savings. As in other studies, our evidence suggests that for savings by caste the importance of access to alternative financial services as a driver of savings volume as much as household income. 'Lower' castes tend to have less access to alternative financial services – and perhaps even consumption opportunities - and this is reflected in their relatively higher levels of savings. In the analysis that follows, we investigate whether there is any evidence, from these data, that program involvement is impacting what women are able to do.

5. Empirical Results

Our main results appear in Table 4, which carries data on the propensity score matching results for 15 capability indicators (in Figure 2). The balance tests indicate that the matching process works well, with the propensity scores being almost identical between the treatment and control groups after matching. We plot these results in Figures 2 to 4, where for comparison, we also plot the propensity scores before matching.

Average treatment effects are statistically significant using both the NN and KB methods of matching.[18] Table 4 shows that there are statistically significant differences for most but not all the indicators. The estimated coefficient for the appreciation of family and friends is only (statistically) significant when estimation is by NN and stress,

matching technique chooses the controls on a statistical basis, so this evidence suggests that it does so from a reasonable pool of potential controls.

[18] Ses are not reported in one case where standard formulae are known to be biased and an implemented correction is not available.

safety and discrimination are never significant. Recalling that this is an empowerment program and that the sign of any impact on health could be either positive or negative, we find that program members are, in fact, more likely to cite health as a factor that limits their daily activities. This suggests that either women in the program have more activities (such as employment) that could be impacted by health or that they are more aware of the role that health plays in limiting what they do (counter to adaption as discussed by Graham (2010)), but we have no way of disentangling these possibilities with these data. That said and given that the program helps women move more freely in their villages and do more productive agricultural work, the former seems likely. Overall, however, the evidence is that most of the capabilities assessed, relating to diverse aspects of life quality, are higher for those women in the program and significantly so, in the statistical sense.

To investigate further these results, we report similar results from models estimated on subsets of the data. Table 5 reports results using only data for scheduled castes and backward tribes and is based on the NN method. Most of the indicators that are statistically impacted by program membership remain so though there are some falls in significance. Decent employment is significant at the 10% level when using ATE but not when ATT is used. Social interaction and suitable accommodation are, for this subgroup, never significantly impacted by program membership. To look at the experience by religion, we also report, in Table 6, results for NN estimates using data for non-Muslims only. In general, the pattern of significance is rather similar to that reported in Table 4 as might be expected given that Muslims are a small minority in this predominantly Hindu region.

Finally, to investigate whether the amount of saving is associated with life quality outcomes, we report NN model results using data only for those with above average savings. The results are reported in Figure S1 and Table S2 and are somewhat similar to those in the main table with the following exception. For this group, health limitations and social interaction are only impacted in a way that is statistically significant, when assessed using ATE and not when ATT is assessed.

Taking these results together, the evidence appears to be that a majority of capabilities assessed are positively impacted by program membership. The sub-group analysis suggests some variations in program impact. While the sample size for subgroups is smaller and differences therefore less easy to detect, for Scheduled Castes and Tribes, support of family and friends, suitability of accommodation and the ability to meet socially are no different when SHG members are compared with those not involved in the program. Traditional religious and caste institutions have been shown to constrain women's business behavior in a field experiment by Field et al (2010) and our findings confirm that there are a small number of capabilities are not expanded for Scheduled Castes and Tribes though several appear to be. In other words, the lack of impact depends on the aspect of quality of life under consideration.

Finally, we consider two additional robustness checks, both aimed at addressing the possibility that the results might be driven by some omitted variable correlated with the decision to join the program (selection bias). In the first instance, we estimate the Rosenbaum bounds (see Table S3). This shows the results of sensitivity analysis using different values of a parameter, Gamma, which measures the degree of hidden bias

needed to change the results of the PSM estimation. The results of the analysis suggest that the following variables are sensitive to omitted variable bias: lost sleep from worry, feel safe walking, risk of future assault, risk of future discrimination and support of family and friends. Caution should be taken when interpreting the treatment effects of these variables. As a result, this robustness check fails to provide evidence that where there are significant differences in the PSM analysis, they are driven by omitted variable bias.

An alternative and final check involves combining evidence from PSM analysis with data on the length of time in the program. Table 7 summarizes the results of combining evidence from these two sources.

In most cases, capabilities are lower for recent joiners (noting the health exception) than for others. Put another way, even if those who join the program have, on average, lower observed financial resources but are higher on some unobserved psychological trait, say, they could have expected their capabilities to be expanded had they stayed in the program for long enough (attrition rates are in fact very low). If we combine results from the length of time in program with the main PSM results, we find that two-thirds of the dimensions pass both tests and so conclude the evidence of causal impact is strongest for these.

As a final qualitative check on the results, it was decided to share an overview with 40 women from the SHG program. They confirmed that a primary motivation for participation was the financial benefits though they also cited self-confidence and greater freedom to move out of the house as key motivators. In terms of daily

experience, the ability to interact socially with important people like bank officers and political representatives was also mentioned. Finally, when asked about ideas for program improvement, some mentioned more training in the making of candles and incense, perhaps (though we cannot tell) because these are income generating activities that can be done at home while caring for children.

6. Concluding Discussion

This paper has offered an account of self-help groups with multiple strands of activity. We offered an observational evaluation study using propensity score matching and reported evidence which shows capability indicators in several life domains to be higher for SHG members compared with non-members. Robustness was considered using subgroup analysis and evidence of missing variable bias in the propensity score model estimates. Most significantly, we also considered the impact of being in the program for more than 500 days and identified a number of capability indicators that are both significant in the main PSM model and higher for those who have been program members for longer. On that basis, the paper makes contributions to do with empirical results, methodology and the conceptualization of self-help.

In the first place, our evidence has shown that poverty alleviation and empowerment through self-help can expand the capabilities of women in several areas of significance to quality of life. The overall pattern of capability expansion documented is noteworthy for while there is robust evidence that several aspects of life quality have been enhanced, two indicators relating to the possibility of assault and discrimination are no different to those of controls. Empowerment as a comprehensive process, therefore, may require interventions that work on social environment – shaped as it is by culture

and history – as well as individuals. Indexes of empowerment may benefit from taking this point into account. Further, our results add to recent technical literature by focusing on an NGO hosted program rather than one organized by government. NGOs have different remits, and so they organize such groups differently. They also have different funding bases which impact strategy. The JEEViKA program supported by the World Bank and implemented by Bihar State government is able to saturate villages where it is present. However, this is not a widespread (and therefore representative) approach: many other programs including that studied here either do not, or cannot, afford such a strategy.

Second, the study shows that direct capability indicators initiated by Anand et al (2009) and applied by others including Simon et al (2013) can, with only modest changes, be used in a rural, low income region setting. Direct capability indicators have been used and accepted in health and child development for some time now. This paper helps methodologically to demonstrate their use and potential value in work on gender and poverty alleviation in a low or middle income country context also. Direct capability indicators can in some instances be like or identical to existing statistical quality of life indicators. However, the explicit development of indicators drawing on capability theorizing gives a clear connection to useful theoretical concepts, particularly Sen's concept of (dis) advantage, and its discussion as an important but under-measured facet of quality of life, particularly but by no means exclusively in low and middle income countries.

Third, the self-help program studied is not merely a micro-finance program but has several strands including enterprise training, maternal health and nutrition education as

well as a citizenship element to encourage political participation. Our analysis has stressed the importance of recognizing the multi-faced nature of self-help groups as they are in India now. Some researchers have questioned the evidence of the financial value from micro-finance initiatives but this research encourages the question why, if these programs are really of marginal value, they have been so popular with millions of women? A contributory factor derives from the fact, we suggest, that it is important not to see human development (health, lifelong learning, and citizenship particularly) program strands as peripheral as they can be an important motive for, and key benefit from, joining an SHG. There may also be significant synergies between social and psychological activation processes invoked by monthly meetings and the financial and cognitive demands imposed by regular involvement in financial activity. It is also important to consider the relative balance between micro-savings and micro-borrowings. This program emphasizes the former and such programs may have different outcomes as a result. In any case, these latter points suggest that more research and attention should be given to the substantial variation in the design of self-help groups.

Finally, we mention three limitations of the research design that merit further research. First, access to credit, through female members, benefits male partners and is believed by program managers to reduce intra-household inequalities by increasing the woman's bargaining position. Our findings are not inconsistent with this possibility but additional data on the outcomes for other household family members (for example children or spouses) would be required to address the question directly. Second, it would be useful to know more about the importance of the hosting remits for SHG performance. There is a general sense that NGO-sponsored SHGs differ from those

funded by governments and it would be helpful to see studies comparing outcomes *across* programs by funding type. Finally, there is the question of the extent to which programs, such as this, offer a portable model for sustainable human development that can work in other environments, cultures or country settings. Given the diversity of human development goals, there may be a premium for interventions able to deliver on multiple goals simultaneously. Our analysis, which focuses on the multi-faceted nature of intervention, something that government agencies might in some circumstances find hard to replicate, suggests that SHGs are promising vehicles for the delivery of sustainable development goals. However, from on the ground experience, we are aware that it is harder to create effective SHGs for certain sub-populations. Theoretically, the opportunity costs of non-participation (as well as traits such as gender) are going to be important but there is little if any research on this of which we are aware. Such research could help identify issues and subpopulations where SHGs are most likely to work.

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Figure 1 SHG program design

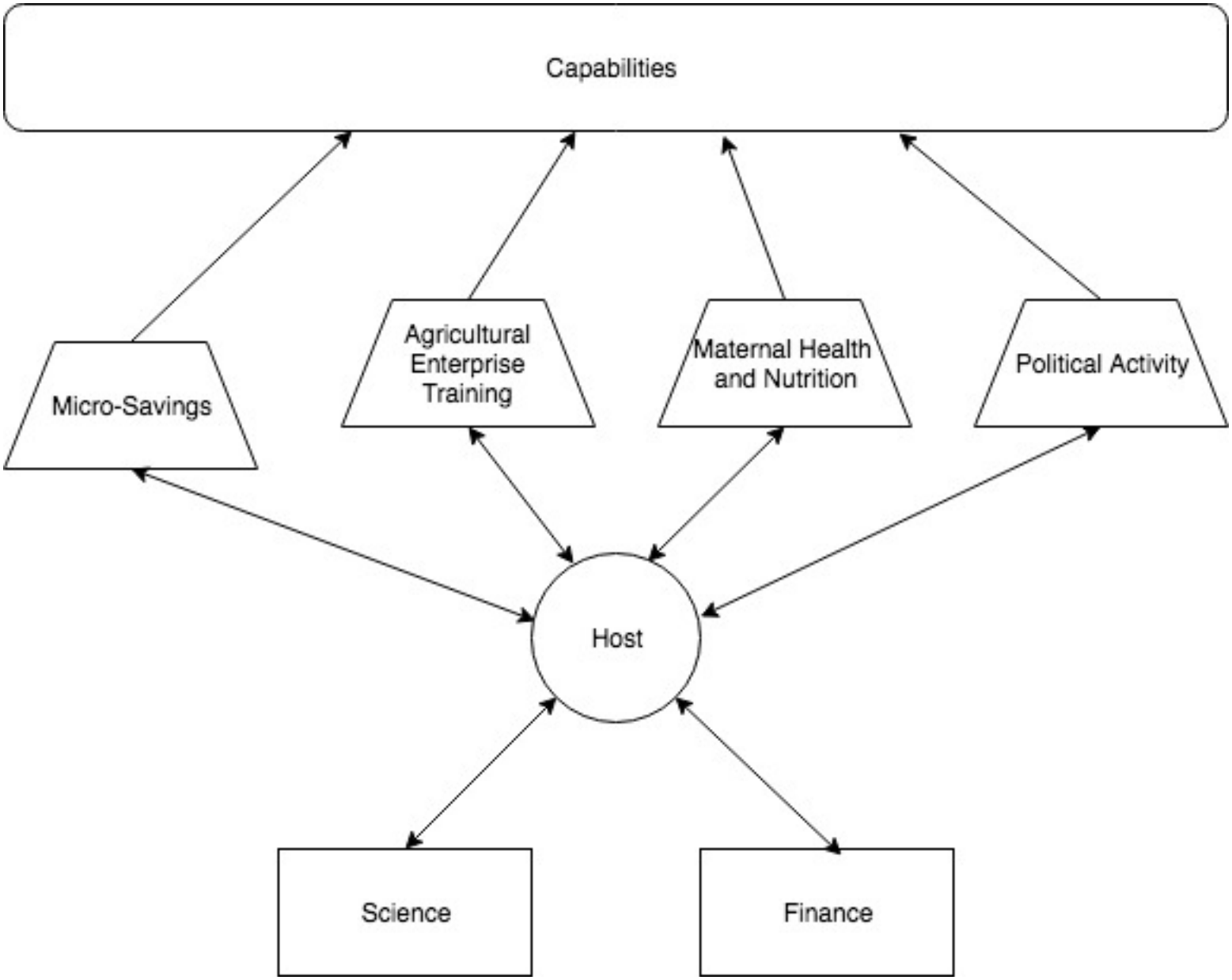

Table 1. Descriptive Statistics for Capability Indicators

Dimension	Question	No. of observations	Answer (relative frequency for each group)	
			Non-Members	SHG Members
Health limits activities	Does your health in any way limit your daily activities, compared to most people of your age?	1493 (Non-Members) 4432 (SHG Members)	Yes (43%) No (57%)	Yes (50%) No (50%)
Able to meet socially	Are you able to meet socially with friends or relatives?	1485 (Non-Members) 4339 (SHG Members)	Yes (87%) No (13%)	Yes (90%) No (10%)
Lost sleep from worry (mental health)	In the past one month, how often have you lost sleep over worry?	1483 (Non-Members) 4389 (SHG Members)	Always (6%) Sometimes (55%) Most of the time (14%) Hardly ever (12%) Never (13%)	Always (7%) Sometimes (57%) Most of the time (15%) Hardly ever (11%) Never (11%)
Able to enjoy recreation	In the past one month, how often have you been able to enjoy your recreational activities?	1494 (Non-Members) 4426 (SHG Members)	Always (13%) Sometimes (48%) Most of the time (13%) Hardly ever (13%) Never (14%)	Always (13%) Sometimes (52%) Most of the time (18%) Hardly ever (9%) Never (7%)
Own home	Do you/family own your home?	1486 (Non-Members) 4337 (SHG Members)	Yes (79%) No (21%)	Yes (87%) No (13%)
Accommodation suitable	How suitable or unsuitable is your accommodation for your current needs?	1483 (Non-Members) 4349 (SHG Members)	Very suitable (12%) Fairly suitable (34%) Neither suitable nor unsuitable (36%) Fairly unsuitable (15%) Very unsuitable (3%)	Very suitable (9%) Fairly suitable (42%) Neither suitable nor unsuitable (37%) Fairly unsuitable (10%) Very unsuitable (2%)
Feel safe walking	Please indicate how safe you feel walking alone in the area near your home?	1485 (Non-Members) 4416 (SHG Members)	Very safe (17%) Fairly safe (46%) Neither safe nor unsafe (23%) Fairly unsafe (10%) Very unsafe (4%)	Very safe (20%) Fairly safe (52%) Neither safe nor unsafe (22%) Fairly unsafe (5%) Very unsafe (1%)

Risk of future assault	Please indicate how likely you believe it to be that you will be assaulted in the future (including sexual and domestic assault)	1485 (Non-Members) 4400 (SHG Members)	Very likely (7%) Fairly likely (34%) Neither likely nor unlikely (33%) Fairly unlikely (16%) Very unlikely (9%)	Very likely (6%) Fairly likely (38%) Neither likely nor unlikely (31%) Fairly unlikely (15%) Very unlikely (10%)
Risk of future discrimination	How likely do you think it is that you will experience discrimination?	1481 (Non-Members) 4412 (SHG Members)	Very likely (10%) Fairly likely (34%) Neither likely nor unlikely (22%) Fairly unlikely (12%) Very unlikely (22%)	Very likely (7%) Fairly likely (41%) Neither likely nor unlikely (22%) Fairly unlikely (10%) Very unlikely (20%)
	On what grounds do you think it is likely that you will be discriminated against?		Race/ethnicity (36%) Gender (26%) Religion (15%) Age (9%) Health or disability (7%) Other (7%)	Race/ethnicity (40%) Gender (24%) Religion (13%) Age (10%) Health or disability (6%) Other (7%)
Influence local decisions	I am able to influence decisions affecting my local area	1475 (Non-Members) 4398 (SHG Members)	Strongly agree (12%) Fairly agree (49%) Neither agree nor disagree (16%) Fairly disagree (20%) Strongly disagree (3%)	Strongly agree (11%) Fairly agree (61%) Neither agree nor disagree (17%) Fairly disagree (10%) Strongly disagree (1%)
Freedom of political and religious expression	I am free to express my views, including political and religious views	1478 (Non-Members) 4379 (SHG Members)	Strongly agree (11%) Fairly agree (50%) Neither agree nor disagree (17%) Fairly disagree (18%) Strongly disagree (4%)	Strongly agree (16%) Fairly agree (60%) Neither agree nor disagree (14%) Fairly disagree (9%) Strongly disagree (1%)
Support of family and friends	I appreciate the love, care and support of my family and friends	1476 (Non-Members) 4406 (SHG Members)	Strongly agree (24%) Fairly agree (62%) Neither agree nor disagree (8%) Fairly disagree (4%) Strongly disagree (2%)	Strongly agree (27%) Fairly agree (63%) Neither agree nor disagree (7%) Fairly disagree (2%) Strongly disagree (1%)
Free to live life	I am free to decide for myself how to live my life	1480 (Non-Members) 4396 (SHG Members)	Strongly agree (17%) Fairly agree (48%) Neither agree nor disagree (16%) Fairly disagree (16%) Strongly disagree (3%)	Strongly agree (21%) Fairly agree (60%) Neither agree nor disagree (6%) Fairly disagree (12%) Strongly disagree (1%)
Freedom of creative expression	I am free to use my imagination and to express myself creatively (e.g. through art, literature, music, etc.)	1485 (Non-Members) 4412 (SHG Members)	Strongly agree (11%) Fairly agree (43%) Neither agree nor disagree (19%) Fairly disagree (22%) Strongly disagree (5%)	Strongly agree (16%) Fairly agree (58%) Neither agree nor disagree (14%) Fairly disagree (10%) Strongly disagree (1%)

Interesting work	I have access to interesting forms of activity (or employment)	1476 (Non-Members) 4410 (SHG Members)	Strongly agree (7%) Fairly agree (35%) Neither agree nor disagree (15%) Fairly disagree (32%) Strongly disagree (11%)	Strongly agree (10%) Fairly agree (50%) Neither agree nor disagree (18%) Fairly disagree (19%) Strongly disagree (3%)

Table 2a. Average age and family size in SHG Members and Non-Members groups

Caste	Average age of women		Average number of family members	
	Non-Members	SHG Members	Non-Members	SHG Members
General	36,3	36,3	5,09	4,75
Minority	35,2	34,9	5,47	5,31
Other Backward Classes	34,5	34,7	5,13	4,74
Scheduled Castes	34,3	34,5	4,97	4,64
Scheduled Tribes	32,3	33,0	5,5	4,68

Note: n = 5935

Table 2b. Women in SHG Members and Non-Members groups and average income by house type

House type	Number of people in each type of house*		Average income (Rupees)	
	Non-Members	SHG Members	Non-Members	SHG Members
Ardh-Kachcha	285 (21%)	114 (13%)	71,9	42,5
Colony	15 (1.1%)	10 (1.1%)	55,1	38,0
Kachcha	588 (43.3%)	612 (69.6%)	74,6	38,1
Pakka	471 (34.7%)	143 (16.3%)	74,5	42,6

Notes: (*) In parenthesis: proportion in Non-Members and SHG Members.
n = 2238

Table 2c. Women in SHG Members and Non-Members groups, by house type

House type	Number of people in each type of house*		
	Non-Members	SHG Members	Total
Ardh-Kachcha	285 (71.4%)	114 (28.6%)	399 (100%)
Colony	15 (60%)	10 (40%)	25 (100%)
Kachcha	588 (49%)	612 (51%)	1200 (100%)
Pakka	471 (76.7%)	143 (23.3%)	614 (100%)

(*) In parenthesis: proportion in Non-Members and SHG Members.
n = 2238 (without missing values)

Table 3. Average time in SHG, and savings, by caste

Caste	SHG time (Months)	Monthly savings (Rupees)	n
General	67,6	583,1	394
Minority	60,4	658,3	744
Other Backward Classes	58,3	688,5	1709
Scheduled Castes	55,9	660,6	1512
Scheduled Tribes	47,3	917,4	76

n = 4435

Figure 2 Balance results of the propensity-score matching for the complete sample

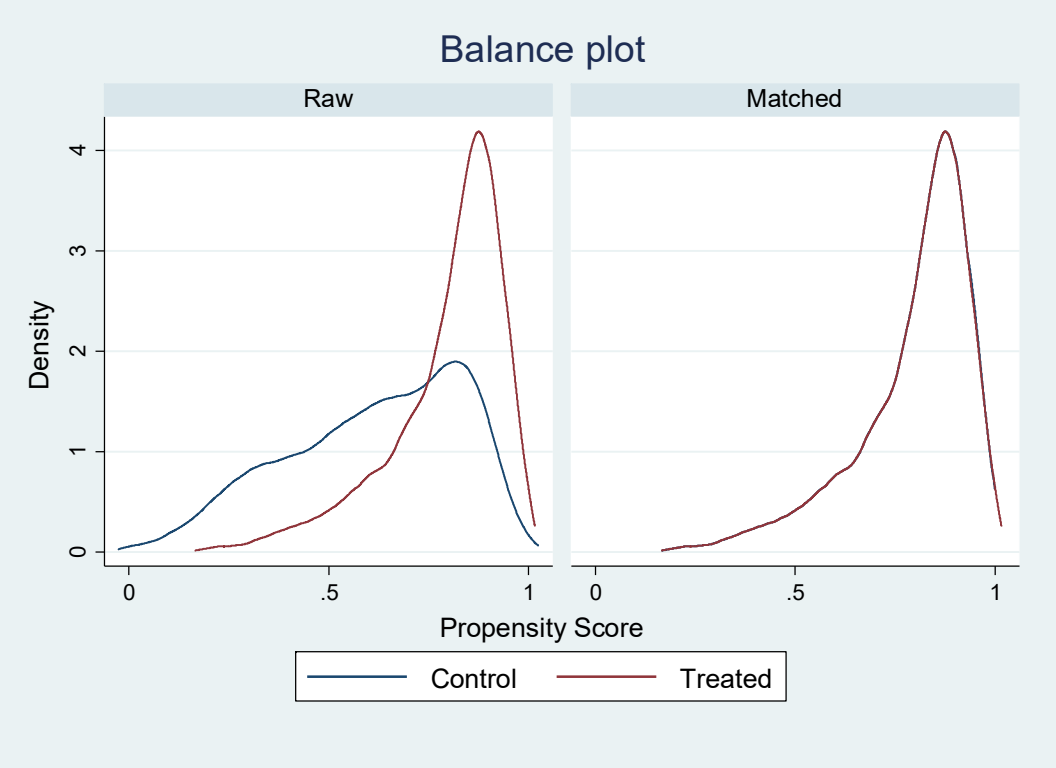

Table 4. Statistical mpact of SHG membership on capability indicators: complete sample

Outcome	Nearest-neighbours				Kernel-based matching		
	ATE		ATT		ATE	ATT	
	Coef.	z-stat	Coef.	z-stat	Coef.	Coef.	t-stat
Health limits activities***	0.0789	3.38	0.0873	3.33	0.0719	0.0205	3.59
Able to meet socially***	0.0687	4.72	0.0774	4.56	0.0564	0.0571	4.15
Lost sleep from worry (mental health)	0.0138	0.72	0.0204	0.97	0.0092	0.0108	0.66
Able to enjoy recreation***	0.1017	6.60	0.1222	7.24	0.0975	0.1047	5.76
Own home***	0.0897	5.57	0.0918	4.85	0.0856	0.0836	5.09
Accommodation suitable***	0.0961	3.78	0.1086	3.55	0.0959	0.1017	4.92
Feel safe walking***	0.1059	4.10	0.1062	3.51	0.1095	0.1108	5.56
Risk of future assault	0.0085	0.46	0.0147	0.70	0.0195	0.0209	1.18
Risk of future discrimination	-0.0055	-0.28	0.0005	0.02	0.0111	0.0169	1.03
Influence local decisions***	0.1433	6.10	0.1403	5.33	0.1261	0.128	6.19
Freedom of political and religious expression***	0.1380	6.17	0.1553	5.97	0.1204	0.1288	6.22
Support of family and friends**	0.0539	2.13	0.0686	2.24	0.0199	0.0244	1.20
Free to live life***	0.1099	5.08	0.1126	4.80	0.1105	0.1154	5.58
Freedom of creative expression***	0.1395	6.64	0.1368	6.00	0.1419	0.1365	6.66
Interesting work***	0.1794	8.45	0.1879	7.56	0.1547	0.1575	7.95

Notes: Significance at less than 1% (***), less than 5% (**), less than 10% (*); Epanechnikov kernel estimates used bandwidth 0.06, N=5433.

Figure 3 Balance results of the propensity-score matching for the sample of non-scheduled castes

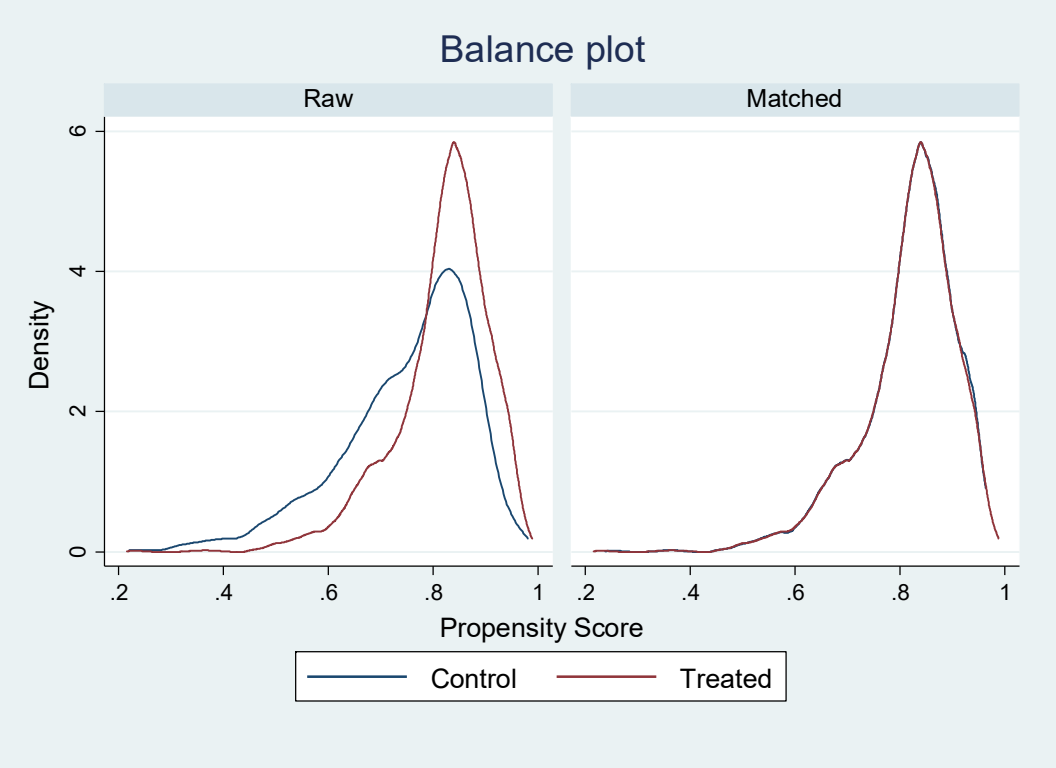

Table 5. Statistical impact of SHG membership on capability indicators for scheduled castes/tribes

Outcome	Nearest-neighbours				Kernel-based matching		
	ATE		ATT		ATE	ATT	
	Coef.	z-stat	Coef.	z-stat	Coef.	Coef.	t-stat
Health limits activities**	0.0899	2.43	0.0820	2.02	0.1090	0.1107	3.40
Able to meet socially	0.0297	1.03	0.0221	0.68	0.0398	0.0386	1.75
Lost sleep from worry (mental health)	0.0456	1.61	0.0422	1.37	0.0379	0.0367	1.48
Able to enjoy recreation**	0.0882	2.57	0.0903	2.37	0.0975	0.0934	3.44
Own home**	0.0684	2.35	0.0788	2.46	0.0434	0.0459	1.83
Accommodation suitable	0.0088	0.28	0.0058	0.17	0.0279	0.0296	0.91
Feel safe walking**	0.1004	2.52	0.1029	2.32	0.1229	0.1224	3.87
Risk of future assault	0.0016	0.04	-0.0045	-0.11	0.0276	0.0284	1.04
Risk of future discrimination	0.0265	0.79	0.0242	0.64	0.0222	0.0219	0.88
Influence local decisions***	0.1059	2.78	0.1073	2.56	0.0931	0.0948	2.90
Freedom of political and religious expression**	0.0893	2.40	0.0815	1.99	0.1097	0.1108	3.39
Support of family and friends	-0.0279	-0.68	-0.0348	-0.76	0.0023	0.0016	0.05
Free to live life***	0.1374	3.39	0.1457	3.22	0.1189	0.1234	3.78
Freedom of creative expression***	0.1358	3.25	0.1206	2.59	0.1484	0.144	4.45
Interesting work**	0.0686	2.00	0.0606	1.63	0.1120	0.1156	3.65

Note: See notes for Table 5; n = 1841

Figure 4. Balance results of the propensity-score matching for the sample of participants with SHG time above average

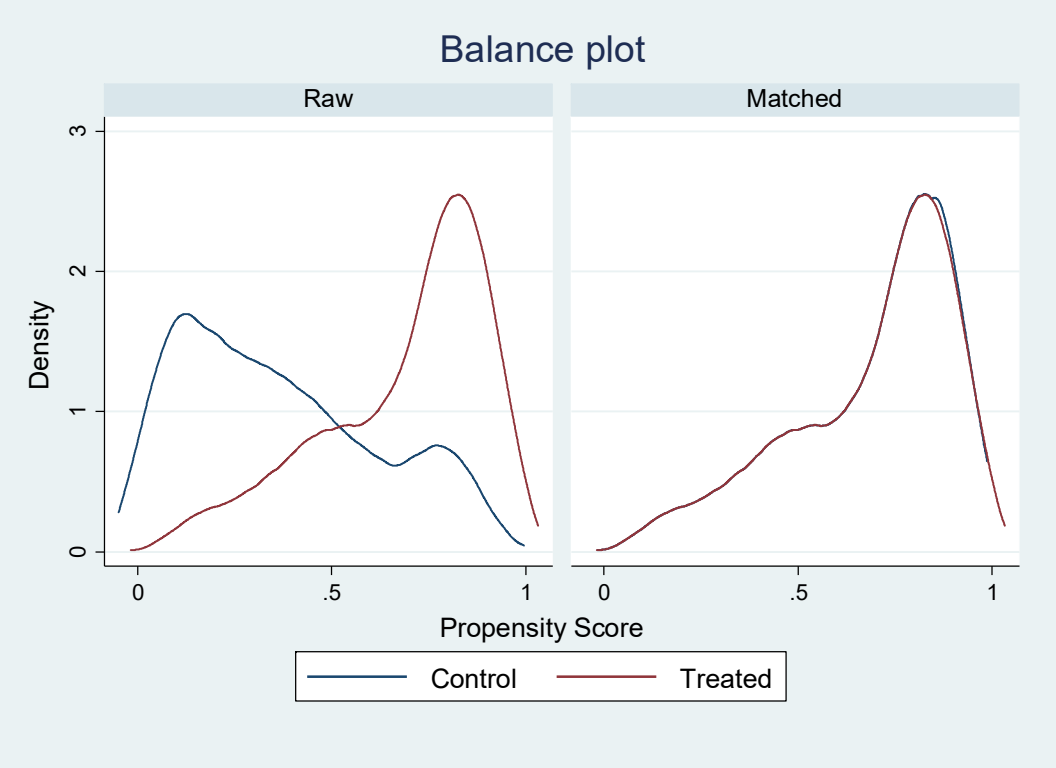

Table 6. Impact evaluation on capability indicators for participants with SHG time above average

Outcome	Nearest-neighbours				Kernel-based matching		
	ATE		ATT		ATE	ATT	
	Coef.	z-stat	Coef.	z-stat	Coef.	Coef.	t-stat
Health limits activities***	0.1424	4.48	0.1314	2.84	0.1089	0.1085	3.91
Able to meet socially***	0.0765	3.68	0.0797	2.34	0.0734	0.0781	4.26
Lost sleep from worry (mental health)	0.0205	0.96	0.0423	2.01	0.0056	0.0171	0.77
Able to enjoy recreation***	0.0903	3.86	0.1248	5.08	0.0908	0.1239	5.01
Own home**	0.0618	2.52	0.0482	1.45	0.0897	0.0962	4.39
Accommodation suitable	0.0411	1.18	0.0581	1.20	0.0953	0.1171	4.20
Feel safe walking***	0.0991	3.01	0.1253	2.71	0.0792	0.0868	3.23
Risk of future assault*	0.0593	1.96	0.0518	1.73	0.0412	0.0336	1.39
Risk of future discrimination*	0.0407	1.88	0.0579	2.63	0.0251	0.031	1.40
Influence local decisions***	0.1209	3.78	0.1152	3.79	0.1248	0.1161	4.17
Freedom of political and religious expression***	0.1046	3.21	0.0772	1.83	0.1241	0.1209	4.34
Support of family and friends	-0.0206	-0.81	0.0239	0.71	0.0067	0.0289	1.06
Free to live life***	0.1299	4.55	0.0973	3.26	0.1476	0.1366	4.92
Freedom of creative expression***	0.1537	5.39	0.1166	4.03	0.1828	0.1527	5.54
Interesting work***	0.1235	3.92	0.1009	2.29	0.1585	0.1598	5.96

Note: See notes for Table 5; n = 2943

Table 7 Combination of Length in Group and PSM analyses

Capability Indicator	Main PSM Effects Significant (Table 4)	Average Capability Indicator Scores		Combined Interpretation
		membership =< 500 days	membership > 500 days	
Health limits activities	Yes	1.598	1.481	nc
Able to meet socially	Yes	1.918	1.913	nc
Lost sleep from worry (mental health)	No	4.196	3.997	nc
Able to enjoy recreation	Yes	4.147	3.743	Contraction
Own home	Yes	1.837	1.865	Expansion
Accommodation suitable	Yes	2.162	2.229	Expansion
Feel safe walking	Yes	2.129	2.162	Expansion
Risk of future assault	No	2.209	2.352	nc
Risk of future discrimination	No	2.588	2.597	nc
Influence local decisions	Yes	1.723	1.857	Expansion
Freedom of political and religious expression	Yes	1.618	1.928	Expansion
Support of family and friends	Yes	2.000	2.009	Expansion
Free to live life	Yes	1.851	2.010	Expansion
Freedom of creative expression	Yes	1.931	1.978	Expansion
Interesting work	Yes	2.208	2.601	Expansion

Notes: Expansion and Contraction denote change in capability indicator significant in PSM and consistent with length of time analysis. Non-conclusive (nc) denotes all other finding combinations.

Supplementary Online Materials
Appendix

Table S1. Results of the logit regression for propensity score matching model in Table 4

Covariate	Coef.	Std. Err.	z	p-value	[95% Conf.	Interval]
Age	-0.0177	0.0042	-4.2100	0.0000	-0.0260	-0.0095
Family members	-0.1627	0.0164	-9.9400	0.0000	-0.1948	-0.1306
Education: 10th pass	-1.8732	0.1961	-9.5500	0.0000	-2.2576	-1.4888
Education: 12th pass	-2.3940	0.2312	-10.3500	0.0000	-2.8472	-1.9409
Education: 5th pass	-1.9336	0.1649	-11.7200	0.0000	-2.2569	-1.6103
Education: 8th pass	-1.8752	0.1666	-11.2500	0.0000	-2.2018	-1.5487
Education: graduate	-2.6906	0.2589	-10.3900	0.0000	-3.1980	-2.1831
Education: illiterate	-0.5682	0.1449	-3.9200	0.0000	-0.8522	-0.2841
Education: post-graduate	-4.3365	0.7829	-5.5400	0.0000	-5.8709	-2.8021
District: allahabad	-0.5626	0.4147	-1.3600	0.1750	-1.3753	0.2502
District: amethi	-0.1614	0.3527	-0.4600	0.6470	-0.8527	0.5298
District: balrampur	-0.7868	0.4781	-1.6500	0.1000	-1.7239	0.1502
District: banda	-0.6806	0.3938	-1.7300	0.0840	-1.4524	0.0912
District: barabanki	0.8669	0.4422	1.9600	0.0500	0.0002	1.7335
District: basti	-0.4057	0.4145	-0.9800	0.3280	-1.2182	0.4067
District: budaun	-0.8694	0.4205	-2.0700	0.0390	-1.6936	-0.0451
District: chandauli	-1.4637	0.4400	-3.3300	0.0010	-2.3261	-0.6014
District: chitrakoot	-0.6179	0.4137	-1.4900	0.1350	-1.4288	0.1930
District: deoria	0.0597	0.4095	0.1500	0.8840	-0.7428	0.8622
District: faizabad	-0.6551	0.4224	-1.5500	0.1210	-1.4829	0.1727
District: fatehpur	-0.8274	0.4229	-1.9600	0.0500	-1.6563	0.0014
District: gonda	-0.7221	0.4223	-1.7100	0.0870	-1.5498	0.1055
District: gorakhpur	-0.1624	0.4081	-0.4000	0.6910	-0.9623	0.6375
District: hamirpur	-0.2600	0.4163	-0.6200	0.5320	-1.0759	0.5558
District: hardoi	-0.1754	0.4293	-0.4100	0.6830	-1.0167	0.6660
District: jalaun	-0.5319	0.4193	-1.2700	0.2050	-1.3538	0.2899
District: jhansi	-0.8184	0.3984	-2.0500	0.0400	-1.5992	-0.0376
District: kanpur dehat	-0.9176	0.5006	-1.8300	0.0670	-1.8988	0.0636
District: kaushambi	-0.8545	0.4837	-1.7700	0.0770	-1.8024	0.0934
District: lalitpur	-0.7851	0.4011	-1.9600	0.0500	-1.5713	0.0010
District: lucknow	1.7362	0.6181	2.8100	0.0050	0.5247	2.9476
District: maharajganj	-0.4329	0.4764	-0.9100	0.3640	-1.3666	0.5009
District: mahoba	-0.5484	0.4692	-1.1700	0.2420	-1.4679	0.3712

District: mirzapur	-1.0697	0.4023	-2.6600	0.0080	-1.8583	-0.2812
District: pratapgarh	-0.1443	0.3827	-0.3800	0.7060	-0.8943	0.6058
District: rae bareli	-0.2930	0.3535	-0.8300	0.4070	-0.9858	0.3999
District: sant	-1.0469	0.4287	-2.4400	0.0150	-1.8872	-0.2067
District: shahjahanpur	-1.0362	0.4207	-2.4600	0.0140	-1.8607	-0.2117
District: sitapur	1.9453	0.6302	3.0900	0.0020	0.7100	3.1805
District: sultanpur	0.1970	0.3655	0.5400	0.5900	-0.5193	0.9133
District: unnao	-0.4216	0.3975	-1.0600	0.2890	-1.2006	0.3574
Caste: general	-1.1313	0.3205	-3.5300	0.0000	-1.7594	-0.5032
Caste: minority	-0.6679	0.3168	-2.1100	0.0350	-1.2888	-0.0469
Caste: backward classes	-0.2095	0.3106	-0.6700	0.5000	-0.8182	0.3993
Caste: scheduled	-0.2686	0.3116	-0.8600	0.3890	-0.8793	0.3421
Intercept	4.3704	0.5102	8.5700	0.0000	3.3704	5.3703

Note: n= 5433

Figure S1 Balance results of the propensity-score matching for the sample of participants with SHG savings above average

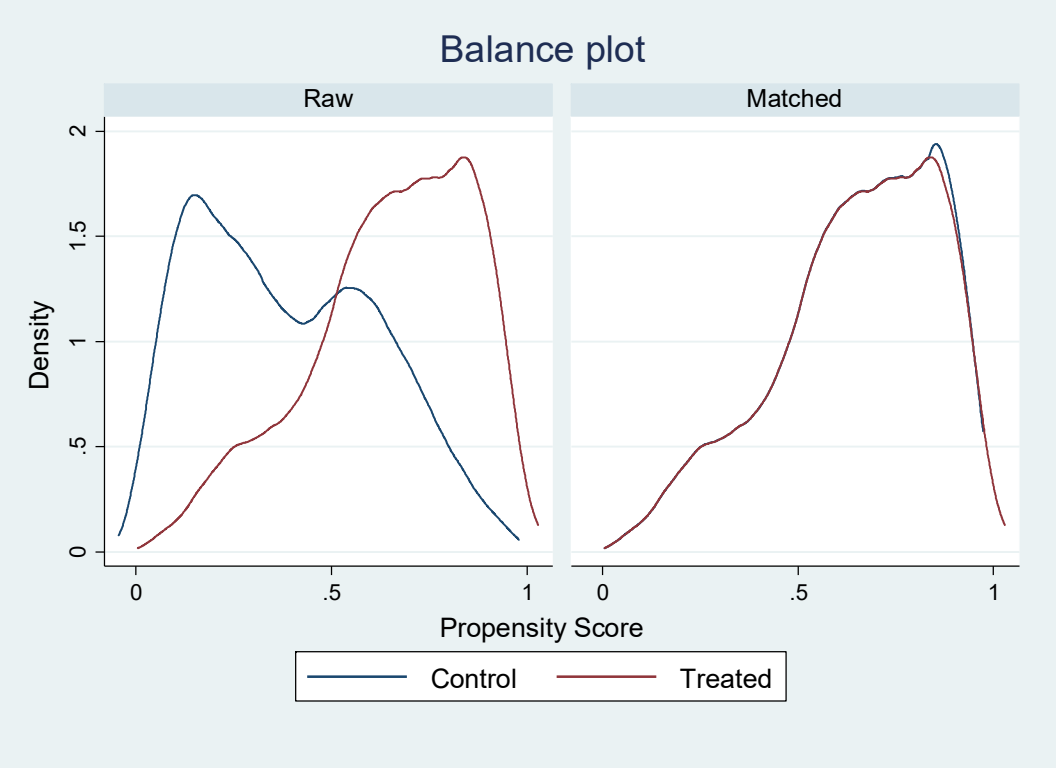

Table S2. Impact evaluation on capability indicators for participants with monthly savings above average

Outcome	Nearest-neighbours				Kernel-based matching		
	ATE		ATT		ATE	ATT	
	Coef.	z-stat	Coef.	z-stat	Coef.	Coef.	t-stat
Health limits activities***	0.0763	2.93	0.0449	1.45	0.0765	0.0705	2.66
Able to meet socially**	0.0331	2.07	0.0194	0.88	0.0468	0.0479	2.70
Lost sleep from worry (mental health)	- 0.0085	- 0.35	0.0131	0.35	0.0010	0.0237	1.11
Able to enjoy recreation***	0.0827	3.00	0.1038	2.86	0.0845	0.1133	4.76
Own home***	0.0901	5.19	0.0684	2.75	0.0971	0.0795	3.78
Accommodation suitable***	0.0808	2.71	0.0905	2.10	0.0838	0.1128	4.23
Feel safe walking***	0.1126	3.86	0.1399	3.49	0.1049	0.1121	4.40
Risk of future assault	0.0181	0.71	0.0187	0.51	0.0243	0.0195	0.84
Risk of future discrimination	- 0.0253	- 1.30	-0.0289	- 1.13	- 0.0009	0.0075	0.36
Influence local decisions***	0.1441	5.38	0.1464	3.84	0.1310	0.1295	4.86
Freedom of political and religious expression***	0.1338	4.81	0.1739	4.57	0.1151	0.148	5.56
Support of family and friends	0.0200	0.74	0.0376	0.97	0.0234	0.0299	1.15
Free to live life***	0.1186	4.85	0.1079	3.50	0.1192	0.1214	4.57
Freedom of creative expression***	0.1899	8.14	0.1249	4.31	0.1912	0.1479	5.61
Interesting work***	0.1921	6.56	0.719	4.18	0.1783	0.1596	6.21

Note: See notes for Table 5; n = 2863

Table S3. Rosenbaum Sensitivity Analysis

		Gamma					n
		1	1.5	2	2.5	3	
Health limits activities	sig+	0.0000	0.0000	0.0000	0.0010	0.9109	4074
	sig-	0.0000	0.0000	0.0000	0.0000	0.0000	
Able to meet socially	sig+	0.0000	0.0000	0.0000	0.0000	0.0000	4074
	sig-	0.0000	0.0000	0.0000	0.0000	0.0000	
Lost sleep from worry (mental health)	sig+	1.0000	1.0000	1.0000	1.0000	1.0000	4074
	sig-	1.0000	0.9869	0.0000	0.0000	0.0000	
Able to enjoy recreation	sig+	0.0003	1.0000	1.0000	1.0000	1.0000	4074
	sig-	0.0003	0.0000	0.0000	0.0000	0.0000	
Own home	sig+	0.0000	0.0000	0.0000	0.0000	0.5242	4074
	sig-	0.0000	0.0000	0.0000	0.0000	0.0000	
Accommodation suitable	sig+	0.0000	0.0000	0.0000	0.0000	0.5082	4074
	sig-	0.0000	0.0000	0.0000	0.0000	0.0000	
Feel safe walking	sig+	0.0050	1.0000	1.0000	1.0000	1.0000	4074
	sig-	0.0050	0.0000	0.0000	0.0000	0.0000	
Risk of future assault	sig+	1.0000	1.0000	1.0000	1.0000	1.0000	4074
	sig-	1.0000	0.0001	0.0000	0.0000	0.0000	
Risk of future discrimination	sig+	1.0000	1.0000	1.0000	1.0000	1.0000	4074
	sig-	1.0000	1.0000	0.1374	0.0000	0.0000	
Influence local decisions	sig+	0.0000	0.0000	0.0000	0.0000	0.5497	4074
	sig-	0.0000	0.0000	0.0000	0.0000	0.0000	
Freedom of political and religious expression	sig+	0.0000	0.0000	0.0000	0.0000	0.0000	4074
	sig-	0.0000	0.0000	0.0000	0.0000	0.0000	
Support of family and friends	sig+	1.0000	1.0000	1.0000	1.0000	1.0000	4074
	sig-	1.0000	0.9465	0.0000	0.0000	0.0000	
Free to live life	sig+	0.0000	0.0000	0.0000	0.0000	0.4215	4074
	sig-	0.0000	0.0000	0.0000	0.0000	0.0000	
Freedom of creative expression	sig+	0.0000	0.0000	0.0000	0.0000	0.2246	4074
	sig-	0.0000	0.0000	0.0000	0.0000	0.0000	
Interesting work	sig+	0.0000	0.0000	0.0000	0.0006	0.7048	4074
	sig-	0.0000	0.0000	0.0000	0.0000	0.0000	

Note: upper bound significance level (sig+) and lower bound significance level (sig-) for each value of the log odds of differential assignment due to unobserved factors (Gamma); n = 4074