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Do Community-Driven Development Projects Enhance Social Capital?

Evidence from the Philippines

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Abstract

This paper explores the social capital impacts of a large-scale, community-driven development project in the Philippines in which communities competed for block grants for infrastructure investment. The analysis uses a unique data set of about 2,100 households collected before the project started (2003) and after one cycle of sub-project implementation (2006) in 66 treatment and 69 matched control communities. Participation in village assemblies, the frequency with which local officials meet with residents and trust towards strangers increased as a result of the project. However, there is a decline in group

membership and participation in informal collective action activities. This may have been because households were time-constrained, so that in order to participate in project activities, they needed to temporarily reduce their participation in informal activities. An alternative explanation is that the project improved the efficiency of formal forms of social capital and thus households needed to rely less on informal forms. Finally, the results indicate that, in the short run, the project might have reduced the number of other investments.

This paper—a product of the Social Development Department, Sustainable Development Network—is part of a larger effort in the department to evaluate the institutional impacts of Community Driven Development projects. Policy Research Working Papers are also posted on the Web at <http://econ.worldbank.org>. The authors may be contacted at jlabonne@worldbank.org and rchase@worldbank.org.

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1 Introduction

International aid organizations, multilateral organizations and national governments are increasingly favoring bottom-up approaches that involve local communities in project design and implementation. In addition to purely normative benefits (Sen 1999), participation is expected to lead to better outcomes through better poverty targeting, reduced project costs, improved maintenance and allocative efficiency. Moreover, often grounded in social theory (Chase and Woolcock 2005), such programs are expected to enhance social capital.

Community-Driven Development (CDD) projects¹ are one way the World Bank has applied conventional wisdom about the value of participation. In a typical CDD project, communities prepare subproject proposals with the support of facilitators, compete over block grants to finance investments for local public goods, and are then responsible for implementation and maintenance of those investments. The CDD approach promotes stakeholder involvement in all stages of the process from subproject identification to subproject maintenance.

While the literature on the benefits associated with direct stakeholder participation in development projects is growing (Arcand and Bassole (2007); Prokopy (2005); Chase et al. (2006); Khwaja (2006); Olken (2007) among others), there is little empirical understanding of its institutional impacts. However, since those projects often have the objective of empowering communities, it seems important to address questions such as: As a result of a CDD project, does participation in local governance activities actually increase? Do group membership rates increase? Do the relationships between local officials and citizens improve?

This paper explores the impacts on community-level social capital of the KALAHI-CIDSS,

¹ Operations that take a CDD approach constitute 9 percent of World Bank lending annually (World Bank 2007).

a large-scale CDD project in the Philippines. Under this project, all villages within a municipality prepare proposals for small-scale infrastructure investment, while only a subset of villages (*i.e.*, those with the best proposals) actually implement those investments. The paper takes advantage of a unique and detailed panel dataset of 2,092 households in 135 villages in 16 municipalities of the Philippines. The sample includes eight municipalities in which the project is implemented and eight matched comparison municipalities.²

Our paper builds on existing research on participatory projects' impact to enhance social capital and foster collective action. First, we use household panel data collected both before the project started and after one cycle of subproject implementation in both treatment and comparison municipalities. The survey instrument includes information on a broad range of household and village-level social capital measures. Thus, we can analyze whether *changes* in social capital indicators can be attributed to the project, controlling for initial village characteristics and time-constant unobserved characteristics.

Second, communities followed very detailed, facilitated participatory processes throughout the project, tailored to Philippine conditions. Since opportunities for participation are clearly defined, we improve upon previous research that used data from CDD projects in which the decision rules within communities and with local authorities were not always clear. However, note that while the subproject implementation cycle is repeated three times in each village, this research summarizes data currently available (collected after the first cycle only).

Our regression and propensity score matching estimates highlight that the project impacts both participation in local governance activities and community social networks. As a result of the project, treatment villages experienced increases in participation in village assemblies

² The selection procedure for treatment and comparison municipalities is described in Section 3. More details are available in Chase and Holmemo (2005).

and in the number of meetings with residents organized by elected village leaders. Generalized trust (*i.e.*, toward strangers) also increases with the project. However, there is a decline in group membership and collective action. This might indicate that different forms of social capital are substitutes. Finally, our results indicate that the project might, in the short-run, crowd-out other investments.

The paper is organized as follows. Section 2 defines social capital and discusses how CDD projects interact with the concept of social capital. Section 3 describes the CDD operation and data. The estimation strategy is presented in Section 4 while the results are discussed in Section 5. Section 6 concludes.

2 Social Capital and CDD Projects

By design CDD projects interact with social capital characteristics within communities. Indeed, CDD approaches may enhance or change the character of community social capital, promoting institutional change in how frequently, easily or in what ways community members collaborate for common ends. One of the claims about CDD approaches is that they enhance community collective action.

It is challenging to test this claim. While social capital has been shown to affect a broad range of economic outcomes, there is little agreement as to what social capital is.³ Woolcock and Narayan (2000) trace the evolution of social capital research and provide a good starting point. They define social capital as *'the norms and networks that enable collective action'*. However, they distinguish four broad research perspectives (communitarian, networks, institutional and synergy), each with its own definition of *'norms and networks'*. For example,

³Writing a history of the concept, Farr (2003) noted that "scarcely an article on social capital begins without complaining about the semantic from this situation."

research from the networks perspectives focuses on vertical and horizontal ties both within and between communities, while the institutional perspective acknowledges that community networks are constrained by the political environment. The synergy view integrates results from the networks and insitutional perspectives. In this paper, we focus on the *synergy* view, which acknowledges the importance of both community networks and of citizens' ties with the state. As a result, we will distinguish between informal and formal social capital. In the paper, the former relates to ties between community and non-community members,⁴ and the latter is concerned with ties between households and the local and national government.⁵

While operations taking a CDD approach vary by context and objective, in general they have two stages: preparation and funding. During the first stage of facilitated discussion, community members reach consensus on the most pressing problem facing their members and then prepare a proposal to address that problem. An inter-community decision-mechanism is then organized during which proposals from various communities are ranked based on a set of criteria. Only those with the highest ranked proposals (within the budget allocated to the locality) undertake the second stage. Specifically, they receive resources and then implement the investments. They are usually required to contribute either money or labor (or both).

Preparation. The processes communities follow through CDD approaches seek to build on and encourage local collective action institutions. Notably, CDD operations work to ensure a transparent decision-making process with clear rules. Further, these approaches include clear incentives to foster collective action, for those communities able to organize themselves to put together a better project proposal will get resources to invest in public-goods. This combination of rules-based processes and resources for collective action can enhance social

⁴Common indicators include trust in neighbors, membership in groups, etc.

⁵Common indicators include trust in local officials, participation in local governance activities, etc.

capital.

Funding. It is often assumed that communities successful in receiving CDD funding likely had higher ex-ante capacity for collective action, *i.e.*, more social capital, than their counterparts. To be successful, communities need to prepare good proposals, a process that requires significant collective effort in the community. Those communities already possessing more developed social capital assets are more likely to secure funding.⁶ Since communities are responsible for project implementation, these successful communities have additional opportunities to practice collective action. As a result, CDD impacts, including potential changes in local institutions, will be greater in communities with higher ex-ante capacity for collective action.

CDD projects likely have different impacts on formal and informal social capital. Indeed, some CDD projects seek to replicate government processes while others set up parallel temporary systems. As a result we should expect the former type of project to positively affect formal social capital and the latter to positively affect informal social capital.

However, as Chase and Woolcock (2005) point out, because they involve new actors (often previously excluded) in a more participatory and transparent decision-making process, CDD projects can generate conflicts. Some might feel threatened by the changes. This has been documented in Indonesia (Barron et al. 2007) and in Thailand (Chase et al. 2006). In Indonesia, a study of local-level conflict in the context of the Kecamatan Development Project (KDP) found that by sending funds through new channels, CDD projects can generate conflicts, though they tend to be resolved through project procedures (Barron et al. 2007). In Thailand, the project under review led to an atmosphere focused on preparing the best proposal, which resulted in a decrease in tolerance of others' differences (Chase et al. 2006).

⁶See, for example, Labonne and Chase (2007).

3 The Setting and the Data

This analysis of CDD and social capital is based on an intervention in rural areas of the Philippines. It is useful to present some key characteristics of that institutional context. Indeed, networks are both dense and varied in rural communities (*Barangay*) of the Philippines. An important component of the institutions of collective action there is the tradition known as *Bayanihan*. It refers to a communal effort to achieve a particular objective. The origin can be traced back to the Filipino tradition wherein community members gather together to help a family relocate their house to a new location (they literally carry the house on their backs). Further, it now encompasses both communal labor and labor exchanges in agriculture. Further, gift giving is common among networks of friends and relatives. Such transfers help households cope with idiosyncratic shocks (Fafchamps and Lund 2003).

The 1991 Local Government Code of the Philippines created formal institutions with the aim of, among others, strengthening the relationship between citizens and the State. The Code instituted village assemblies (*Barangay assemblies*) and devolved power to them. They are to be held twice a year and can initiate legislative processes by recommending the adoption of measures for the welfare of the village. In practice, they are not held regularly and tend not to fulfill their mandate, however.

Further, the code established the Village Council which is the legislative body of the village (*Sangguniang Barangay*). It is composed of the elected village leader (*Barangay Captain*) as presiding officer, and the seven regular members which are also elected. Further, the Village Development Committee assists the village council in setting the direction of economic and social development and coordinating development efforts within the village. It is headed by the elected village leader and is composed of members of the village council, representatives

of non-governmental organizations and a representative of the congressman.

The KALAHI-CIDSS, a US\$182.4 million CDD project in the Philippines, is implemented by the Department of Social Welfare and Development, with financial support from the World Bank. The project's well-established operating procedures build on decades of local knowledge on participatory approaches in the Philippines. A pilot was set up in 6 villages in one municipality during which the participatory processes were carefully tested and codified in project operational manuals. Then, the project was launched in 201 villages in 11 municipalities which helped fine-tune the mechanisms before scaling-up.

Within eligible municipalities, the project is implemented according to a 'Community Empowerment Activity Cycle'. This cycle, repeated three times in each participating municipality, has four main stages: (i) social preparation, (ii) subproject identification, (iii) subproject preparation, selection and approval and, (iv) sub-project implementation, monitoring and evaluation, and operations and maintenance.⁷ From this point forward, we will refer to stages (i)-(iii) as *preparation* and stage (iv) as *funding*. Below is a short description of the type of activities undertaken at each stage.

Preparation. After a municipal introduction, facilitators are sent to all villages in the municipality. A first village assembly is organized in which the facilitator presents KALAHI-CIDSS to villagers and helps them select volunteers to conduct a participatory situation analysis. This leads to a village action plan that includes the top priority project to be submitted for KALAHI-CIDSS funding. These results are validated in another village assembly during which the project preparation team and village representative team are elected. The village representatives then attend a municipal meeting during which the rules and a subset of subproject ranking criteria are decided (some of the criteria are specified in advance). Local

⁷<http://kalahi.dswd.gov.ph/PartProc/> - visited on 03/05/2007

project teams are instructed to emphasize the need to target the most deserving villages in the municipality. Once those criteria have been agreed upon, the project preparation teams prepare proposals, which are validated in a village meeting.

Funding. Once the proposals are ready, a Municipal Inter Village Forum is set up. During this forum, preparation teams present the proposals and village representatives rank them (i.e., decide on which proposals to fund given the budget allocated to the municipality) based on the agreed criteria. The results of this municipal forum are presented in a village assembly and, in the funded villages, villagers elect the members of the subproject management committee which are responsible for subproject implementation.

In each cycle, all villages in treatment areas go through 'preparation', while only villages successful in receiving funds from the project undertake 'funding'. Villages successful in getting funding during a cycle are still eligible for funding in the subsequent cycles.

To ensure meaningful participation, an Area Coordination Team is deployed to each municipality two months prior to municipal launch. Area coordinators are selected locally according to their expertise in community mobilization. In addition, community facilitators help mobilize communities and ensure adequate representation, each working with five villages.

The project is active in the 42 poorest provinces of the Philippines out of 82 total provinces. In each province, using municipal poverty mapping methods, only municipalities in the bottom quartile of a provincial poverty ranking (about 177) are eligible to participate. All villages in a municipality are eligible to participate. The poverty ranking was implemented by researchers from the School of Economics at the University of the Philippines relying on census data on the age profile, quality of housing, access to water and electricity, education achievements, distance to center of trade and quality of roads. This data was used to rank municipalities in the province according to a computed poverty index. The poorest one-fourth was then

eligible to participate in the project. No municipalities refused to participate.

Comparison municipalities were selected based on the set of indicators used for the poverty ranking with the addition of two variables: the municipality population and land area. Specifically, the eight control municipalities were selected using cluster analysis.⁸ To ensure that control municipalities share similar characteristics, a cluster analysis was computed for each of the four provinces in which the survey was to be fielded. The method starts with as many clusters as the number of municipalities in the province, which are then systematically clustered with those closest in Pythagorean distance along the various dimensions specified. There is significant within-municipality variation in our variables of interest.

From the outset, the operation included a rigorous impact evaluation collecting data from treatment and comparison municipalities before, during and after the intervention. The analysis takes advantage of a detailed household-level panel dataset collected to evaluate project impacts. The original sample covered 2,400 households in 135 villages in 16 municipalities, in 4 provinces of the Philippines. It includes municipalities in which the project is being implemented as well as comparison municipalities.

The first round of data collection took place in November 2003. In the 66 treatment villages included in the sample, project implementation started in October 2004. The second round of data collection took place in November 2006. The survey was fielded in the same 135 villages.⁹

⁸ The targeting mechanism used to select municipalities made more commonly used techniques such as propensity score matching impossible to implement.

⁹The survey used two stage stratified probability-proportional-to-size sampling to draw respondent households. First stage units are the villages. The villages in each selected municipality were stratified into three groups according to proximity to the población (municipal center). The first 1/3 in the ranking comprise stratum 1 (the villages nearest the población), the next 1/3 stratum 2 and the last 1/3 comprise stratum 3. One quarter of the total number of villages were randomly selected from each stratum using probabilities

The survey team managed to re-interview 2,092 households (about 87.2 percent of the original number of households). Between the first and the second round of data collection, sampled municipalities went through only one cycle (out of three) of subproject implementation.

For each household, the survey includes information on knowledge of Village Assemblies (*Aware Assembly*), participation in such assemblies during the past six months (*Participate Assembly*) and knowledge of their village incomes and expenses (*Know Expenses*). Respondents were also asked to provide information regarding how decisions are made in their village. First, the survey asks respondents if, in practice, the village assembly solves problems that affect the village (*Solution Assembly*). Second, it also asks respondents if decisions that affect them are made during a village assembly (*Decision Assembly*). The survey includes information on whether the household requested services from the local government (*e.g.*, business permit, community tax certificate, etc.) in the past year (*Service*).

Considering collective action, the survey contains information on the household participation in bayanihan¹⁰ activities in their village (*Collective Action*) during the past six months, and the time spent in those activities (*Time Collective Action*).

The respondent was also asked whether she trusts people in her village (*Neighbors trust*). The question was worded as follows: *In general, do you agree or disagree with the following statements: "Most people who live in this village can be trusted"*. We follow Alesina and La Ferrara (2002) and classify individuals answering "agree somewhat" or "agree strongly" as proportional to size with number of households in the village as measure of size. Between 6 and 12 villages were selected per municipality. In the second stage, households were drawn using systematic sampling. The sample size was proportionately allocated to the villages selected in the municipality with 20 percent over-sampling to allow for sample attrition in the follow-up surveys. Sampling of households was done in the field using systematic random sampling with the households numbered according to proximity to the village center.

¹⁰ In the survey, bayanihan was taken as a proxy for collective action.

trusting, and others (*i.e.*, answering “neither agree nor disagree”, “disagree somewhat” and “disagree strongly”) as non-trusting. The survey includes similar questions (*How much do you trust . . . ?*) about local government officials (*Officials trust*) and strangers (*Strangers trust*).

In addition, for each individual in our sample, the survey includes data on whether they are a member of any people’s, religious and/or nongovernmental organization (*Group*). It contains information on whether the household has a network of support (*Network*) and on whether they perceive their village as cohesive (*Cohesion*).

Finally, the survey includes information on households’ poverty status, education and ethnic group. We use information on access to services, tenure status, quality of housing and ownership of various durable consumption goods to build an asset index which serves as a measure of wealth (*Asset*). We also have information on the highest level of schooling achieved by the household head (*Year Edu*) and, on his ethno-linguistic group. For each village, we compute the average asset index and the average years of education achieved by household heads. Moreover, following McKenzie (2005), we take advantage of the asset index to compute a measure of relative inequality (*Inequality*).¹¹ Finally, an index of ethnic diversity (*Ethnic Diversity*) is obtained with a fractionalization index (as described in Labonne et al., 2007). We aggregate all our variables at the village-level.

The survey also comprises a village leader component. It includes information on the number of village council ¹² meetings (*VC Meetings*), village development committee ¹³ meetings

¹¹ For more information on the asset and the relative inequality indices, see Labonne et al. (2007).

¹²Instituted by the Local Government Code of the Philippines, it is the legislative body of the village (*Sangguniang Barangay*). It is composed of the elected village leader (*Barangay Captain*) as presiding officer, and the seven regular members which are also elected.

¹³This committee assists the village council in setting the direction of economic and social development, and coordinating development efforts within the village. It is headed by the elected village leader and is composed

(*VDC Meetings*) and meetings with villagers (*Villagers Meetings*) over the past year. In addition, it contains information on the number (*Nb Projects*) and cost (*Cost Project*) of each project implemented in the village in the year preceeding the survey (excluding investments supported by the KALAH-CIDSS).

Overall, we observe changes in the social dynamics and practices in our sample villages between the two surveys. This is consistent with findings obtained by Miguel et al. (2006) in neighboring Indonesia over the period 1985-1997. For example, between 2003 and 2006, the proportion of households who belong to a group increased by a 7.5 percentage points. Similarly, the participation rates in collective action activities increased by 6.2 percentage points between 2003 and 2006. In addition, the percentage of households who request service from their local government increased by 6.7 percentage points.

It is worth noting that, between the two surveys, the Philippines went through difficult political times. This might explain some of the observed changes that occurred in the comparison villages, especially the reduction in trust levels and the deterioration of relationships between citizens and local officials. For example, in control villages the percentage of respondents who declared trusting local officials went down from 56.6 percent to 41.2 percent. A similar drop was observed in the percentage of respondents who trusted national officials (from 54.0 percent to 38.6 percent).

4 Identification Strategy

We aim to determine the average effect of the preparation stage on the social capital of the implementing communities. This requires estimating the counterfactual (*i.e.*, what would have

of members of the village council, representatives of non-governmental organizations and a representative of the congressman.

happened in the treated villages had the project not been implemented there?). As described above, our sample includes villages similar to the ones in which the project is implemented but which did not participate.

4.1 Regressions

The level y_{jkt} of social capital in village j in municipality k at time t ($t=0,1$) is determined by:

$$y_{jkt} = \alpha * X_{jkt} + \beta * Prep_{jkt} + u_{jk} + w_{jkt} \quad (1)$$

where α and β are coefficients to be estimated, X_{jkt} is a vector of control variables that vary across villages and time, $Prep_{jkt}$ is a dummy indicating if the project is implemented in village j in municipality k at time t , u_{jk} is a common village-effect and, w_{jkt} is the usual idiosyncratic error term. It is assumed to be independent of X_{jkt} , $Prep_{jkt}$ and u_{jk} .

We estimate our equation above through first-differencing.¹⁴ Specifically, we eliminate the time-constant unobservable by differencing equation (1). We obtain:

$$\Delta y_{jk} = \alpha * \Delta X_{jk} + \beta * \Delta Prep_{jk} + (w_{jk1} - w_{jk0}) \quad (2)$$

where ΔX_{jk} and $\Delta Prep_{jk}$ are the change in the variables between $t=0$ and $t=1$. We simplify equation (2) by rewriting $d_{jk} = (w_{jk1} - w_{jk0})$. We estimate the following equation:

$$\Delta y_{jk} = \alpha * \Delta X_{jk} + \beta * \Delta Prep_{jk} + d_{jk} \quad (3)$$

Our estimation strategy, difference-in-differences, relies on the availability of data in treatment and control areas before and after the project was implemented. We compare changes in social capital before and after the project between treatment and control communities.

¹⁴ With two time periods, the estimates are numerically identical to the fixed-effects (Wooldridge 2002).

This strategy is justified if and only if the changes observed in the control communities provide good estimates of the counterfactual (*i.e.*, what would have happened in the treatment communities had the project not been implemented there).

Because it is impossible to directly observe the counterfactual, the literature focuses on testing if *prior* to treatment the two groups evolved similarly, the parallel trend hypothesis. As our best estimate of the hypothesis, we test if prior to project implementation, the two groups evolved similarly in terms of poverty levels.

To do so, we take advantage of the availability of detailed poverty maps at the municipal-level (NCSB, 2005) to test if changes in poverty incidence between 2000 (date at which the data on which the poverty maps are based were collected) and 2003 (date of the baseline survey) are similar between control and treatment municipalities. We regress the changes in poverty incidence at the municipal-level between 2000 and 2003 on a dummy indicating whether a municipality was eligible for the project in 2004. A coefficient not statistically different from zero at the standard levels of confidence would indicate that the evolution observed between 2000 and 2003 was similar between the control and treatment groups. We cannot reject the parallel trend assumption. This provides some evidence that control and treatment communities would have evolved similarly over the period covered by our data had the project not been implemented.

We compare the 2003 distributions of our variables of interest of comparison and treatment villages (Table 2). We do so using T-tests of equality of means and Kolmogorov-Smirnov tests of equality of distribution. For most of the variables, there is no statistically significant difference between the two groups. However, trust toward both neighbors and strangers as well as frequency of meetings is lower in treatment villages while participation in informal collective action (*bayanihan*) is higher than in comparison villages. As a result, as a further check of

robustness, we will also estimate equation (3) including y_{jk0} as an explanatory variable.

Following the literature on the determinants of social capital, the set of control variables X_{jkt} includes a measure of inequality and ethnic diversity as well as the average wealth and education levels in the community. As described above, the treated villages only went through one cycle of subproject implementation between the two surveys and only about a third of the villages were successful in getting their proposal funded (*i.e.*, in which a subproject has been implemented). As a result, we are not concerned by potential project impacts on the control variables. We also include province dummies to control for time-varying province-level unobserved characteristics. Results are available in Column 1-2 of Table 3 and 4.

In addition, we run regressions where we substitute $Prep_{jkt}$ by $Funding_{jkt}$ which indicates if the village was successful in getting funding for its proposal, restricting our sample to treatment municipalities. However, as shown in Labonne and Chase (2007), $Funding_{jkt}$ is likely to be correlated with w_{jkt} and $y_{jk(t-1)}$ which would lead to biased estimates as this violates the strict exogeneity assumption. Thus, results presented in Column 3-4 of Table 3 and 4 are only indicative of trends that would deserve further study. Given the way those projects are implemented, providing estimates of the social capital impact of being successful in getting funding would require getting data on proposal ranking during the municipal forum during which funding decisions are made.

4.2 Propensity Score Matching

The method described above would lead to biased estimates of the impacts of *preparation* if they are a function of the initial levels of X_{jkt} .¹⁵ For example, it is possible that project

¹⁵ Please see Galiani et al. (2007) for a similar method applied to the estimation of the ATT of water privatization on child mortality.

effects on social capital will be greater in more educated villages. Further, while care has been taken in selecting the control group, it is possible that, within the treatment municipalities, some villages are too poor to find a comparable village in the set of control municipalities.

We attempt to deal with those potential sources of bias by using propensity score matching. The key assumption with this method is that the treatment and the control groups are similar along unobserved characteristics. Given the transparent and rule-based criteria used to select municipalities eligible for the project, this hypothesis appears warranted. However, we do not attempt to provide propensity score matching estimates of the impacts of *funding* as the likelihood that a village proposal is selected for funding is likely to be driven by unobservables.

Practically, we start by generating a propensity function that assesses a village's likelihood of participation in the project (*i.e.*, of going through one cycle of *preparation*). We then match treatment villages with villages with similar propensity of participation in the project but in which the project was not implemented. Results from the probit regression are available in Table 7 while the pre- and post-match density of participation propensity are available in Figures 1 and 2, respectively. For each measure of social capital, our outcome of interest is the village-level changes in the variable considered between 2003 and 2006. We use both nearest neighbor and the kernel (Epanechnikov) matching procedures. To deal with concerns over common support, we drop the treatment observations whose propensity is higher than the maximum propensity of the controls and drop the 5% of control observations with the lowest propensity. Results, discussed in the next Section, are displayed in Table 5 and 6.

Given the likely importance of village-level unobserved characteristics in determining success in receiving funds from the project, we do not attempt to provide propensity score matching estimates of the impact of having a proposal funded.

Finally, as discussed in Section 2, it is possible that the project social capital impacts will

be dependent upon the initial level of social capital. We would thus need to estimate, through quantile regression, β at different points of the distribution of y_{jk0} . We decide to leave this for further research, however.

5 Results: Project Impacts on Social Capital

In this section we discuss project impacts on community-level social capital. Specifically, we compare the change in social capital indicators between treatment and comparison villages over the 3-year period.

5.1 Formal Social Capital

First, at the village-level, after one cycle of CDD subproject implementation, the percentage of households participating in village assemblies increase by about 20 percentage points (about a third of the baseline mean). The average number of meetings attended by households also goes up. Similarly, there is a positive impact on the number of times a year the village elected leader meets with residents. This suggests that, in project areas, officials' and households' perception of the benefits associated with participation in village meetings increased by gaining experience with similar processes.

It is possible that some of our respondents confused participation in village assemblies with participation in project-related meetings thus biasing our estimates upwards. We account for this possibility by taking advantage of a short module that was added at the end of the household questionnaire (in the treatment villages). It collects data on whether or not the household participated in project activities. We then modify our two variables on participation in village assemblies in the following (*conservative*) way: (i) we subtract the number of project

meetings from the number of village assemblies (replacing all the negative values by zeroes) and, (ii) we reclassify households who declared attending more project meetings than village assemblies as non-participating in village assemblies. With those changes, results are still significant (at the 5% level) but, as expected, the coefficients are smaller.¹⁶

Decisions that affect the village are increasingly made during village assemblies as a result of the project (once we control for the baseline values). This represents about 24.6 percent of the baseline mean. However, we do not know if this perception increase is due to the project directly (and is thus partly responsible for the increased participation in village assemblies) or if this effect materializes through increased participation in assemblies. Conversely, once we control for baseline values, our results indicate that the project negatively impacts the proportion of households who request services from the local government.

Turning our attention to the relationship between changes in social capital and success in receiving funds from the project, we find interesting effects. First, the increase in participation in village assemblies is larger in villages which were successful in receiving funding from the project. Second, trust toward local officials increased by 10.7 percentage points in those villages. This seems consistent with the notion of good leadership in those rural communities, which is tied to the capacity to access resources for the community (World Bank 2005). Third, there is some evidence that in such villages, households request fewer services from the local government.

Interestingly, the village council appears to meet more often in villages which were successful in receiving funding from the project. Less projects¹⁷ appear to be implemented in those villages, however. Specifically, for each KALAH-CIDSS-financed investment in a vil-

¹⁶Results available upon request.

¹⁷Our definition of project excludes investments supported by the KALAH-CIDSS.

lage one less project is implemented. This seems to indicate that the capacity to implement projects is limited in project areas. It is worth noting that KALAH-CIDSS supported projects are quite different from projects usually implemented in those villages. Indeed, the average non-KALAH-CIDSS project in treatment areas cost 252,100 PhP, the average cost of a KALAH-CIDSS project was 1,665,320 PhP in our sampled municipalities.

5.2 Informal Social Capital

Surprisingly, our estimates indicate that, at the village-level, going through one cycle of subproject implementation reduces participation in group and in collective action activities. Results on collective action are not robust to the inclusion of baseline value, however. It could be that, as households are time-constrained, they cannot join both village assemblies and participate in groups, and the two activities are substitutes. For example, households might join groups for the opportunities they offer for participants to network. It is thus possible that in project areas village assemblies provide better opportunities to do so and thus households have less need to join groups. Similarly, if households join groups for their specific objectives¹⁸ and as a result of the increased participation, village assemblies are more responsive to the community needs, villagers would need to rely less on services provided by groups. Unfortunately, we cannot test those hypotheses with the data at hand.

Once we control for baseline values, going through one cycle of subproject implementation decreases trust towards neighbors. This might be linked to results obtained in Indonesia (Barron et al. 2007) and in Thailand (Chase et al. 2006) discussed earlier.

Overall, results from propensity score matching confirm the results obtained previously. At the village-level, going through one cycle of subproject implementation has a positive effect

¹⁸This is supported by findings by Godquin and Quisumbing (2007) in rural communities of the Philippines.

on participation in village assemblies but negatively impacts the likelihood of joining collective action activities, such as construction and maintenance of community infrastructure.

Our propensity score matching estimates indicate that bridging trust (*i.e.*, trust toward strangers) increased as a result of the project. In project areas, individuals have structured opportunities to interact with outsiders (*i.e.*, the local project team) that might change their perceptions of others and thus lead them to be more trusting. Similarly, as meetings are open to everyone and tend to be well-attended, individuals can interact with other members of their community who they did not know previously. This is consistent with findings from social psychologists. For example, Glanville and Paxton (2003) argue that "encounters with persons who do not share one's sociodemographic characteristics could be particularly important in gauging how much to trust people in general."

6 Conclusion

In this paper, we build on and expand existing research on the impacts of community driven development approaches. First, using a unique household panel dataset collected before the project started and after one cycle of subproject implementation in both treatment and matched control communities, we assess whether we can attribute to the project changes in social capital indicators. Second, we refine previous research by having data on a large number of social capital measures. As a result, we are able to provide a more accurate picture of how CDD projects operate within Philippines villages.

Overall, our results indicate the CDD operation led to changes in village-level social and institutional dynamics. It increased participation in village assemblies, the frequency with which local officials meet with residents and bridging (*i.e.*, generalized) trust. Furthermore,

there is evidence that group membership and collective action did not increase as quickly in treatment villages as they did in control villages over the three-year period. Finally, our results indicate that the project might, in the short-run, reduce the number of other investments.

Our results are only an initial step in understanding how CDD projects work with and build on pre-existing social dynamics in the communities in which they operate. We see at least three areas where further research could generate useful knowledge. First, efforts should be devoted to understanding the household-level impacts of participation in project activities. Given the potentially strong endogeneity of this decision, this would require experimental design. For example, if in a particular setting sending invitation to households increases their likelihood of participation, randomly sending invitations could provide a credible instrument.

Second, development practitioners should devote more effort to understanding the role played by facilitators in ensuring broad representation within communities and that the community derives significant benefits from the project. The outstanding operational question here is whether and how increased facilitation can ensure that a broader proportion of community members participate than would be the case without such facilitation.

Third, practitioners need to assess whether the results discussed in this paper hold or change after other subproject implementation cycles. This could provide useful information to policymakers when deciding how many cycles should be funded. Another round of data collection is expected to take place after the third cycle of subproject implementation which will allow us to answer those questions.

Fourth, it would be interesting to assess if, in light of the benefits associated with the project, municipalities adopt the CDD approach in allocating some of their resources. There is anecdotal evidence that some do but analyzing why they do could prove extremely fruitful.

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Table 1: Descriptive Statistics - Village-level changes in social capital 2003 - 2006

	Comparison				Treatment			
	Obs	Before	After	Diff	Obs	Before	After	Diff
Aware Assembly	69	0.92	0.93	0.01	66	0.90	0.94	0.04
Participate Assembly	69	0.64	0.56	-0.09	66	0.62	0.74	0.12
Know Expenses	69	0.13	0.13	0.00	66	0.11	0.13	0.02
Officials Trust	69	0.55	0.39	-0.17	66	0.50	0.37	-0.14
Service	69	0.62	0.67	0.06	66	0.52	0.62	0.11
Solution Assembly	69	0.12	0.09	-0.03	66	0.15	0.13	-0.02
Decision Assembly	69	0.11	0.06	-0.05	66	0.13	0.10	-0.03
Strangers Trust	69	0.09	0.03	-0.06	66	0.05	0.03	-0.02
Neighbors Trust	69	0.61	0.61	0.00	66	0.55	0.53	-0.02
Collective Action	69	0.50	0.59	0.08	66	0.61	0.60	-0.01
Time Collective Action	69	4.86	8.27	3.42	66	11.08	7.73	-3.35
Cohesion	69	0.83	0.80	-0.03	66	0.81	0.77	-0.03
Network	69	0.62	0.63	0.01	66	0.58	0.63	0.05
Group	69	0.32	0.42	0.10	66	0.31	0.36	0.06
VC Meetings	69	21.78	21.10	-0.68	66	19.29	20.14	0.85
VDC Meetings	69	3.07	7.35	4.28	66	1.70	5.71	4.02
Villagers Meetings	69	3.46	2.51	-0.96	66	2.27	7.48	5.21
Nb Projects	69	2.91	3.88	1.05	66	3.17	3.48	0.32
Avg. Cost (1,000 PhP)	69	172.72	216.65	62.74	66	173.36	252.10	86.11

Table 2: Comparing the Treatment and Comparison Groups in 2003

	Treatment	Comparison	T-test	K-Smirnov test
	(1)	(2)	(3)	(4)
Aware Assembly	.90 (.019)	.92 (.016)	.88 [.376]	.122 [.623]
Participate Assembly	.62 (.034)	.64 (.030)	.66 [.507]	.109 [.761]
Know Expenses	.11 (.011)	.13 (.018)	1.14 [.253]	.143 [.422]
Officials Trust	0.50 (.024)	.55 (.027)	1.18 [.238]	.183 [.159]
Service	.52 (.026)	.62 (.026)	2.68 [.008]***	.226 [.043]**
Solution Assembly	.15 (.016)	.12 (.017)	-1.25 [.212]	.175 [.193]
Decision Assembly	.13 (.016)	.11 (.017)	-.54 [.585]	.104 [.812]
Strangers Trust	.05 (.009)	.09 (.014)	2.39 [.018]**	.223 [.048]**
Neighbors Trust	.55 (.021)	.61 (.021)	1.88 [.061]**	.257 [.014]**
Collective Action	.61 (.032)	.50 (.035)	-2.12 [.035]**	.279 [.006]***
Time Collective Action	11.08 (1.50)	4.86 (.989)	-3.48 [.000]***	.392 [.000]***
Cohesion	.81 (.021)	.83 (.016)	1.17 [.242]	.125 [.589]
Network	.58 (.021)	.62 (.025)	1.37 [.171]	.130 [.542]
Group	.31 (.028)	.32 (.027)	.237 [.812]	.103 [.818]
VC Meetings	19.2 (1.08)	21.8 (.800)	1.86 [.064]*	.224 [.046]**
VDC Meetings	1.69 (.401)	3.07 (.622)	1.84 [.068]*	.157 [.305]
Villagers Meetings	2.27 (.240)	3.46 (.437)	2.21 [.028]*	.183 [.156]
Nb Projects	3.167 (.255)	2.912 (.241)	-.72 [.469]	.085 [.967]
Avg. Cost (1,000 PhP)	173.33 (27.9)	172.72 (32.3)	-.01 [.988]	.173 [.313]

Notes: Testing if the distributions of our variables of interest were similar in 2003 between villages in municipalities in which the project will be implemented and comparison municipalities. The standard deviation are in (parentheses) (Column 1-2) and the p-value are in [bracket] (Column 3-4)

Table 3: Project effects on Formal Social Capital - Regression Estimates

	Preparation		Funding	
	(1)	(2)	(3)	(4)
Aware Assembly	0.033 (0.026)	0.019 (0.015)	-0.014 (0.021)	-0.006 (0.022)
R-squared	0.09	0.45	0.21	0.41
Participate Assembly	0.214 (0.052)***	0.188 (0.037)***	0.051 (0.022)*	0.066 (0.017)***
R-squared	0.28	0.50	0.35	0.55
Nb Assemblies	0.795 (0.168)***	0.730 (0.149)***	0.218 (0.188)	0.292 (0.187)
R-squared	0.28	0.40	0.31	0.44
Know Expenses	0.020 (0.028)	0.006 (0.018)	-0.017 (0.031)	0.004 (0.036)
R-squared	0.16	0.54	0.18	0.41
Decision Assembly	0.027 (0.036)	0.032 (0.013)**	0.031 (0.042)	0.003 (0.020)
R-squared	0.41	0.75	0.47	0.70
Solution Assembly	0.007 (0.035)	0.027 (0.016)	0.002 (0.040)	-0.019 (0.037)
R-squared	0.26	0.60	0.28	0.57
Service	0.043 (0.058)	-0.047 (0.025)*	-0.072 (0.038)*	-0.022 (0.039)
R-squared	0.09	0.53	0.29	0.57
Official Trust	0.030 (0.062)	-0.024 (0.022)	0.107 (0.031)**	0.088 (0.016)***
R-squared	0.05	0.61	0.23	0.71
VC Meetings	1.527 (2.213)	-0.559 (1.018)	5.054 (1.669)**	3.150 (1.761)
R-squared	0.06	0.48	0.21	0.54
VDC Meetings	-0.415 (1.532)	-2.034 (1.668)	-2.099 (2.533)	-1.565 (1.581)
R-squared	0.12	0.35	0.19	0.38
Villagers Meetings	6.011 (2.193)**	4.431 (1.448)***	-1.215 (3.567)	-1.738 (3.377)
R-squared	0.13	0.22	0.22	0.23
Nb. Projects	-0.759 (0.601)	-0.400 (0.366)	-1.352 (0.512)**	-0.412 (0.440)
R-squared	0.06	0.58	0.23	0.59
Avg. Cost	29.240 (82.386)	26.538 (80.229)	9.916 (90.111)	-5.546 (90.334)
R-squared	0.03	0.20	0.09	0.16
Province Dummies	Yes	Yes	Yes	Yes
Clustered s.e.	Yes	Yes	Yes	Yes

Notes: Each cell is the coefficient on the dummy variable "Preparation" (Column 1-2) and on the variable "Funding" (Column 3-4) from a different fixed-effects OLS regression (n=135 and n=66). The dependent variables are the village-level changes in the measure of social capital considered between 2003 and 2006. The set of regressor includes Average education levels in the village, Average wealth level in the village, Wealth inequality and Ethnic diversity. In Columns 2 and 4, we also control for the 2003 value for the social capital measure considered. The standard errors (in parentheses) are Hubert-corrected and account for intra-municipality correlation. * denotes significance at the 10%, ** at the 5% and, *** at the 1% level.

Table 4: Project effects on Informal Social Capital - Regression Estimates

	Preparation		Funding	
	(1)	(2)	(3)	(4)
Group	-0.053 (0.026)*	-0.060 (0.024)**	-0.010 (0.046)	0.022 (0.026)
R-squared	0.14	0.37	0.17	0.38
Cohesion	0.004 (0.028)	-0.025 (0.016)	0.033 (0.042)	0.048 (0.043)
R-squared	0.15	0.54	0.20	0.62
Network	0.048 (0.040)	0.027 (0.028)	-0.053 (0.029)	-0.032 (0.023)
R-squared	0.20	0.50	0.25	0.50
Collective Action	-0.090 (0.061)	-0.013 (0.018)	0.068 (0.057)	0.051 (0.058)
R-squared	0.37	0.68	0.33	0.54
Time Collective Action	-6.342 (3.361)*	-1.594 (1.598)	1.989 (3.430)	0.089 (1.732)
R-squared	0.10	0.34	0.08	0.36
Neighbors Trust	-0.009 (0.034)	-0.060 (0.030)*	0.062 (0.063)	0.086 (0.060)
R-squared	0.08	0.50	0.16	0.49
Strangers Trust	0.037 (0.028)	-0.003 (0.010)	0.025 (0.022)	0.004 (0.008)
R-squared	0.20	0.75	0.12	0.62
Province Dummies	Yes	Yes	Yes	Yes
Clustered s.e.	Yes	Yes	Yes	Yes

Notes: Each cell is the coefficient on the dummy variable "Preparation" (Column 1-2) and on the variable "Funding" (Column 3-4) from a different fixed-effects OLS regression (n=135 and n=66). The dependent variables are the village-level changes in the measure of social capital considered between 2003 and 2006. The set of regressor includes Average education levels in the village, Average wealth level in the village, Wealth inequality and Ethnic diversity. In Columns 2 and 4, we also control for the 2003 value for the social capital measure considered. The standard errors (in parentheses) are Hubert-corrected and account for intra-municipality correlation. * denotes significance at the 10%, ** at the 5% and, *** at the 1% level.

Table 5: Project effects on Formal Social Capital - Propensity Score Matching Estimates

	(1)	(2)	(3)
	Nearest Neighbor	Epanechnikov (bw=0.06)	Epanechnikov (bw=0.01)
D Aware Assembly			
<i>Treatment</i>	0.0382	0.0382	0.0339
<i>Matched Controls</i>	-0.0144	0.004	-0.0132
<i>T-stat</i>	1.98**	1.26	1.5
D Participate Assembly			
<i>Treatment</i>	0.1246	0.1246	0.1051
<i>Matched Controls</i>	-0.049	-0.0731	-0.0891
<i>T-stat</i>	3.06***	3.88***	3.34***
D Nb Assemblies			
<i>Treatment</i>	.6014	.6014	.4940
<i>Matched Controls</i>	.0805	-.0007	-.0050
<i>T-stat</i>	2.92***	3.26***	2.45**
D Know Expenses			
<i>Treatment</i>	0.0229	0.0229	0.0162
<i>Matched Controls</i>	0.0644	0.0228	0.0499
<i>T-stat</i>	-1.16	0	-0.83
D Officials Trust			
<i>Treatment</i>	-0.1479	-0.1479	-0.1437
<i>Matched Controls</i>	-0.2093	-0.2144	-0.2081
<i>T-stat</i>	0.81	1.19	0.94
D Service			
<i>Treatment</i>	0.1139	0.1139	0.1023
<i>Matched Controls</i>	0.1716	0.1057	0.1511
<i>T-stat</i>	-1.03	0.18	-0.95
D Solution Assembly			
<i>Treatment</i>	-0.0244	-0.0244	-0.0297
<i>Matched Controls</i>	-0.0578	-0.0479	-0.0693
<i>T-stat</i>	0.72	0.66	0.89
D Decision Assembly			
<i>Treatment</i>	-0.0293	-0.0293	-0.0426
<i>Matched Controls</i>	-0.1231	-0.0804	-0.1172
<i>T-stat</i>	1.84*	1.35	1.51
D VC Meetings			
<i>Treatment</i>	0.921	0.921	0.648
<i>Matched Controls</i>	1.397	1.344	0.885
<i>T-stat</i>	-0.22	-0.22	-0.1
D VDC Meetings			
<i>Treatment</i>	3.651	3.651	3.852
<i>Matched Controls</i>	2.921	3.824	2.689
<i>T-stat</i>	0.27	-0.09	0.43
D Villagers Meetings			
<i>Treatment</i>	5.397	5.397	5.852
<i>Matched Controls</i>	0.079	0.587	-0.037
<i>T-stat</i>	2.06**	1.89*	1.98**
D Nb. Projects			
<i>Treatment</i>	0.349	0.349	0.596
<i>Matched Controls</i>	1.524	1.279	1.952
<i>T-stat</i>	-1.68*	-1.48	-1.95*
D Avg. Cost (1,000 PhP)			
<i>Treatment</i>	80.28	80.28	116.04
<i>Matched Controls</i>	55.25	122.15	36.25
<i>T-stat</i>	0.19	-0.38	0.68

Notes: Propensity score matching estimates. Column 1 presents estimates obtained with the nearest neighbor method. Column 2-3 present kernel estimates.

Table 6: Project effects on Informal Social Capital - Propensity Score Matching Estimates

	(1)	(2)	(3)
	Nearest Neighbor	Epanechnikov (bw=0.06)	Epanechnikov (bw=0.01)
D Strangers Trust			
<i>Treatment</i>	-0.0204	-0.0204	-0.0214
<i>Matched Controls</i>	-0.0846	-0.0653	-0.0896
<i>T-stat</i>	1.95*	1.77*	2.11**
D Neighbors Trust			
<i>Treatment</i>	-0.0224	-0.0224	-0.0092
<i>Matched Controls</i>	0.0016	-0.0344	-0.0051
<i>T-stat</i>	-0.37	0.25	-0.07
D Collective Action			
<i>Treatment</i>	-0.0029	-0.0029	-0.0178
<i>Matched Controls</i>	0.2021	0.1219	0.182
<i>T-stat</i>	-2.26**	-2.06**	-2.47**
D Time Collective Action			
<i>Treatment</i>	-3.4904	-3.4904	-3.3735
<i>Matched Controls</i>	3.1312	1.146	2.7737
<i>T-stat</i>	-2.24**	-1.53	-1.90*
D Cohesion			
<i>Treatment</i>	-0.0339	-0.0339	-0.0381
<i>Matched Controls</i>	-0.0781	-0.0564	-0.0919
<i>T-stat</i>	0.82	0.56	1.06
D Network			
<i>Treatment</i>	0.0561	0.0561	0.0562
<i>Matched Controls</i>	0.054	0.0411	0.025
<i>T-stat</i>	0.04	0.32	0.58
D Group			
<i>Treatment</i>	0.0508	0.0508	0.0204
<i>Matched Controls</i>	0.1025	0.1148	0.0939
<i>T-stat</i>	-1.00	-1.40	-1.44

Notes: Propensity score matching estimates. Column 1 presents estimates obtained with the nearest neighbor method. Column 2-3 present kernel estimates.

Table 7: Propensity Scores

	(1)
Wealth	-0.124 (0.091)
% Farmers	0.782 (0.263)***
Education	0.035 (0.060)
Access to Roads	-0.172 (0.207)
Access to Water	-0.690 (0.351)**
Distance to Mun. Center	-0.107 (0.053)**
Province dummies	Yes
Observations	135
Obs. P	48.8
Predicted P	47.9

Notes: Results from a probit regression. The dependent variable is a dummy equal to one if the project is implemented in the village. The standard errors (in parentheses) are Hubert-corrected and account for intra-municipality correlation. * denotes significance at the 10%, ** at the 5% and, *** at the 1% level.

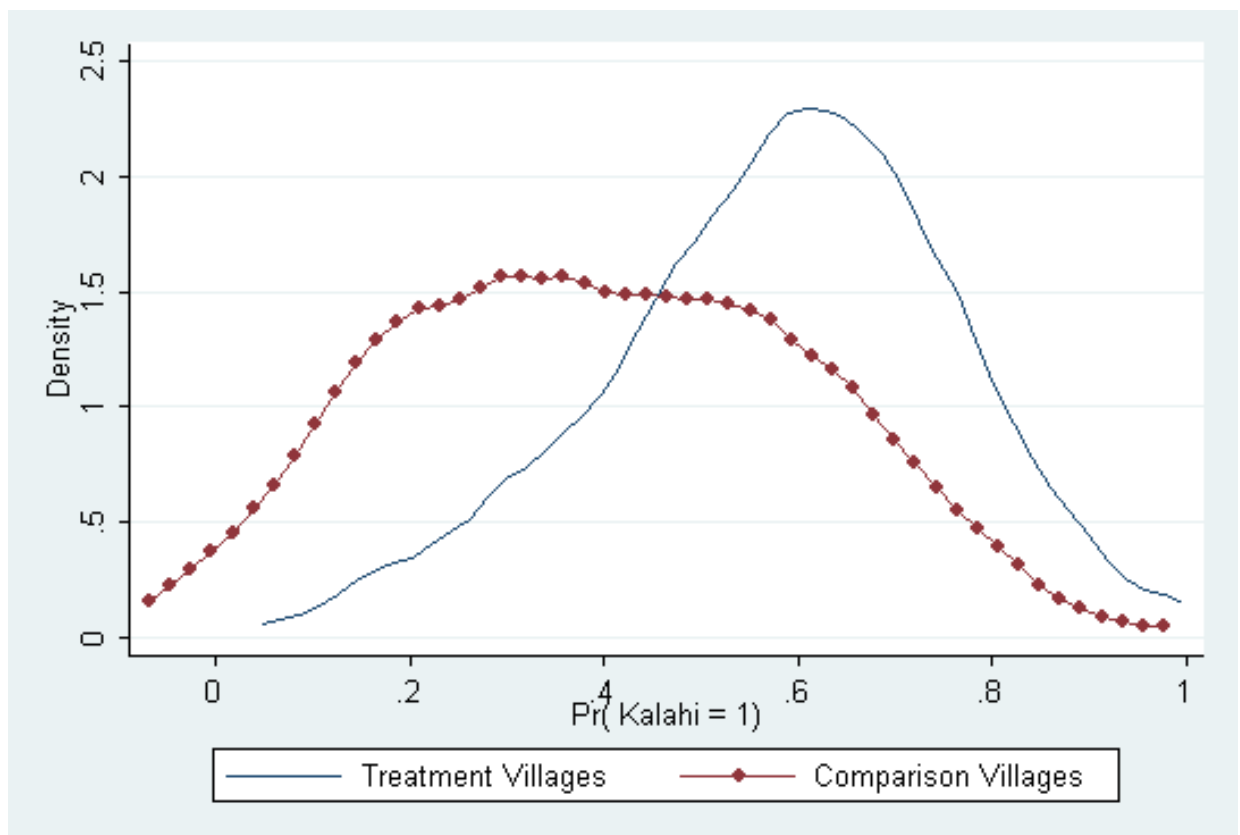


Figure 1: Pre-match density of participation propensity

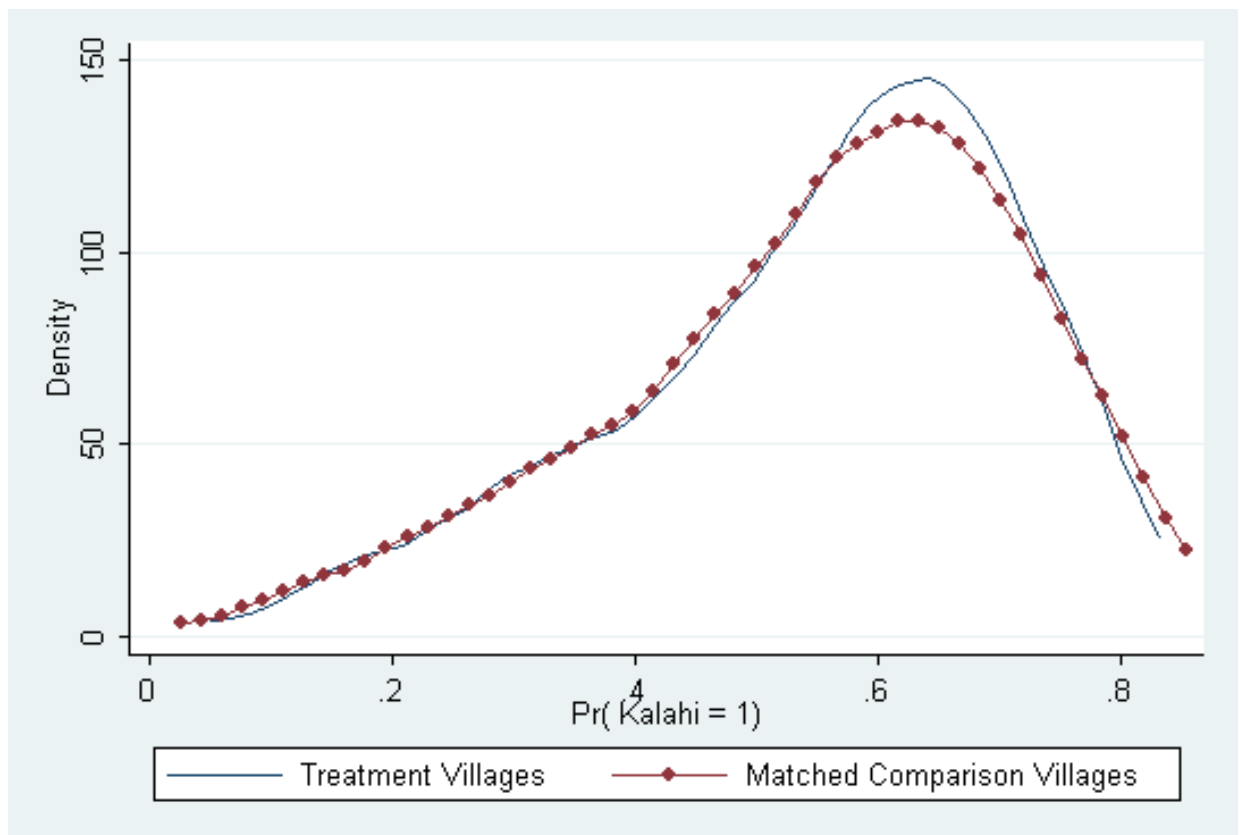


Figure 2: Post-match density of participation propensity (Kernel = epanechnikov; bw=0.001)

Table A-1: Definition of Variables

Variable	Question	Source
Aware Assembly	Does your village hold Village Assembly?	HH
Participate Assembly	Over the past six months, did you or a member of your family attend a Village Assembly?	HH
Nb Assemblies	How often did you or a member of your family attend these meetings over the past six months?	HH
Know Expenses	Do you know the details of village income and expenses, including the costs of particular development activities such as road or school project?	HH
Officials Trust	How much do you trust the people in that category?	HH
Service	In the past year, did you or any member of your family require services such as business permit, barangay clearance or community tax certificate from the local government?	HH
Solution Assembly	If there is a problem that affects your entire village, such as the breakdown of the water supply system, how is this usually solved?	HH
Decision Assembly	When there is a decision to be made in the village that affects you, such as deciding between building a new school and a road, how does this usually come about?	HH
Strangers Trust	How much do you trust the people in that category?	HH
Neighbors Trust	Do you agree or disagree with the following statement: "Most people who live in this village can be trusted."	HH
Collective Action	Over the past six months, did you or any member of your family participate in any bayanihan in the village ?	HH
Time Collective Action	All together, how much time did you or anyone else in your family spend on these activities?	
Cohesion	Suppose something unfortunate happened to someone in the village, such as a serious illness. How likely is it that some people in the village would get together to help them?	HH
Network	If you suddenly needed to borrow a small amount of money enough to pay for expenses for your household for one week, are there people beyond your immediate household and close relatives that would be willing to help you?	HH
Group	Are you or any member of your family a member of any people organization, religious and/or any nongovernmental organization?	HH
VC Meetings	During the past year, how many times did your village council meet?	C
VDC Meetings	During the past year, how many times did the VDC meet?	C
Villagers Meetings	During the past year, how many times did you meet with the village residents?	C
Nb Projects	Over the past 3 years, what development projects have been implemented in your village?	C
Avg. Cost	How much did the project cost?	C

Notes: HH indicates 'household survey' and C indicates 'community survey.'