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CAN THE POOR BE ORGANIZED?
EVIDENCE FROM RURAL INDIA

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ABSTRACT

In response to the problems of high coordination costs among low-income households, efforts are underway in many countries to organize the poor through "self-help groups" (SHGs)—membership-based organizations that aim to promote social cohesion through a mixture of education, access to finance and linkages to wider development programs. We randomly selected 32 of 80 villages in one of the poorest districts in rural India in which to establish SHGs for women. After two years of exposure to the intervention, women in treatment villages were more likely to participate in group savings programs, exerted greater control over household decisions, and displayed greater civic engagement than women in control villages. To investigate the sources of cooperation further, we conducted a simple multiround public goods game in 14 villages. We find that players who have been exposed to SHGs converge towards a cooperative equilibrium faster than those who have not. We also find that SHG women discount the risk of noncooperation by others more than women in control villages. We conclude that SHGs and other membership-based organizations for the poor, where they promote collective action do so not by enforcing a commonality of tastes, but by reducing uncertainty surrounding cooperation.

INTRODUCTION

There is significant evidence of the role collective action plays in reducing poverty. Effective coordination by the poor has been shown to strengthen property rights (Baland and Platteau 2003; von Braun and Meinzen-Dick 2009), increase bargaining power in labor markets (Bardhan 2005), improve access to financial markets (Karlan 2007) and increase public investments in poor communities (Alesina et al. 1999; Banerjee and Somanathan 2007).

In light of this evidence, governments, aid donors and international NGOs have sought to expand their support to collectives in poorer communities. At the World Bank alone, more than $50 billion has been spent in the past two decades on "community-driven development" projects that expand participation of the poor in the design, implementation and evaluation of development (Mansuri and Rao 2012).

The question of where social capital originates remains poorly understood. Most analyses of how poor communities resolve coordination problems focus on simple, group-devised solutions that restrict access to common resources (Bowles 1998; Ostrom 1998; Henrich et al. 2001; Fehr and Gächter 2000; Ostrom 2000; Ostrom and Ahn 2009). Others examine "socialization" effects for group members in fostering collective action (Miguel and Gugerty 2005). Overall, this research suggests that, in the absence of common preferences, collective action is likely to emerge when individuals have low costs of information, the opportunity to coordinate their actions, the opportunity to engage in repeated interaction and the power to reward contributors and punish free-riders. Given that these constraints are often binding for the poor, it follows that almost everywhere, the poor demonstrate lower levels of organization and collective action (Narayan et al. 2000; Gugerty and Kremer 2008).

This paper examines whether external actors can lower the barriers for collective action and strengthen social capital in poor communities. We focus on a group for whom the constraints for collective action are likely to be particularly binding: rural Indian women. This group is characterized by some of the lowest levels of literacy, labor force participation and autonomy in the world (Sen 2001; Sen and Dreze 2002; King and Mason 2001).[1] Divisions along the lines of religion, class, caste and tribe have long hindered the formation of a unified women's movement in India (Agnihotri and Mazumdar 1995). Overall participation in civil society organizations also remains low (Chhibber 2001). As a result of all these factors, women are unlikely to organize spontaneously.

We examine the impact of organizing rural women into "Self-Help Groups" (SHGs)—membership-based organizations typically composed of 10-20 women who meet routinely to save and coordinate their actions to meet common economic, political and social objectives (Chen et al. 2007). The intervention we study was facilitated by the Self-Employed Women's Association (SEWA) in the district of Dungarpur, Rajasthan within the framework of a randomized control trial: 32 villages were provided services by the NGO and 38 additional villages were selected as controls. SEWA lowered the barriers to collective action in this community in several ways. Most importantly, door-to-door visits and group meetings held by literate and educated SEWA fieldworkers provided local women with information about opportunities for saving, credit, employment and access to government schemes. They also assisted with gathering documents, filling forms, filing applications and interactions with local government officials, etc. Fieldworkers also supported the groups by reminding women to attend meetings, motivating them to work together, arbitrating disputes and providing routine counseling. While groups

were trained to elect their own leaders and govern themselves, fieldworkers provided constant oversight of the process to ensure that rules were adhered to. This ensured that heterogeneous women were able to work together towards a common goal and avert the problem of free-riding. In some instances, SEWA was also able to provide women with additional supports such as child care services, employment training programs, and leadership training programs.

We make three contributions. First we demonstrate that through such programs, external actors can lower collective action costs among marginalized individuals. Second we also show that the programs themselves can contribute to broad improvements in well-being. Data from baseline and endline surveys are used to illustrate that the intervention had a wide range of impacts not only for the women who participated, but for all women in a village where programs were present. Following two years of exposure to SHGs, women in treatment villages were more likely to participate in group programs, had acquired greater "personal autonomy" (including greater control over household decision-making), had taken collective action on issues such as the drinking water supply, and were more likely to be knowledgeable of and involved in community affairs than their counterparts in control villages.

Finally we highlight the channel through which the intervention may encourage collective action. We hypothesize that repeated social interaction within SHGs increases intragroup trust and thus makes cooperation a self-reinforcing equilibrium. We test this hypothesis by conducting a basic, repeated public goods game played with groups of eight to 14 women in several treatment and control villages. Although group members in both treatment and control villages converge towards a cooperative equilibrium, we find that women in SHG treatment villages do so at a faster rate than women in control villages. There is also less inequality in final payouts across players in SHG villages. We infer that SHGs improve well-being not by promoting the convergence of individual preferences, but by reducing individual-specific uncertainty surrounding cooperation.

The remainder of this paper is organized as follows. The following section presents a review of related literature on self-help groups in India. The section titled Context and Experimental Design describes the research setting and provides an overview of the intervention. The section following that presents the empirical results of the impact evaluation of the SHG program by comparing outcomes in treatment and control villages between 2007 and 2009. The next section explores the behavioral aspects of collective action by presenting the results of experimental games played in treatment and comparison areas. The final section concludes.

BACKGROUND: SELF-HELP GROUPS IN RURAL INDIA

SHGs are "membership-based organizations", i.e. organizations whose members provide each other with mutual support while attempting to achieve collective objectives through community action (Chen et al. 2007). A typical Indian SHG consists of 10-20 poor women from similar socio-economic backgrounds who meet once a month to pool savings and discuss issues of mutual importance. They are facilitated by NGOs, the government and, in some cases, even the private sector. Facilitators typically oversee the operations of the group and "link" women to formal institutions such as banks or government programs. They often add on other services such as child care services, extracurricular programs for schoolchildren, and job training programs. SHGs also have important social functions: they may serve as a platform to address community issues such as the abuse of women, alcohol, the dowry system, educational quality, inadequate infrastructure, etc.

The focus on women is critical to the SHG movement. More than 80 percent of all Indian SHGs are for women only (National Bank for Agriculture and Rural Development 2011). This is for several reasons. First, a vast literature demonstrates that public investments in women empower them to make choices that benefit not only them as individuals, but also their families and communities (Schultz 1995; Nussbaum 2000). Second, there is also evidence that women are less risky borrowers and more responsive to the threat of social sanctions that form the basis of recent group lending schemes (Armendáriz and Morduch 2005). Third, this policy reinforces other policies that aim to improve women's participation in local politics in India. A third of all seats in democratically elected village institutions are now reserved for women. In some cases, this leads to policy decisions that better reflect women's preferences (for example, the prioritization of drinking water), but there are plenty of cases where women serve as token appointments and their authority is limited by dominant elites (Chattopadhyay and Duflo 2004; Ban and Rao 2008). Investments in SHGs are often cited as an investment in grass-roots democracy.

Women's SHGs have been heavily promoted by the Indian government since at least since the 1980s, particularly in the southern states (Reddy and Manak 2005; Deshmukh-Ranadive 2004; Galab and Rao 2003; Basu 2006; Chakrabarti and Ravi 2011). One of the largest microcredit operations in the world—the SHG linkage program—links these groups to formal credit providers (NABARD, 2011). Several large development programs, such as the Integrated Rural Development Program (IRDP), the *Swarnjayanti Gram Swarojgar Yojana* (SGSY) and most recently, the National Rural Livelihood Mission (NRLM) have provided a wide range of benefits to these groups. The NRLM envisions eventually mobilizing *all* rural, poor households into SHGs and producer groups in the states of Bihar, Chhattisgarh, Jharkhand, Madhya Pradesh, Orissa, Rajasthan, and Uttar Pradesh—some 150 million citizens—by the year 2015 (Planning Commission 2011).

Despite the large scale-up in the number of SHGs in India in recent years, the impact of these groups on the lives of women remains poorly understood. Efforts to measure impact are typically constrained by the nonrandom placement of programs, the nonrandom assignment of individuals to groups, and wide variations in the methods employed by these organizations. A recent report studied 214 SHGs in 108 villages across two northern and two southern states (Sinha 2006). The study found that SHGs indeed promoted collective action and succeeded in organizing women.

In 25 percent of SHGs, a woman ran for local political office and 30 percent of SHGs were involved in community actions such as improving community services (43 percent of the total actions, including water supply, education, health care, veterinary care and village road care), trying to stop alcohol sale and consumption (31 percent), contributing finance and labor for new infrastructure (12 percent), protecting natural resources and displaying acts of charity to nonmembers.[2] Twenty-five percent of groups also undertook a joint enterprise, joint production or joint marketing exercise. The study, however, has some important limitations because it only focuses on a select sample of groups that were formed in the 1990s and persisted for several years. Groups were chosen by the facilitating NGOs and may not be representative of SHGs in general, and communities in which they were established may also not be representative of rural India in general.

A set of recent studies has also focused on SHGs in the state of Andhra Pradesh, which accounts for 40 percent of all SHGs in India (Galab and Rao 2003; Aiyar et al. 2007). Several studies have evaluated the "Velugu" program, which was an SHG program implemented by the state of Andhra Pradesh via an independent organization headed by the state's chief minister. While the program's core involved microfinance and SHG-Bank linkages, it also included additional features such as the establishment of grass-roots institutions, the provision of community investment funds, and the training of SHGs to address social problems such as child labor, gender inequalities and caste inequalities. The program was widely touted as increasing incomes, reducing poverty, improving women's participation in household decisions and civic engagement (Aiyar et al. 2007), but we are not aware of a rigorous quantitative evaluation.

The most rigorous attempt to evaluate SHGs comes from Deininger and Liu (2009) and also focuses on Andhra Pradesh. The state government and the World Bank began promoting SHG formation through the bank-linkage model in the six poorest districts of Andhra Pradesh in 2000, and subsequently to the remaining districts three years later. In addition to only providing credit and savings (as previous SHGs had done), these SHGs also provided in-kind food and access to insurance. The authors use data from household surveys from 2004 and 2006 to conduct propensity-score matching and construct difference-in-difference estimates. Estimates from propensity-score matching methods suggest that the program had three main impacts: increases in social capital and economic empowerment, nutritional improvement (despite persistent drought at the time), and an increase in consumption for participants of new groups. However the findings did not find increases in income or assets, but interestingly the effects were not limited to group members, indicating spill-over effects for communities in which SHGs were formed. Estimates from difference-in-differences estimates, constructed by exploiting the timing of the program rollout, suggested that exposure to the program over 2.5 years resulted in higher consumption, nutrition levels and asset accumulation for poor participants. Spill-over effects were not observed when these methods were used. The main limitation of this analysis is the central assumption that women that first received the program (poorer clients) were fundamentally similar to those that received the program in the second rollout. Propensity-score matching methods can only "match" on a few observables, while selection may be driven by a wide range of unobserved attributes such as social status, prior exposure to outside institutions, and the level of cooperation and support received by a woman at home (Deininger and Liu 2009).

Some recent literature also examines the organizational structure of the groups themselves. Various research shows that the inequality and heterogeneity of participants can affect the stability of groups, and/or the incidence of "elite capture" (Galasso and Ravallion 2005; Mansuri and Rao 2004; Jha et al. 2009; Gaiha 2000; Lanjouw and Ravallion 1999). Most studies find that the problem is highly context-specific and varies widely across programs, levels of government, countries and regions. However, the risk of elite capture is particular strong in India considering that rural India remains highly stratified and divided along the lines of caste, class and gender. A recent paper by Jha, Bhattacharyya et al. (2009), finds that the size of landholdings in a targeted population is a negative predictor of participation in the National Rural Employment Guarantee Program (NREGP) in the Indian state of Rajasthan, but the opposite pattern is observed in the state of Andhra Pradesh. Comparisons of land inequality, the ratio of NREG to slack season agricultural wage rates, political interference, and geographical remoteness across the two states suggest that the extent of program capture, and the identity of those who are able to capture, may vary between the two states.

Some fundamental questions about SHGs, however—such as whether they succeed in mobilizing women and in alleviating poverty—remain unanswered, including their impact on access to public goods and their effects on cooperative behavior among women. The extent of elite capture for programs aimed at women in particular also remains poorly understood. In the next section, we describe our intervention to study these issues.

CONTEXT AND EXPERIMENTAL DESIGN

Setting

Research was conducted in Dungarpur district of Rajasthan, India, a largely rural district of 1.1 million people located on the southern tribal belt between Rajasthan and Gujarat. The population is largely composed of members of "scheduled tribes"– one of the politically least-mobilized groups in India.[3] Levels of socio-economic development in Dungarpur are quite low relative to the rest of Rajasthan, which is already one of the lowest in India. In 2005 the per capita income of Dungarpur stood at Rs. 12,474 (approximately $312) compared to the state average of Rs. 16,800 (approximately $420). Twenty-one percent of the population lives below the rural poverty line (Government of India 2009). Literacy levels are only 66 percent among men and 31 percent among women, and 76 percent of the population is engaged in agriculture (Census of India, 2001). In 2004, the Indian Planning Commission included Dungarpur in its Backward Districts Initiative, which aimed to address the problems of low agricultural productivity, unemployment, and to fill critical gaps in physical and social infrastructure through both central and state-level government interventions in the 100 least-developed districts.[4,5]

In 2007, Rajasthan state authorities invited a well-known nongovernmental organization with a long history of establishing SHGs in Gujarat, the Self-Employed Women's Association (SEWA), to set up SHGs in Dungarpur. SEWA, founded as an offshoot of the Textile Labor Association by the activist Ela Bhatt in 1972, is a trade union for women in the informal sector and claims a membership of over 1 million women in nine Indian states. Its main mission is to organize women to help them achieve economic independence through "self-reliance"(Datta 2000; Chen 1991; Bhatt 2006).[6]

Program

SEWA began a rollout of a rural SHG development pilot–known as the "Sustainable Livelihoods" project–in Dungarpur district in late 2007. All villages on the census listing for Dungarpur were stratified according to average female literacy rate, total village population and average household size. From these strata, 32 villages were randomly selected for the SEWA program and 48 villages were selected as control villages (80 villages in total). The rollout of the program proceeded in several steps. First, all women in a village were invited to become members of SEWA by paying a nominal fee of Rs. 5 (approximately $0.10).[7] Members participated in a full day of basic training programs that were intended to create a sense of unity and direction, and an understanding of SEWA's objectives. SEWA members were then organized into SHGs. These groups typically consist of groups of 10 – 20 women with an elected leader. All these activities were led by SEWA fieldworkers: two local, married and educated women with at least 12 years of education who are highly regarded by the community. These fieldworkers report to a SEWA coordinator, who works from the SEWA office in Dungarpur town. The team of SEWA workers made considerable attempts to ensure that the intervention was participatory and socially inclusive. They held open meetings, disseminated information along local networks (for example, through school teachers, health care workers, government employees, and home visits based on official lists of individuals who fall below India's nationally poverty line) and held meetings with community leaders to spread information and ensure that the poorest women were able to participate.

Once SHGs were formed and leaders were elected, participants would meet once a month and set savings targets of Rs. 25 – 100 each. These were deposited into a savings account at an SHG-linked bank. SHG meetings were also used to discuss other issues—details of job training programs, motivational messages, the importance of participating in local government, etc. SHG leaders were trained to manage the group, maintain minutes of meetings, manage group accounts, and monitor the group's activities. All meetings were attended by SEWA fieldworkers, who provided women with information about government schemes/programs and their eligibility for those programs. Since most women were illiterate, they also helped with other activities such as recording minutes of the meetings, assisting in necessary activities such as filling out all necessary paperwork at the local bank and/or arbitrating in the event of any dispute between the women. In addition to these activities, SEWA also conducted educational programs, job training programs and employment/income-generation workshops. These programs were always open to all women in a village, not just SEWA members. They were almost always very well-attended. All meetings emphasized the importance of collective action and encourage women to engage in community issues.

PROGRAM IMPACT: SURVEY RESULTS

We measure the impact of SEWA programs on all women in our sample who reside in villages where SEWA programs were implemented. We use this measure of "treatment" rather than a direct measure of actual participation in SEWA programs, mainly because the intervention was randomized at the village level (rather than at the individual level), and we wish to avoid the problem of estimating the program's impact on the self-selected group of participants. This strategy is also motivated by two additional reasons. First, low female mobility causes women's networks in rural north India to be highly localized and concentrated in their villages of residence (Dyson and Moore 1983; Jeffrey and Jeffrey 1996). New information introduced into a single village can diffuse along such social networks quite quickly, leading to the rapid spread of information and social learning (Munshi 2007).[8] Second, SEWA's integrated approach is designed to promote spillovers in rural communities and change prevailing attitudes of both men and women of communities.[9]

Baseline and follow up surveys of the study area were conducted in 2007 and 2009. These form a pooled cross-section with treatment and control samples. The sample of treated women includes a total of 1,410 women who resided in the villages where SEWA programs were in place. Of these, 748 women were interviewed in the 2007 baseline and 662 interviewed in the 2009 follow up surveys. The sample of control women includes 1,795 women who did not reside in SEWA villages over the two year period, with 855 interviewed in 2007 and 940 in 2009.[10]

Outcomes of Interest

Based on past studies of SHGs, other participatory programs, and other poverty alleviation programs in India focused on marginalized women, we expect the SHG program to have wide-ranging effects on economic, political and social indicators.

Savings and Labor Force Participation

In the long-run, participation in SHGs could be expected to increase income, assets and labor force participation rates. In the short-run, however, which is the focus of this paper, we expect the presence of SEWA programs to increase women's participation in group programs aimed at increasing saving, access to credit and employment. We measure participation as a simply dummy variable that takes value 1 if a woman reports any participation in such programs and 0 otherwise. Women in treated villages are also expected to save more (within or outside a saving group). For this, we define binary variables coded 1 if the woman reports that she saves money each month and 0 otherwise. Since SHGs seek to increase female participation in the labor force, we also define two binary labor-participation indicators: the first takes value 1 if a woman participates in the general workforce and 0 otherwise. The other similarly takes value 1 if a woman participates in the agricultural workforce and 0 otherwise.[11]

Household Decision-Making

If SHG membership raises a household's current and future income by increasing labor participation and returns on savings, we expect the presence of SEWA programs to increase women's decision-making autonomy within their households. Higher wages also increase the opportunity costs of woman's time,

lowering the demand for children and increasing the likelihood of contraceptive use. We thus examine respondent's involvement in three types of decisions: children's schooling, medical decisions, and family planning. We define dummy variables that take value 1 if a woman reports that she is able to make independent decisions in these matters and 0 otherwise.

Further, we hypothesize that access to a female safety-net in the village should increase women's participation in these types of decisions, even if she is not directly a member of the group. We measure this using dummies that take value 1 if a woman reports that she has a "final say" in matters of children's schooling, family medical decisions, and the practice of family planning, and 0 otherwise. Summary statistics of all variables are presented in Table 1.

Civic Inclusion and Engagement

SEWA programs disseminate information about local institutions, governmental programs, policies and procedures. In other words, they lower the cost of accessing information regarding community issues. We measure respondents' knowledge of where to report four types of grievances: problems with water/sanitation, poor road conditions, faulty electricity supply, and inadequate education and health services (all variables take value 1 if the woman knows where to report a grievance in the village and 0 otherwise). We also measure whether she has actually approached authorities to report a complaint and demand improvements in delivery, again using a variable coded 1 if the woman reports that she has reported a grievance at least once in the preceding two years, 0 otherwise.

We also test the hypothesis that participation in SHGs expands women's knowledge of authority structures

in the village and motivates them to redress grievances about public issues. We measure this in three ways. First, we examine women's knowledge of where to report five types of grievances: water/sanitation, road conditions, electricity supply, education services and health services. These variables take value 1 if the woman knows where to report a grievance in the village and 0 otherwise. Second, we examine whether women are aware of bribes being collected from villagers by public officials, coded 1 if they personally know someone who has been asked to pay bribes, 0 otherwise. Finally, we also measure women's participation in the main local governmental institutions, the "Gram Sabha" and "Gram Panchayat".[12] These are measured by two dummies. The first takes value 1 if the respondent knows of the Gram Sabha and the Gram Panchayat and 0 otherwise. The second takes value 1 if the woman has ever engaged with both institutions (by attending meetings and/or interacting panchayat members outside of meetings) and 0 otherwise.

Public Goods Satisfaction

We examine reported changes in levels of satisfaction with public services. We focus on the same set of public goods that we examined when considering their knowledge of grievances and actions taken to address grievances: problems with water/sanitation, poor road conditions, faulty electricity supply, and inadequate education and health services. Our survey asked women whether the state of each of these services was "very bad," "bad," "somewhat good," or "very good." To measure satisfaction, we define a binary variable that takes value 1 if a woman reports that a particular service is "somewhat good" or "very good" and 0 otherwise. We expect public services to improve in villages with strong SHG participation, on the assumption of enhanced bargaining strength vis-à-vis

Table 1: Summary of Statistics of Key Variables (N=3205)

	Mean	Standard Deviation	Min	Max
SEWA Village	0.450	0.498	0	1
Post-intervention	0.500	0.500	0	1
SEWA Village x Post-intervention	0.217	0.412	0	1
Participates in group savings	0.220	0.414	0	1
In the habit of saving	0.198	0.398	0	1
Employed in any capacity (past three months)	0.783	0.412	0	1
Employed in agriculture (past three months)	0.720	0.449	0	1
Employed outside agriculture (past three months)	0.063	0.242	0	1
Final say: children's schooling	0.088	0.283	0	1
Final say: medical decisions	0.097	0.296	0	1
Final say: family-planning	0.031	0.173	0	1
Grievance: Water	0.245	0.430	0	1
Grievance: Roads	0.199	0.400	0	1
Grievance: Electricity	0.238	0.426	0	1
Grievance: Ed/Health	0.180	0.385	0	1
Addressed Grievance: Water	0.212	0.409	0	1
Addressed Grievance: Roads	0.173	0.378	0	1
Addressed Grievance: Electricity	0.181	0.385	0	1
Addressed Grievance: Ed/Health	0.110	0.314	0	1
Adequate drinking water	0.233	0.423	0	1
Adequate sanitation	0.215	0.411	0	1
Adequate electricity	0.214	0.410	0	1
Know of the *Gram Sabha*	0.361	0.480	0	1
Ever attended *Gram Sabha*	0.040	0.195	0	1
Know about *Gram Panchayat*	0.749	0.434	0	1
Know of *Gram Sabha* and *Gram Panchayat*	0.230	0.421	0	1
Engage with *Gram Sabha* and *Gram Panchayat*	0.014	0.118	0	1
Know anyone in the village who paid a bribe	0.038	0.192	0	1
Top issue in the village: water	0.885	0.319	0	1
Top issue in the village: sanitation	0.509	0.500	0	1
Top issue in the village: transportation	0.637	0.481	0	1
Top issue in the village: electricity	0.807	0.395	0	1
Top issue in the village: educational services	0.294	0.456	0	1
Top issue in the village: health services	0.471	0.499	0	1
Age	37.13	10.00	14	80
Literate	0.183	0.387	0	1
Married	0.945	0.228	0	1
Scheduled tribe	0.726	0.446	0	1
Husband age	40.67	9.990	1	77
Husband literate	0.082	0.275	0	1
Own house	0.849	0.358	0	1
Have own farm	0.877	0.329	0	1
Kutcha house	0.685	0.464	0	1
Household has toilet	0.072	0.259	0	1

service providers. However, we are unable to identify whether improvements occurred because women succeed in taking public action (as measured above) or because local governments make a greater effort to improve service delivery.

Summary statistics of all variables used in the analysis across both treatment and control areas, and both before and after the intervention, are presented in Table 1**.**

Pre-Program Differences

Establishing a causal relationship between the SEWA program implemented in late 2007 and the observed outcomes in 2009 requires an analysis of pre-program differences between the treatment and control villages. For example, if the two areas differ in characteristics that are associated with improvements in socio-economic well-being before or after the program was established in 2007, estimates of the SEWA program could be biased.

Comparisons of pre-program characteristics are presented in the first three columns of Table 2 (individual-level estimates) and Table 3 (village-level estimates). Estimates in column 3 in each table contain the difference in mean outcomes between treatment and control populations prior to program implementation. Estimates are obtained from weighted regressions with robust standard errors clustered at the village level. Note there is no evidence that the treatment villages had more SHGs prior to the arrival of SEWA. There is also no systematic difference in women's schooling, labor force participation or involvement in SHGs prior to the program. We do note some other pre-intervention differences. Estimates in Table 2 illustrate that women in SEWA villages were less likely to be in the habit of saving prior to the program, were

more likely to participate in the agricultural workforce, had lower levels of participation in family planning decisions, higher levels of satisfaction with electricity services, and lower levels of satisfaction with sanitation services. Our selected sample in SEWA villages was slightly older, belonging to Scheduled Tribe ST groups and residing in "kutcha" (nonpermanent) houses. These estimates disappear when looking at village-level averages (Table 3), indicating that these initial differences may be driven by a small number of distinctive villages. We also present results that control for these and other possible factors.

Estimates of Unconditional Impact

We begin by comparing women who reside in the treatment villages with those who reside in the control villages before and after the intervention. Unconditional estimates of the program's impact are presented in columns 5 – 7 of Table 2 (individual-level estimates) and Table 3 (village-level estimates). Estimates in column 6 in each table contain the difference in mean outcomes between treatment and control populations after the program implementation. Estimates are obtained from weighted regressions with robust standard errors clustered at the village level. Table 2 shows that treated individuals did not significantly differ from their untreated counterparts prior to the SEWA programs, but after the program SEWA members are significantly different in several ways. They were 22 percent more likely to participate in group programs and 7 percent more likely to save regularly (Table 2). These estimates are significant at the 1 percent and 5 percent level respectively.

Differences in employment are negligible. There was no overall effect on employment, and although about 4 percent of women report shifting away from agricultural to nonagricultural employment, the effect is not

Table 2: Pre- and Post-Program Differences, Individual Data

	Pre-Program Differences			Post-Program Differences		
	SEWA Villages	Control villages	Difference (std err)	SEWA Villages	Control villages	Difference (std err)
Participates in group programs	0.132	0.146	-0.014 (0.030)	0.427	0.199	0.223*** (0.053)
In the habit of saving	0.155	0.194	-0.039* (0.023)	0.256	0.188	0.065** (0.030)
Employed (past three months)	0.798	0.768	0.030 (0.039)	0.784	0.783	-0.000 (0.051)
Employed in agriculture (past three months)	0.750	0.705	0.045 (0.041)	0.693	0.731	-0.038 (0.060)
Employed outside agriculture (past three months)	0.048	0.063	-0.015 (0.017)	0.091	0.053	0.038 (0.028)
Final say: children's schooling	0.092	0.087	0.006 (0.023)	0.130	0.055	0.067*** (0.019)
Final say: medical decisions	0.098	0.110	-0.012 (0.021)	0.131	0.061	0.063*** (0.021)
Final say: family-planning	0.018	0.055	-0.036** (0.014)	0.044	0.010	0.032** (0.012)
Know where to report grievance: Water	0.183	0.164	0.019 (0.027)	0.421	0.245	0.156*** (0.052)
Know where to report grievance: Roads	0.146	0.130	0.016 (0.026)	0.301	0.234	0.052 (0.051)
Know where to report grievance: Electricity	0.136	0.109	0.028 (0.027)	0.435	0.298	0.112* (0.060)
Know where to report grievance: Education/Health	0.163	0.159	0.004 (0.031)	0.258	0.159	0.082* (0.044)
Addressed Grievance: Water	0.160	0.139	0.021 (0.025)	0.349	0.220	0.128** (0.050)
Addressed Grievance: Roads	0.128	0.103	0.025 (0.025)	0.252	0.215	0.037 (0.046)
Addressed Grievance: Electricity	0.100	0.083	0.017 (0.021)	0.316	0.236	0.080 (0.048)
Addressed Grievance: Education/Health	0.086	0.091	-0.006 (0.024)	0.166	0.107	0.059* (0.033)
Know of Gram Sabha and Panchayat	0.215	0.218	-0.002 (0.035)	0.268	0.226	0.042 (0.049)
Engage with Gram Sabha and Panchayat	0.011	0.019	-0.008 (0.007)	0.018	0.009	0.010 (0.008)
Known anyone who has paid a bribe	0.040	0.055	-0.015 (0.015)	0.049	0.013	0.036** (0.015)

Table 2: Pre- and Post-Program Differences, Individual Data (Cont.)

	Pre-Program Differences			Post-Program Differences		
	SEWA Villages	Control villages	Difference (std err)	SEWA Villages	Control villages	Difference (std err)
Adequate drinking water	0.166	0.174	-0.008 (0.056)	0.369	0.240	0.129** (0.056)
Adequate sanitation	0.132	0.164	-0.031 (0.034)	0.267	0.293	-0.026 (0.044)
Adequate electricity	0.222	0.198	0.024 (0.054)	0.235	0.208	0.027 (0.049)
Adequate roads	0.179	0.221	-0.042 (0.055)	0.490	0.445	0.045 (0.057)
Adequate facilities for health, education	0.479	0.519	-0.041 (0.058)	0.781	0.716	0.065 (0.046)
Age	37.39	36.35	1.044 (0.645)	36.69	37.97	-1.077* (0.618)
Literate	0.184	0.188	-0.004 (0.037)	0.213	0.186	0.057 (0.039)
Married	0.947	0.952	-0.006 (0.012)	0.923	0.952	-0.024 (0.015)
Scheduled tribe	0.668	0.730	-0.061 (0.100)	0.725	0.77	-0.057 (0.078)
Husband age	41.06	40.24	0.824 (0.710)	40.50	40.87	-0.463 (0.613)
Husband literate	0.086	0.083	0.003 (0.020)	0.095	0.070	0.023 (0.021)
Own house	0.861	0.835	0.026 (0.027)	0.805	0.884	-0.071** (0.030)
Have own farm	0.900	0.891	0.009 (0.040)	0.835	0.874	-0.027 (0.051)
Kutcha house	0.667	0.746	-0.079 (0.071)	0.642	0.676	-0.039 (0.060)
Household has toilet	0.098	0.081	0.017 (0.036)	0.073	0.045	0.025 (0.028)
Observations	748	855		662	940	

Table 3: Pre- and Post-Program Differences, Village Data

	Pre-program Differences			Post-program Differences		
	SEWA Villages	Control villages	Difference (std err)	SEWA Villages	Control villages	Difference (std err)
Participates in group programs	0.115	0.171	-0.056 (0.039)	0.444	0.183	0.261*** (0.048)
In the habit of saving	0.148	0.200	-0.053 (0.034)	0.267	0.186	0.081* (0.041)
Employed (past three months)	0.773	0.779	-0.0053 (0.048)	0.775	0.787	-0.012 (0.048)
Employed in agriculture (past three months)	0.731	0.719	0.012 (0.049)	0.689	0.741	-0.052 (0.055)
Employed outside agriculture (past three months)	0.0424	0.0600	-0.017 (0.019)	0.0855	0.0453	0.040* (0.023)
Final say: children's schooling	0.080	0.082	-0.002 (0.021)	0.130	0.053	0.077*** (0.017)
Final say: medical decisions	0.084	0.100	-0.016 0.022	0.131	0.055	0.076*** (0.020)
Final say: family-planning	0.022	0.056	-0.034* (0.020)	0.044	0.008	0.036*** (0.009)
Know where to report grievance: Water	0.171	0.152	0.019 (0.027)	0.415	0.243	0.172*** (0.045)
Know where to report grievance: Roads	0.119	0.114	0.005 (0.026)	0.299	0.241	0.058 (0.052)
Know where to report grievance: Electricity	0.113	0.102	0.012 (0.027)	0.436	0.286	0.151*** (0.056)
Know where to report grievance: Ed/Health	0.163	0.147	0.016 (0.032)	0.255	0.158	0.097** (0.043)
Addressed Grievance: Water	0.149	0.131	0.018 (0.025)	0.335	0.219	0.117*** (0.042)
Addressed Grievance: Roads	0.105	0.0930	0.012 (0.023)	0.246	0.221	0.026 (0.046)
Addressed Grievance: Electricity	0.0889	0.0819	0.007 (0.022)	0.309	0.226	0.083* (0.044)
Addressed Grievance: Education/ Health	0.105	0.0941	0.0113 (0.027)	0.160	0.106	0.053 (0.032)
Know of Gram Sabha and Panchayat	0.202	0.245	-0.043 (0.049)	0.262	0.212	0.0505 (0.051)
Engage with Gram Sabha and Panchayat	0.019	0.015	0.004 (0.009)	0.018	0.007	0.0112* (0.006)
Know anyone who paid a bribe	0.042	0.051	-0.009 (0.634)	0.049	0.013	0.036*** (0.003)

Table 3: Pre- and Post-Program Differences, Village Data (Cont.)

	Pre-program Differences			Post-program Differences		
	SEWA Villages	Control villages	Difference (std err)	SEWA Villages	Control villages	Difference (std err)
Adequate drinking water	0.146	0.144	0.002 (0.967)	0.372	0.244	0.128*** (0.023)
Adequate sanitation	0.146	0.185	-0.039 (0.375)	0.264	0.300	-0.0358 (0.413)
Adequate electricity	0.221	0.175	0.045 (0.312)	0.227	0.214	0.0125 (0.805)
Adequate roads	0.176	0.225	-0.049 (0.313)	0.505	0.443	0.0625 (0.301)
Adequate Ed/Health services	0.477	0.538	-0.061 (0.305)	0.780	0.717	0.0632 (0.221)
Age	37.390	36.250	1.140 (0.819)	36.680	37.990	-1.309 (0.792)
Literate	0.160	0.180	-0.020 (0.032)	0.208	0.155	0.053 (0.035)
Married	0.954	0.954	0.000 (0.012)	0.922	0.957	-0.035** (0.014)
Scheduled tribe	0.712	0.775	-0.063 (0.068)	0.736	0.772	-0.036 (0.074)
Husband age	40.930	39.950	0.978 (0.762)	40.400	40.870	-0.473 (0.713)
Husband literate	0.073	0.086	-0.014 (0.021)	0.093	0.070	0.023 (0.020)
Own house	0.853	0.849	0.004 (0.029)	0.808	0.888	-0.08*** (0.027)
Own farm	0.913	0.909	0.004 (0.031)	0.834	0.876	-0.042 (0.048)
Kutcha home	0.705	0.774	-0.069 (0.049)	0.650	0.669	-0.019 (0.058)
Home has toilet	0.068	0.055	0.013 (0.026)	0.069	0.046	0.023 (0.028)
Observations	27	55		27	54	

statistically significant. In the case of village-level averages (Table 3), the positive effect of the treatment on nonagricultural employment is of equal magnitude (i.e. 4 percent) but is statistically significant. The unconditional effects of the program on employment are, however, likely to be influenced by the presence of a large public works program. This program was the outcome of the Mahatma Gandhi Rural National Rural Employment Guarantee Act (NREGA), which passed in parliament in 2005. It is a job assurance scheme that provides a legal guarantee for 100 days of employment in every financial year to adult members of any rural household willing to do public works-related unskilled manual work at the statutory minimum wage of Rs. 120 ($2.39) per day in 2009 prices. The program was rolled out in this area shortly after we began our intervention, and was popular in both treatment and control areas. While the program appears to have benefitted both areas, we believe it is important to condition our results on its presence. This will be done later in this section.

Unconditional impact estimates also indicate that SEWA programs strengthened women's participation in household decision-making. Treated women are 3-6 percent more likely to have a say in decisions about children's schooling and medical decisions as well as decisions about family planning (Table 2). The effects are significant at the 1 percent level in all but the case of the family planning, which is significant at the 5 percent level. The magnitude and significance of the coefficients are similar when constructed at the village level (Table 3).

The results also indicate that women in treatment villages were more likely to know where to report grievances related to the failures of public services: these estimates range from 16 percent for water, 6 percent for roads, 11 percent for electricity, and 8 percent for

education and health institutions. For the case of water, estimates are significant at the 1 percent level. Treated women were not only more knowledgeable of where to report their grievances, but also more likely to take action and actually report a grievance to the concerned authorities. These estimates are 12 percent for the case of drinking water, 8 percent for electricity, 6 percent for education and health services and 4 percent for roads. The estimate for water is significant at the 1 percent level, and the effect for education and health services is significant at the 6 percent level. Given the low level of awareness and action at the baseline (Table 1), these are significant improvements. The case of drinking water is particularly striking. On average across our entire sample in both periods, only 24 percent of women were aware of where to report grievances about drinking water and only 21 percent of women had ever made the effort to report a grievance to the authorities. Treated women in 2008 were thus 40 percent more likely to be aware of where to report drinking water problems, and 60 percent more likely to take action in the case of poor service delivery. This is a significant and important difference, particularly in light of the fact that women in rural Rajasthan are responsible for fetching drinking water and spend considerable amounts of time on this activity. Estimates regarding the levels of satisfaction with public services further reinforce these results. Note that women in treatment villages were 13 percent more likely to report that the supply of drinking water was "Adequate". The effect was significant at the 5 percent level. Different levels of satisfaction were smaller and not statistically significant for other types of public services.

Estimates in Tables 2 and 3 also suggest that treated women were also more likely to engage with local political institutions: they were 4 percent more likely to be aware of bribe payments within the village (signifi-

cant at the 10 percent level). They were also 4 percent more likely to be aware of the Gram Sabha and Gram Panchayat and 1 percent more willing to interact with these institutions. These effects are small and also statistically insignificant, but we return to examining these in estimates of conditional impact in the section ahead.

Estimates of Conditional Impact

Simple aggregate estimates of the program's effect on households can be derived from a regression of the following form:

$$Y_{hvt} = \beta_0 + \beta_1 \text{SEWA Village}_v + \beta_2 \text{Post-intervention}_t$$

$$+ \beta_3 (\text{SEWA Village}_v \times \text{Post-intervention}_t)$$

$$+ \beta_4 X_{h,v} + \mu + e_{jt}$$

where Y_{hvt} is the outcome of interest for household h in village v in survey year t. SEWA village takes value 1 if it is a village in which SEWA operates programs. *Post-intervention* is a dummy variable that takes value 1 if the household was interviewed after the treatment program, X is a vector of household and village-level control variables, μ is a block fixed-effect[13] and e_{jt} is a standard disturbance. The variable that is of chief interest is the interaction *SEWA Village*$_v$ x *Post-intervention*$_t$ which captures the impact of residing in a SEWA village after the intervention. Control variables include the respondent's age, literacy, marital status, household size, husband's age and literacy, scheduled tribe status, and dummies for home/land ownership, kutcha dwellings, and the presence of a toilet (as proxies for income and assets that are likely to be unaffected by a two-year intervention). We also include an indicator coded 1 if public works programs from the National Rural Employment Guarantee Act were oper-

ating within the village during the survey year, on the assumption that presence of public works programs may affect village-level outcomes and may measure the effectiveness of village-level institutions. Finally, given the subjective nature of many of our dependent variables we include responses by women to questions about the quality of roads to their village, on the assumption that this should be invariant across village households. The distribution of responses to this question in equations, including village-fixed effects, should therefore closely proxy individual bias. We use a dummy variable that takes value 1 if she reports that the village roads are either "bad" or "very bad" and 0 otherwise.

We omit the listing of control variables and present only the coefficients from treatment and post-intervention dummies, and their interactions in Table 4.[14] Results confirm that two years of exposure to SHGs resulted in improvements in several different aspects of well-being. First, women who reside in SEWA villages were 24 percent more likely to participate in group savings programs and 11 percent more likely to be in the habit of saving money. The results are significant at the 1 and 5 percent level respectively.

Unlike the case of the unconditional estimates, we now find that women were also more 5 percent likely to be involved in nonagricultural employment, and the effect is significant at the 10 percent level. Controlling for the presence of NREGA works strengthened this coefficient. This possibly indicates that labor markets during the period of study were being considerably transformed by the NREGA program. We cannot rule out the possibly that the transformation occurred at a different pace in treatment and control villages. [15] Anecdotal evidence from fieldworkers as well as local government representatives suggests that the program was hugely popular among women from both

Table 4: Conditional Estimates of the Impact of SEWA

	SEWA Village	Post-intervention	SEWA Village x Post-intervention	R2
Participates in group programs	-0.007 (0.027)	0.075** (0.035)	0.244*** (0.049)	0.110
In the habit of saving	-0.043* (0.025)	0.018 (0.031)	0.109** (0.043)	0.042
Employed (past three months)	0.029 (0.027)	0.040 (0.026)	-0.004 (0.040)	0.268
Employed in agriculture (past three months)	0.052* (0.026)	0.032 (0.029)	-0.055 (0.039)	0.318
Employed outside agriculture (past three months)	-0.022 (0.016)	0.008 (0.021)	0.051* (0.029)	0.064
Final say: children's schooling	0.004 (0.018)	-0.019 (0.015)	0.047* (0.024)	0.164
Final say: medical decisions	-0.018 (0.017)	-0.028 (0.018)	0.065** (0.027)	0.138
Final say: family-planning	-0.034** (0.012)	-0.050*** (0.015)	0.062*** (0.016)	0.032
Know where to report grievance: Water	0.004 (0.020)	0.110*** (0.027)	0.128** (0.052)	0.109
Know where to report grievance: Roads	0.001 (0.023)	0.154*** (0.034)	0.04 (0.055)	0.075
Know where to report grievance: Electricity	0.014 (0.027)	0.232*** (0.037)	0.089 (0.069)	0.110
Know where to report grievance: Ed/Health	-0.009 (0.029)	0.046 (0.031)	0.081 (0.052)	0.051
Addressed Grievance: Water	0.009 (0.021)	0.100*** (0.025)	0.099* (0.052)	0.083
Addressed Grievance: Roads	0.014 (0.021)	0.153*** (0.031)	0.016 (0.051)	0.058
Addressed Grievance: Electricity	0.013 (0.023)	0.183*** (0.031)	0.068 (0.058)	0.077
Addressed Grievance: Ed/Health	-0.011 (0.025)	0.045 (0.028)	0.067 (0.042)	0.033
Know of Gram Sabha and Panchayat	-0.011 (0.031)	0.011 (0.041)	0.048 (0.054)	0.072
Engage with Gram Sabha and Panchayat	-0.009 (0.007)	-0.007 (0.008)	0.018* (0.011)	0.022
Known anyone who has paid a bribe	-0.017 (0.014)	-0.034** (0.014)	0.051** (0.020)	0.016
Adequate drinking water	-0.027 (0.036)	0.045 (0.034)	0.125** (0.058)	0.176
Adequate electricity	0.004 (0.040)	0.001 (0.036)	-0.008 (0.049)	0.102
Adequate roads	-0.003 (0.004)	-0.009 (0.007)	-0.023 (0.020)	0.935
Adequate facilities for health and education	-0.043 (0.046)	0.150*** (0.048)	0.089 (0.067)	0.145

Notes: (i) Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$; (ii) All regressions include block-level fixed effects; (iii) All regressions include the set of control variables described in the text; (iv) N=3205.

treatment and control villages, and they chose to participate in this program in large numbers. Both self-employment and entrepreneurship, already at very low levels in Dungarpur, fell even further as a result. Other research also confirms that the program was well-targeted in the state and did not suffer from the problems of elite capture that have been seen in other states (Jha et al. 2009).

Results in Table 4 also confirm that women in treatment villages experienced benefits of greater bargaining power within their households. Residence in a SEWA village is associated with 4-7 percent greater likelihood of participation in household decision-making. The effect is particularly noteworthy for family planning decisions. Recall that prior to the program, women in SEWA villages reported lower autonomy in such decisions relative to their counterparts in control villages.

Next, we explore the conditional estimates of impact on knowledge of where to report grievances, and a woman's actions in actually reporting grievances. Results indicate that women in treatment villages are 13 percent more likely to know where to report grievances regarding water, and are also 10 percent more likely to have actually reported problems of water access to village councils or district offices.[16] It is also interesting to note that the conditional estimates of program impact for other types of public goods are not significant. We interpret this as evidence that women organize around issues that are of greatest relevance to them. Many other studies from rural India have documented the salience of this issue: women fetch water in rural India and are consistently weighting issues related to drinking water higher than issues with other types of public services, particularly roads, since these primarily used by men (Chattopadhyay and Duflo 2004; Joshi 2011). Interestingly, these pat-

terns were not observed for any other type of public services—sanitation, electricity, roads or facilities for health or education. In all those cases, knowledge of where to report grievances, actual action on grievances and levels of satisfaction with the services themselves measured no statistically significant impacts.

The results also indicate that women who resided in SEWA villages were 5 percent more likely to know if anyone in the village had paid a bribe to either gain access to water for farming or to public officials. Two years of exposure to the program also resulted in a slightly higher (2 percent) village-wide likelihood of interaction with the Gram Sabha and Gram Panchayat. The magnitude of the impact is small, but it is possible that these are likely to intensify over time, particularly as women from the SHGs themselves take advantage of their political opportunities.

In summary, the estimates of program impact suggest that two years of exposure to SEWA programs resulted in a wide variety of "indirect" impacts for not only women who participated in the groups themselves, but all residents of a village. Women in SEWA villages are more likely to participate in group savings programs, save money, obtain credit, have a final say in decision-making within their households, know where to report grievances about drinking water, seek to address grievances about drinking water, and know about local corruption. These indirect benefits are larger and more significant than the program's effects on employment or income. This leads to an important question: how and why does participation in SHGs produce these effects? We demonstrate in the next sections that SEWA is likely removing steep barriers to intravillage coordination and facilitating cooperation. But first we demonstrate that exposure to SEWA is not resulting in a convergence of preferences.

Heterogeneity of Preferences

A wide body of evidence indicates that social and political fractionalization is prevalent in poor communities, and not merely in communities characterized by high levels of ethno-linguistic diversity. In India gender disparities, religious, caste and tribal divisions, and other communal inequities are endemic even in relatively (ethnically) homogenous communities, and these inequities are often reflected in public goods choices (Pande 2003; Chattopadhyay and Duflo 2004; Hoff and Pandey 2006). We would expect, therefore, that any successful effort to promote cooperation by SHGs would ultimately hinge on whether the heterogeneity of preferences across individuals in poor areas can be managed.

In Dungarpur—as in other districts in the northwest tribal belt—a principal division is between those who are members of tribes and those who are not. The reservation of seats in Panchayats for historically disadvantaged groups—Scheduled Castes (SC), Scheduled Tribes (ST), Other Backward Castes (OBC), and women—has been a feature of political life since 1991, when the 73rd Amendment to the Indian constitution gave village governments the authority and the resources to appropriate funds for local public goods. However, there are notable differences between ST and non-ST groups. ST members, who are outside traditional caste structures, are more economically marginalized than SC/OBC groups that are considered at the bottom of the Hindu caste hierarchy (Banerjee and Somanathan 2007). More importantly, tribal communities are among the politically weakest groups in India, and in contrast to SC/OBC groups, have been slow to organize politically (Chandra 2005).[17]

Over two-thirds of both the district population and our sample are comprised of scheduled tribes. We use ST information of survey respondents to determine whether the SHG intervention has affected the diversity of public goods preferences. Returning to the question of principal concerns over public goods quality, Table 4 examines the difference between ST and non-ST choices for the number one concern, pooled across villages, before and after the intervention. The figures in Table 5 are the percentage of ST women listing any particular public good choice as their first priority, less the percentage of non-ST women doing the same; a positive number thus implies that a greater percentage of ST women selected the public good as the village's first priority than non-ST women.

These results show no discernible reduction of preference in heterogeneity between these groups. We see no greater narrowing of the spread between ST and non-ST preference regarding public goods from pre-intervention to post-intervention periods when comparing treatment and control villages. We also calculate a Herfindahl concentration index from the sum of the squared percentages of respondents that expressed preferences for any particular public good (a lower number indicating a greater heterogeneity of preferences). ST respondents between the pre- and post-intervention periods became more dispersed in terms of their public goods preferences, but we see no difference between control and treatment villages, either within or across ST/non-ST groups, between the two survey periods.

Although we see survey evidence that that SEWA programs were able to achieve to encourage greater cooperation in terms of group activities, this does not appear to have been accomplished through change in the diversity of preferences across members. In the next section, then we follow up in a small number of surveyed control and treatment villages by conducting a basic public goods game in order to examine the underlying processes of cooperation that may have emerged in such groups.

Table 5: Preferences for Public Goods

	Non-SEWA		SEWA	
	Pre-intervention	Post-intervention	Pre-intervention	Post-intervention
Sewage and Sanitation	16.38	-15.15	26.20	-16.13
Water	-6.85	5.06	-14.83	-0.46
Transport	-1.58	-4.09	4.94	17.28
Electricity	-6.42	5.27	-5.53	5.30
Education	-1.81	5.53	-2.67	-2.53
Health	1.07	4.54	-3.01	-2.07
Employment	-0.97	-1.16	-4.71	0.23
Exclusion	0.18	..	-0.39	-1.61
ST Concentration	0.3749	0.1891	0.3809	0.1912
Non-ST Concentration	0.0865	0.1500	0.1085	0.1004

Notes: The table lists several public goods/services priorities selected by respondents as the "no. 1 priority for the village." Figures show differences in public goods priorities between Schedule Tribe (ST) women and non-ST women across village categories (a positive number indicating greater ST than non-ST preference for prioritizing the particular public good). Concentration figures are Herfindahl indices calculated from then sum of squared fraction of ST and non-ST preferences.

THE CAPACITY FOR COLLECTIVE ACTION: RESULTS FROM EXPERIMENTAL GAMES

To assess the mechanisms that lead to cooperation among members of SHGs, we played a variant of a threshold public goods game (Davis and Holt 1993; Ledyard 1995; Eckel and Grossman 2008). The combination of quantitative and qualitative research methods provides insights into the impact of SHG participation on the mindsets and behaviors of participants in the treatment villages.

The Threshold Public Goods Game

The game was implemented in each of seven treatment and control villages in 2011. Female participants were randomly selected in each village.[18] Group sizes ranged from eight to 14 women, but were made comparable across treatment and control villages as much as possible. Game players were briefly surveyed in order to obtain basic information regarding their age, socio-economic status, education and occupation. Differences between the characteristics of treatment and control populations are presented in Table 5, showing no significant difference between the players in treatment and control villages.

Each subject was assigned a number, to be used throughout the game to ensure anonymity in the distribution of payouts. At the beginning of each round of the game, subjects were given coupons worth Rs. 20 and were told that these would be redeemable for cash at the end of the game. The players were then asked to secretly place any portion of the Rs. 20 worth of coupons into an envelope on which their identifying number was written, which they would then place into a box—explained to them as analogous to a village fund ("Lok Phada"). If the total amount contributed to the fund exceeded a certain threshold, that amount

would be doubled and distributed back to the participants in equal amounts. If the threshold was achieved in the current round, it would be raised by 20 percent in the subsequent round, and increased steadily to a maximum of $N \times 20 - 20$ where N is the number of players. If the combined contributions did not exceed the threshold, all contributions were lost for that round. All contributions and contributory decisions were made in secret as players were instructed not to discuss their actions with others, and thus no formal monitoring or sanctioning of individual behavior by the group was allowed. Players were not told when the game would end. Each game was played without revealing the number of rounds until the end of the game.

The stage game has two types of pure strategy Nash equilibria. In the first of these, each player contributes zero. There are no incentives for any player to deviate unilaterally from this strategy profile, even if by doing so the threshold would be met, since the amounts are distributed back to all participants in equal shares irrespective of whether they contributed or not.[19] The second type of pure strategy equilibrium is a strategy profile in which the threshold is just satisfied, and all players contributed a strictly positive amount to get back at least as much as they gave. If the latter condition is not satisfied, then a contributing player would be better off contributing nothing. On the other hand, there are no incentives for any player to contribute any amount above the threshold since that amount would be shared equally with all other players. We refer to this second type of equilibrium as a "cooperating equilibrium", and there generally exists many such equilibria with different combinations of contributions to just satisfy the threshold. However, only one cooperative equilibrium is symmetric in the sense that each player contributes an identical amount.

In the repeated game, it is possible to use trigger strategies to sustain an infinite number of equilibria, some of which involve even higher contributions. In the games we organized, the participants did not know how many rounds would be played. This is typically formally treated as a game with an infinite horizon. In such a game, a strategy profile in which all players contribute their full amount, in which no other player deviates, and in which every player turns to contributing zero after a deviation, is the welfare maximizing Nash Equilibrium as long as all players are sufficiently patient. The repeated nature of the game should thus in principle make it possible to sustain a higher level of cooperation between the players.

This game and several variants of this game have been widely played in both classrooms and field settings.[20] Most of the research finds tremendous variations in the willingness of participants to contribute to the public good. Early research focused on the one-shot version of the game played among university students and found that contributions were 40-60 percent of the Pareto optimal level (Marwell and Ames 1981, 1979, 1980). Contributions tended to be lower if the initial endowments were more unequal than the case where all participants had an equal endowment. In repeated games, it has been observed that cooperation diminishes over time and contributions converge close to the Nash equilibrium level or simply to zero (Isaac et al. 1984; Isaac et al. 1985). Contributions to the public good are also known to be higher in the presence of thresholds or provision points (Marwell and Ames 1980; Isaac et al. 1989; Cadsby and Maynes 1998), with homogeneous groups of female players (Cadsby and Maynes 1998), and an allowance for communication between players (Isaac et al. 1985). Other factors, such as group size, decision costs, concepts of fairness and framing, etc. are all shown to matter as well, but there is little agreement in the literature on the precise direction of the effects. Some recent work also combines laboratory experiments on public goods with field experiments. Others have found that individuals' contributions to a public good in the laboratory were not always able to predict their willingness to contribute to a public good in the naturally occurring world (Laury and Taylor 2008). On the other hand, it has also been shown that social preferences exhibited in a public good game in Japan predict the productivity of fishermen: those who behave more pro-socially in experiments are more productive. (Carpenter and Seki 2006).

Our analysis differs from any of the papers mentioned above in a critical way: we are focused on the *differences* between treatment and comparison areas. Since identical games were run in both sets of villages, we are able to attribute the differences in outcomes between the two sets of games to the treatment program and not to the structure of the game, innate behavioral biases (such altruism or confusion about the rules of the game), or the framing of the game's rules.

We hypothesize that SEWA members and nonmembers will behave differently in these group games. Since SEWA members have the greatest exposure to group participation, understand the benefits of collective action and are accustomed to making decisions in groups of women, we expect them to display higher levels of trust and contribute greater amounts to the public goods than their counterparts who are not members of SEWA. We also expect games with SEWA members to display lower levels of inequality than games with nonmembers, since free-riding is likely to be less common. Given our survey evidence on the externalities of SEWA programs, we also expect that nonmembers in SEWA villages will behave similarly to SEWA members. We expect even this group to show

higher levels of cooperation than their counterparts in control areas.

Results

Average contributions per round are presented in Figure 1. Note that contributions in treatment villages exceed the contributions in control villages. Contributions to the public good in the first round in treatment areas were higher than comparison areas by Rs. 3.8, or approximately 20 percent of the initial endowment. We also break down contributions in treatment areas into SEWA members (solid line) and nonmembers (dashed line) respectively. Note that in treatment villages, SEWA members on average contributed more to the public good both at the beginning of the game, but nonmembers rapidly increased their contributions. Overall, there was little discernible difference between the two groups: average contributions across all rounds were only about Rs. 0.68 higher among SEWA members, and the difference is statistically insignificant.

Contributions in treatment villages also displayed lower dispersion than contributions in control villages (Figure 2). In both village types, however, dispersion declined over time, but more quickly in treatment villages. The low level of inequality in contributions (Figure 2) is driven by the nearly complete absence of free-riders in these villages, even though some women had experienced benefits from free-riding in earlier rounds.

Achievement of Thresholds

The higher levels of cooperation in treatment villages are also seen in the patterns of threshold attainment. The threshold was attained about 62 percent of the time in treatment villages and only 50 percent of the time in control villages (See Table 7).[21] The extent of

cooperation is also apparent from looking at the number of rounds played. Since the game ceased once the maximum common-fund threshold was reached, we see that the greater cooperation in treatment villages was associated with shorter overall games with an average game length of less than 5 rounds. The maximum threshold was reached in control villages after 6 rounds, on average, and in one village it was not reached.

Regression Results

Since the games varied in their length and the choice of thresholds, a comparison of earnings and other outcomes requires controlling for these differences. We estimated measures of game performance based on demographic characteristics and group fixed-effects, in addition to the treatment effect. Regressions take the following form:

$$Z_{i,r,v} = \beta_0 + \beta_1 \text{ SEWA Member} + \beta_2 \text{ SEWA Village, Non-Member} + \beta_3 X + \mu_v + e_{i,r}$$

where $Z_{i,r,v}$ is the outcome of interest for individual i in round r of the game in village v. *SEWA Village* is the treatment village indicator, **X** is a vector of control variables, μ_v is a village-specific fixed-effect (to control for group-specific attributes such as how long the women have known each other and other village characteristics), and e_{jt} is a random disturbance. Additional control variables include age and literacy (measured on the basis of whether game players could sign their name). Additionally, we include round-specific controls, including round number and the threshold. We also include dummies for the individual days over which the games were played.

Table 8 and Table 9 present regression results for five outcomes: (1) contributions to the public good per round; (2) cumulative balance per round (i.e. endow-

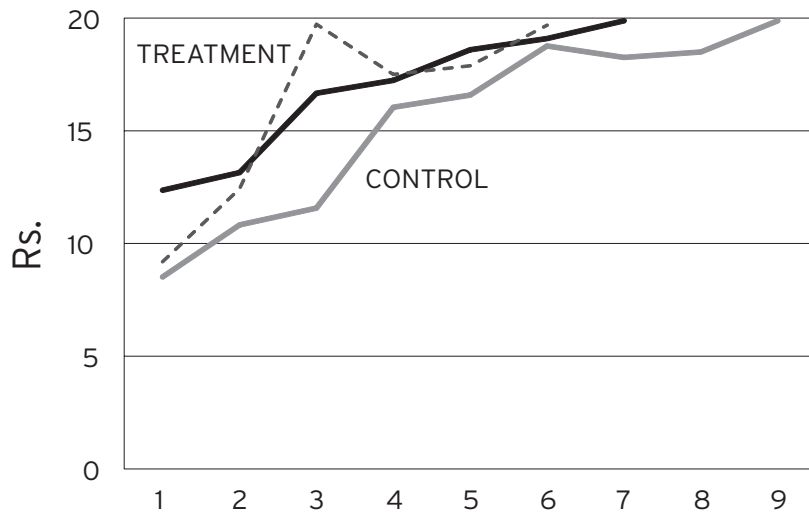Figure 1: Contribution and Cumulative Payouts per Round

Figure 2: Spreads (i.e. Maximum Contribution Minus Minimum Contribution) Per Round
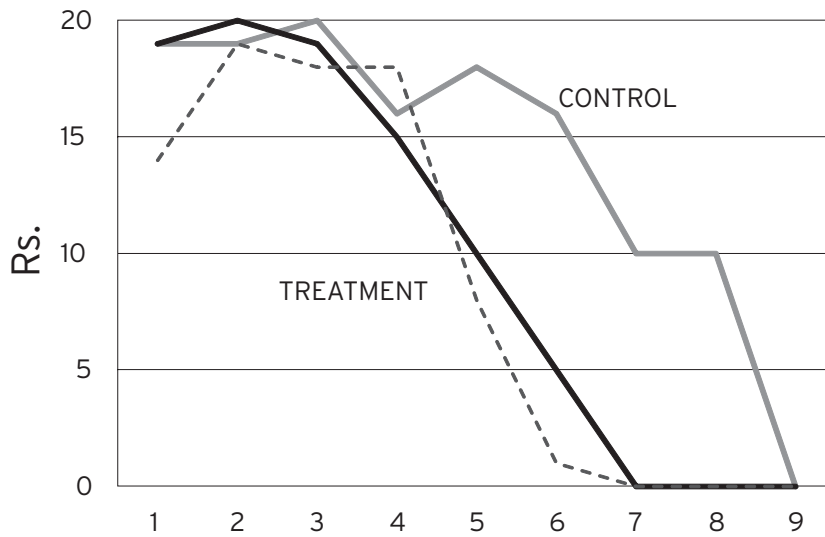
Table 6: Differences in Demographic Characteristics, Game Players

	Control	Treatment	Difference
Average Age	32.950	32.604	-0.349
			(0.549)
Average Education	1.440	1.416	-0.0252
			(0.213)
Average Literacy	0.233	0.313	0.080
			(0.035)
Live with husband	0.883	0.937	0.054***
			(0.019)

* p < 0.10, ** p < 0.05, *** p < 0.01.

Table 7: Summary Statistics for All Rounds, Treatment and Control Areas

		Treatment	
Outcome	Control	SEWA Members only	SEWA Members and Nonmembers
Number of rounds played	6.5	4.6	4.75
Number of players in each round	12	12	15
Fraction of rounds in which cooperation was achieved	51%	59%	62%
Average of payouts per round - Payouts from Nash strategy of contributing 0 in each round	Rs. 6.05	Rs. 31.23	Rs. 25.46

ment less contribution to the public good + earnings from the public good); (3) gross payouts per round (total earnings from the common fund distributed equally); (4) the net payout (gross payout less the contributed amount), and (5) the difference between a woman's payout and the amount she would have earned from contributing nothing to the public good, i.e. playing the Nash strategy of contributing nothing to the public good.

Estimates in Table 8 suggest that all individuals—both SEWA members and nonmembers—contribute ap-

proximately Rs. 4.00 (20 percent of the original endowment) more to the public good than women in control villages (Table 8, columns 1–3). Estimates also indicate that SEWA village participants also maintain higher balances: throughout the game, SEWA members hold an extra Rs. 17, while nonmembers hold an extra Rs. 14 compared to players in control villages (Table 8, columns 4–6). Higher contributions to the public good and higher balances throughout the game are associated with higher gross payouts: SEWA members receive an extra Rs. 25 and nonmembers in SEWA villages receive an extra Rs. 23 more than their

Table 8: Regression Results for Experimental Games: Contributions, Balances and Payouts

	Contribution			Balance			Payouts		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
SEWA Village, SEWA Member	2.552***	4.175***	3.980***	3.986***	17.524***	17.066***	9.623***	25.988***	25.172***
	(0.791)	(0.917)	(0.934)	(0.712)	(4.333)	(4.139)	(2.106)	(5.604)	(5.485)
SEWA Village and Nonmember	2.706***	4.264***	4.382***	2.533	15.645**	13.939*	8.478	24.299***	22.940**
	(0.891)	(1.268)	(1.233)	(4.183)	(5.948)	(6.718)	(5.185)	(7.479)	(7.650)
SEWA Member x Lagged net contribution			0.067**						0.162
			(0.030)						(0.212)
SEWA Village, Nonmember x Lagged net contribution			0.022						0.258
			(0.065)						(0.407)
Lagged net contribution			-0.044			-0.155			-0.234
			(0.026)			(0.161)			(0.173)
Threshold		0.015**	0.015***		-0.162***	-0.158***		-0.131***	-0.125***
		(0.005)	(0.005)		(0.027)	(0.025)		(0.032)	(0.029)
Round		1.484***	1.427***		1.343*	0.858		4.095***	3.516***
		(0.139)	(0.138)		(0.711)	(0.780)		(0.740)	(0.766)
July2011		-1.792*	-2.471**		-43.182***	-45.199***		-47.657***	-50.864***
		(0.844)	(0.928)		(5.609)	(6.203)		(6.625)	(7.001)
Age		-0.005	-0.004		0.107	0.106		0.098*	0.099*
		(0.025)	(0.024)		(0.077)	(0.083)		(0.046)	(0.052)
Literate		0.041	0.093		-0.129	-0.010		-0.194	0.023
		(0.443)	(0.417)		(0.546)	(0.626)		(0.458)	(0.370)
R-squared	0.040	0.355	0.362	0.232	0.394	0.403	0.321	0.417	0.431
N	860	860	860	860	860	860	860	860	860

Notes: Standard errors in parentheses. All regressions include village-level fixed-effects. Intercepts and day dummies are included but not reported. * p < 0.10, ** p < 0.05, *** p < 0.01.

counterparts in control villages. Higher levels of cooperation, and higher contributions to the public good in these villages led to higher payouts and thus greater improvements in balances and gross payouts.

Estimates in Table 9 further illustrate how well women in treatment villages fared in the game. Relative to control villages, net payouts (defined as gross payout less contributed amount) are Rs 18-20 higher for both SEWA members and nonmembers in treatment villages in each round (Table 9, columns 1–3). The gap between what women actually earned and the amount they would have earned had they played the Nash equilibrium of contributing nothing to the public good shows a similar pattern: relative to women in control villages, SEWA members and nonmembers both earned approximately Rs. 5.00 extra according to this metric (Table 9, columns 4–6).

These data can also be used to examine differences in strategies as well as outcomes for women as a function of their own gains/losses throughout the game. We examine the independent variable "net earnings" (payout less contributions) in the previous round of the game to determine whether the propensity to contribute is affected by previous round net gain/loss (Net $payout_{r-1}$), and interact this variable with residence in a treatment village ($SEWA$ $Village$ x Net $payout_{r-1}$). This measures whether women who gained from free-riding were more or less likely to remain free-riders in subsequent rounds, or whether they were prompted to move to a more cooperative strategy, even at the cost of lower balances in their own account. Note that the coefficient for Net $payout_{r-1}$ is negative (though not statistically significant) in the case of contributions to the public good (Table 8, column 3), suggesting that women who received higher payouts in the previous round (for example, by free-riding) on average lowered their contributions in the following round.

However, the coefficient for the interaction $SEWA$ $Village$ x Net $payout_{r-1}$ is positive and statistically significant, indicating that women in treatment villages behaved in the opposite way: a player who profited in the previous round actually increased her contributions in the current rounds. Synchronization of strategies ensured that these women collectively achieved higher payouts than the zero-contribution strategy (Table 9, column 3). Note that lagged earnings and their interaction with the treatment indicator only affect current-round contributions and the difference between actual payout and the case where players simply kept the Rs. 20. Neither variable affects balances or gross or net payouts.

Overall, we note three results of interest. First, although women in both treatment and control villages engage in cooperative behavior, women who participated in the SHG treatment achieve a cooperative outcome more quickly than their counterparts in the control villages. Moreover, the gap between the most and least generous individuals narrowed more quickly in treatment than in control villages. Second, cooperative behavior is encouraged with the presence of a leader; but the cooperative effect of the leader is nonexistent in treatment villages. Third, free-riding in control villages delays the emergence of cooperative behavior, whereas in treatment villages initial free-riding hastens a cooperative result. Thus it is likely that the SHG promotes cooperative behavior not through the management of group members' policy preferences, but by reducing players' uncertainty surrounding cooperation. Under normal conditions, game players who free-ride continue to do so in sequential rounds of game play. But among SHG members, free-riding quickly disappears as those who achieve high earnings increase contributions to the common fund in subsequent rounds.

Table 9: Regression Results for Experimental Games, Gap and Net Payouts

	Gap			Net payouts		
	(10)	(11)	(12)	(13)	(14)	(15)
SEWA Village, SEWA Member	1.071*** (0.353)	4.718*** (0.731)	4.435*** (0.644)	6.639*** (1.427)	21.622*** (4.942)	20.991*** (4.788)
SEWA Village and Nonmember	1.498 (0.924)	4.894*** (0.972)	5.012*** (0.916)	5.340 (4.646)	19.835** (6.658)	18.293** (7.117)
SEWA Member x Lagged net contribution			0.065** (0.028)			0.098 (0.198)
SEWA Village Non-Member x Lagged net contribution			0.007 (0.068)			0.246 (0.348)
Lagged net contribution			-0.065** (0.024)			-0.193 (0.164)
Threshold		-0.037*** (0.006)	-0.035*** (0.005)		-0.146*** (0.029)	-0.141*** (0.026)
Round		0.681*** (0.194)	0.531** (0.183)		2.754*** (0.704)	2.226** (0.753)
July2011		-6.178*** (1.172)	-7.064*** (1.021)		-45.071*** (6.060)	-47.668*** (6.518)
Age		-0.002 (0.022)	0.000 (0.020)		0.101 (0.059)	0.101 (0.066)
Literate		-0.233 (0.564)	-0.167 (0.530)		-0.135 (0.215)	0.032 (0.279)
R-squared	0.028	0.116	0.131	0.294	0.410	0.421
N	860	860	860	860	860	860

Notes: Standard errors in parentheses. All regressions include village-level fixed-effects. Intercepts and day dummies are included but not reported.* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

CONCLUSIONS

This paper has explored whether collective action can be promoted in communities by external actors. It examined an intervention by the Self-Employed Women's Association of India in the Dungarpur district of Rajasthan. Women in 32 randomly selected treatment villages were organized into SHGs. An additional set of 48 villages served as a control group. A dedicated group of SEWA fieldworkers conducted an information campaign, organized the women and provided them with information, education and training to make decisions as a group. The fieldworkers also provided regular oversight, support, and arbitration in the case of disputes or "free-riding" (real or perceived), and facilitated the group's interaction with formal institutions such as banks or government agencies.

A comparison of a baseline survey in 2007 and an endline survey in 2009 provide estimates of program impact, which we measure at the village level. We find that over the two years of its operation, indirect impacts of these programs—on women's autonomy and empowerment—largely outweigh the direct benefits on income and employment. Compared to the control group, women who live in villages with SEWA programs report greater participation in group programs (particularly for saving), increased say in domestic decision-making, greater awareness of where to express grievances about public services (particularly drinking water), a willingness to take action on grievances in the case of drinking water, and finally, an increase in satisfaction with the state of these services. We observe no significant impact of the program, however, on measures of income, consumption or employment.

We also explore the possible mechanisms through which these impacts are realized. We rule out the possibility that cooperation is achieved through top-down mechanisms that force preferences to converge. Survey evidence shows that SHGs have no effect on narrowing differences between women—and in particular, between tribal and nontribal women—regarding preferences for public goods in treatment villages relative to control villages. Rather our behavioral evidence suggests that SHGs change incentives structures for members by minimizing the individual risks of engaging in cooperation. In public goods games, we found that free-riding tends to persist in control villages, but free-riders tend to correct their behavior in subsequent rounds of play in SHG villages, even when group monitoring of individual behavior was not allowed. Although we cannot determine the precise means by which SHGs do this—whether it is due simply to the routinization of cooperative behavior that SHG activities promote—without further exploration, we can conclude that SHGs do reduce the uncertainty surrounding cooperation.

Taken together, these results suggest that external actors (such as NGOs, other civil society organizations or even the government) can in fact mobilize the poor and lower the costs of collective action in rural communities. SHGs or other types of membership-based organizations targeting the poor can not only increase the propensity for collective action in local communities, but also empower women more broadly. But in order for these groups to be able to take further steps in improving livelihoods, increasing income and eventually the bargaining power of marginalized communities, these groups will have to move beyond their current status as simple linkages between the public sector and (mostly) the rural poor. Given time and appropriately designed incentives, these groups have the capacity to influence the processes of both economic and political development in significant ways.

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ENDNOTES

1. Adult female literacy currently stands at 51 percent for women and 76 percent for men (World Development Indicators, 2012). These numbers are generally lower, and the gender-gap larger, in rural areas.

2. The authors do not include activities such as cleaning the village before village functions – which community leaders increasingly find SHGs useful for. Nor do they include general participation in campaigns or rallies - pulse polio, literacy, anti-dowry, for example – for which SHGs are becoming a means of mobilizing women.

3. 65 percent of Dungarpur's population belongs to scheduled tribes, with the highest concentration in the south. The dominant tribe here is that of the *Bhils*. This tribe's occupancy in the Aravalli range (one of the oldest mountain ranges in the world) is said to date back to 4000 BC (Government of India 2009).

4. The identification of backward districts within a state has been made on the basis of an index of backwardness comprising three parameters with equal weights to each: (i) value of output per agricultural worker; (ii) agriculture wage rate; and (iii) percentage of SC/ST population of the districts.

5. A sum of Rs. 15.00 crore per year (approximately $3 million) will be provided to each of the districts for a period of three years i.e. a total of Rs. 45.00 crore (approximately $9 million) per district.

6. SEWA's definition of self-reliance encompasses more than employment and economic independence, and includes women's ability to make independent decisions, and have a voice at home and in their communities. Collective action is central to this mission. A recent annual report summarizes this as follows: "Self-employed women must organize themselves into sustainable organizations so that they can collectively promote their own development. They can be organizations at the village level, at the district level, at the state level, at the national or international level. They can be registered as cooperatives, societies, producers associations or even remain unregistered. Their members may be self-employed women directly, or primary organizations of self-employed women (SEWA 2008: 12)".

7. Recruitment of members is carried out by making announcements about SEWA at village *Panchayat* meetings, and/or private meetings with educated and influential members of the village who then spread awareness about SEWA's programs. SEWA volunteers and employees also meet with randomly selected women in the privacy of their homes, encourage them to join SEWA and spread awareness about SEWA programs among friends and family.

8. Diffusion is likely to be particularly strong in Dungarpur, where we observed that villages were typically quite small (<1000 people). Villages were often physically separated by hills and intervillage transport was often restricted to narrow dirt tracks.

9. Nonmembers are always invited to participate in SEWA activities and members are encouraged to draw nonmembers into collective activities whenever possible. Moreover, women are encouraged to participate in local politics and community events, where information about SEWA programs is often highlighted.

10. These villages may have other SHGs operating besides SEWA's, but none received SEWA's Sustainable Livelihoods intervention. Five villages that were originally designated as treatment villages were reclassified as control villages because SEWA programs were not implemented until after the completion of the follow up survey in December 2009. The delay in establishing programs in these villages is attributed to the presence of an-

other NGO that was operating in these villages. All results in this paper are robust to the exclusion of these villages from the sample completely.

11. We do not consider measures of income or asset holdings mainly because the gap between our baseline and endline surveys is only two years. Many groups took several months to establish and begin their operations and thus became eligible to receive credit and other benefits from poverty-alleviation programs at different times. We plan to explore this further in the next round of our survey, expected next year.

12. The "Gram Panchayat" is the local governing body of a village or small town in India. It is the foundation of India's system of grass-roots governance. It is generally composed of seven to 31 members and performs functions such as the resolution of local disputes, the implementation of development schemes for the village, the establishment of primary health centers and primary schools, arrangements for clean drinking water and drainage, and the construction and repair of roads. The "Gram Sabha" is composed of all men and women in the village who are above 18 years of age. Meetings of the Gram Sabha are usually convened several times a year. In Rajasthan they are typically held twice a year. The agenda typically includes the annual budget, the development schemes for the village and, where necessary, individual difficulties or grievances of the people of a village. The Gram Sabha plays a critical role in holding government institutions, particularly local Panchayat members, accountable.

13. Blocks, or *tehsils* are district subdivisions comprising multiple villages. In our sample, villages belong to one of three blocks.

14. These estimates are available from the authors on request.

15. In both 2007 and 2009, we observe no difference in either the intensity of the NREG program, or the timing of its rollout, between treatment and control villages, but it is possible that the program was rolled out quicker in group of villages.

16. The effect of SEWA programs is as strong as the effect of literacy on these outcomes.

17. In the 1990s the Bahujan Samaj Party (BSP) came to rule India's most populous state (Uttar Pradesh) principally as an SC-based political party.

18. In treatment villages, our research team established contact with local SEWA leaders (*Agewans)* through both phone-calls and site visits. These leaders were told about the research project and were asked to randomly select women for participation in the games. In control villages, our research team established contact with local government leaders such as panchayat members, female health workers and other local government representatives (ASHA workers, *anganwadi* workers, etc.). These leaders were also told about the research project and were asked to randomly select women who were not affiliated to any types of SHGs at all.

19. Strictly speaking, this statement requires that the number of participants exceed two, since the contributions are doubled.

20. A thorough review of this literature is beyond the scope of this paper, but some notable papers include (Nunn and Watkins 1978; Marwell and Ames 1979, 1980, 1981; M. Isaac, J. Walker, and Thomas 1984; J. Andreoni 1995; M. Isaac and J. Walker 1988; Davis and Holt 1993; Cadsby and Maynes 1998; Abbink, Sadrieh, and Zamir 2002; Hauert n.d.; James Andreoni and Petrie 2004; Semmann, Krambeck, and Milinski 2003). Reviews of the literature are found in (Davis and Holt 1993; Janssen and Ahn 2003).

21. Excluding one treatment village where the game was disrupted by male on-lookers, this increases to 75 percent.

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