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Targeting Performance of Community-based Development Interventions: An Econometric Analysis of a Women-Focused and Women-Managed Non-Governmental Organization in Rural Pakistan

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Targeting Performance of Community-based Development Interventions:

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Abstract

This paper investigates whether the community-based development (CBD) approach effectively reaches out to the poor. The CBD approach is expected to improve targeting performance by reducing leakage to the non-poor, elite capture, and program placement costs. However, the existing literature lacks comprehensive and innovative ways to assess the targeting performance involving women. We thus examine the targeting performance of CBD interventions adopted by a women-focused and women-managed non-governmental organization (NGO) in northwestern Pakistan. The NGO intervenes through female organizations called Community Organisations (COs), which is rather unusual for a male-dominated society like Pakistan. To assess the targeting performance, we employ rich village- and household-level survey data and compare villages with and without COs on the one hand and member and non-member households on the other hand. The comparison is in terms of poverty and vulnerability. The study shows that the NGO, with proactive involvement of women, has been able to successfully target poorer and environmentally vulnerable villages as well as households.

Key words: community-based development, targeting performance, women-focused and women-managed NGO, Pakistan.
JEL codes: O1, O2, O13, O15.

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1 Introduction

The approach of community-based development (CBD)is expected to improve targeting and reduce program costs of poverty reduction policies, besides other positive contributions[1](Mansuri and Rao,2004). Furthermore, the use of local knowledge is expected to bear greater relevance in a situation where credible monetary data for potential use in targeting activities are not available. According to Alatas et al. (2012), in developing countries—where the majority of potential target group is employed in the informal sector—the availability of verifiable income records is always an issue. Therefore, it is difficult to identify target groups by employing conventional targeting techniques such as means tests. For these reasons, identification through the CBD approach is expected to improve targeting.

However, the absence of institutional support and/or homogeneity within a community may diminish the usefulness of local information. In the absence of local governance institutions, it is difficult to ensure accountability in the course of implementing CBD initiatives in decentralized settings. For instance, according to Conning and Kevane (2002), within-community heterogeneity may result in a variety of perceptions vis-à-vis poverty, and this may adversely impact targeting performance. The situation becomes worse when the perceptions of donors (i.e., governments, non-government organizations (NGOs), multilateral donors, and philanthropists) with regard to poverty differ from those of the local community. These conditions may create an environment conducive to elite capture.

In addition, even when the CBD approach is able to target poorer villages, it may fail in reaching out to the poor households within each village (Mansuri and Rao, 2004), which can be termed as "poor targeting or mistargeting." For instance, the study of Galasso and Ravallion (2005)—whose motivation closely resembles that of this paper—investigates the targeting performance of the Food-for-Education (FFE) Program in Bangladesh. The targeting mechanism adopted for the program comprises two stages: selection of the participating communities by the central government and the identification of eligible households by the communities concerned. By employing both household and community-level data, Galasso and Ravallion (2005) show that the larger a program is, the lower the levels of land inequality and remoteness therein are, the lower the number of shocks is, and also the lower private redistribution of transfers is, the more improved the

[1] The CBD approach is also expected to contribute to the decentralization of power; the creation of high-quality, low-cost public goods; and empowerment. These, however, are not the focus of this paper.

within-village targeting becomes. Furthermore, the decision-making ability of the community has a strong influence on the program outcomes and the center's program placement did not take into account village attributes that may potentially help in reaching out to the poor.

Given these findings within the literature, this paper attempts to garner a better understanding of targeting performance for the case of Pakistan.[2] First, we employ village and household-level data that contain an array of geographic, socioeconomic, demographic, and vulnerability-related measures, to analyze the targeting performance. The list of variables there in is more comprehensive than any adopted in the existing literature. Second, some of the parameters—like networking with the local elite and environmental vulnerability—are used here for the first time, to analyze the targeting performance of CBD interventions. In assessing the performance of targeting, we define "good" targeting as the success of an implementing NGO in placing its programs in poor villages (in terms of lower adult literacy, poor access to basics amenities, higher level of susceptibility to the natural disasters, etc.) and reaching out to the poor households (poorer access to basic civic services and environmental vulnerability). This is because the aim of the NGO is to improve the livelihood of poor and vulnerable households.

The rest of this paper is organized in the following manner. Section 2 describes the study area while Section 3 elaborates the data used in the empirical analysis. Section 4 proposes the empirical strategy, followed by Section 5 that shows quantitative results. Section 6 concludes the paper.

2 Study Area and the NGO

Pakistan is an underdeveloped country in terms of both economic and human development. As per the United Nations Development Programme (UNDP, 2013), Pakistan is ranked the146th of 185 countries on Human Development Index. Moreover, the country has very low mean years of schooling, i.e. 4.9 years and per-capita gross national income, i.e. USD 2,566 (in purchasing power parity dollars of 2005). Meanwhile, over 60% of the Pakistan's population dwells in rural areas. The rural population of the country has generally poor access to basic amenities and is highly vulnerable to various shocks.

Given the public sector's failure to deliver basic public services to the nation—and especially to the

[2]There is not much quantitative evidence regarding the CBD approach in Pakistan using a micro econometric approach. Notable exceptions include Khwaja (2004), Kurosaki (2005), Khwaja (2009), and Kurosaki and Khan (2012).

rural poor—NGOs have been actively intervening and providing such services. Several of them have adopted CBD approaches since the 1990s. To analyze the targeting performance of such NGOs and success or failure to outreach the rural poor, in 2010, we began a study on an NGO called the Pakistani Hoslamand Khawateen Network (PHKN), which has its headquarters in District Haripur of Khyber Pakhtunkhwa (KP).

PHKN intervenes in areas of microfinance, human resource development (HRD) training, micro infrastructure projects, and the like. In providing these services, PHKN adopts a CBD approach, under which dwellers of a village or rural community are outreached and organized into community-based organizations. In the case of PHKN, such organizations are called "Community Organisations" (COs). Owing to socio-cultural norms, PHKN has separate COs for males and females. On average, the COs have 16–40 members. PHKN is a woman-led and a women-focused NGO. Its current president is a woman, all members of its board of directors are women, almost three-quarters of the COs are managed by women, and most of its activities are focused on women. This characteristic distinguishes PHKN from other NGOs in the region. Such NGOs are rare in the context of the male-dominated society of Pakistan (Khan, 2013).

The formation of a CO involves a number of steps (Khan et al, 2011).[3]Under the CO formation process, some of the contacted villages may refuse to form a CO in their village(s). Similarly, some of the non-CO villages can eventually become CO villages, although this did not happen frequently after we began our survey in 2010.Once a CO is formed in a village, PHKN's interventions become active and routine.[4]

[3]The CO formation process involves the following steps. First, PHKN contacts a village through a meeting with peer leaders (e.g., village elders, school teachers, local elected members, and religious leaders). At the first contact, initial assessment of the area is undertaken, covering general information on the village society and on its development needs. The introduction of PHKN to a village can be made through PHKN staff members who find potential villages from available secondary information, the concerned local administration (e.g., social welfare, agriculture, health, education, and livestock departments) or local politicians, and the peer leaders of a village. The first route i.e. contact through the PHKN staff is employed most frequently. After the initial contact, PHKN holds a series of meetings with peer leaders, local communities, and stakeholders. This stage is called the 1st Dialogue, and it is recorded in the PHKN log books. Subject to satisfying the minimum criteria qualification and eliciting the willingness of a considerable number of villagers, a CO is formed. This stage is called the 2nd Dialogue. During the 2nd Dialogue, community development tools such as participatory rapid appraisal and village resource mapping are employed to identify developmental needs and priorities, and CO office bearers (the president, secretary, and activists) are elected and trained on how to run a CO (i.e., record-keeping, accounting, and savings management). All interventions undertaken by PHKN are categorized as the 3rd Dialogue.

[4] Usually, COs have a monthly meeting called the general body meeting, where CO members discuss PHKN activities, prevailing issues in the village, and future plans to address issues. CO members also deposit savings during these meetings. CO savings are recorded in individual savings accounts. All COs are provided with HRD training, the emphasis of which is on the development of income-earning skills and microenterprise management; the exact training differs from CO to CO, reflecting each community's unique needs. In villages with deficits in educational institutions, PHKN sometimes provides assistance to community-based schools. Similarly, in villages with poor health facilities, PHKN may train and mobilize informal health workers, such as traditional birth attendants (TBAs). PHKN staff members regularly visit each CO, with the average visit frequency being once every two months. During these visits, PHKN personnel discuss various issues with CO members while also checking CO records.

3 Data

During September–December 2010, we implemented a benchmark survey comprising three tiers; the three tiers are villages, COs, and households. Khan et al. (2011) describe the survey in detail. In this paper, we employ village- and household- level data.

The village survey was designed as a census survey to cover all villages that were (potential) target areas of PHKN. We gathered 105 observations of villages, of which 99 are located in District Haripur. COs of PHKN existed in 40 out of 105, all in District Haripur. We call them CO villages. The rest, 65 villages, are called non-CO villages.

Table 1 lists variables taken from the village survey and analyzed in this paper. The variables include village population, the occupation-based distribution of the populations of the villages, the literacy rate,[5] connectivity with canal-irrigation system, access to amenities, health and education institutions, local-governance institutions (we call them dispute settlement forums, or DSFs below), and susceptibility to shocks including damages due to the July-August 2010 floods.

In the household data, three types of households were randomly chosen: (i) those who have been members of PHKN activities (henceforth referred to as *T*-group households), (ii) non-member households (henceforth called as C_1-group households) living in CO villages, and (iii) households living in non-CO villages (henceforth labeled as C_2-group households). The total size of the sample is 583, divided into 249 *T*-group households, 234 C_1-group households, and 100 C_2-group households.[6] T he sample represents predominantly rural households living in Haripur District that are potential targets of PHKN.

Table 3 lists variables taken from the household survey and analyzed in this paper. The variables include demographic characteristics, education, housing conditions, access to amenities, assets holding, susceptibility to shocks, and social status of the sample households and their networking with the local elite (native and social status, and relationship with local elite). The statistics suggest household-level disparity in education between male and female members, which is a reflection of male domination in the study area. The housing conditions and asset holding reveal that most of the sample households are poor. We consider

[5] Both the occupational distribution of population and the literacy rate figures are consistent with that at the national level.

[6] See Khan et al. (2011) for the detail of sampling procedures. Regarding *T*-group households, in the first stage of sampling, 50 sample COs were chosen, and in the second stage of sampling, we collected information on five-member households, randomly chosen from the member list. To collect information on C_1-group households, we surveyed non-member households living in the CO village where *T* households were surveyed. The sample for C_1 households was randomly selected from the electoral list of the villagers, at the rate of one per one *T* household. Regarding C_2-group households, we randomly selected five households from 20 non-CO villages; these 20 villages were randomly selected from the village list.

housing conditions and land ownership exogenous to PHKN's outreach, while livestock ownership and access to amenities as potentially endogenous to PHKN interventions.

4 Empirical Strategy

To assess the targeting performance of the CBD approach, we test the two following hypotheses. First, we test H_1: Whether CO villages are systematically poorer and more vulnerable than non-CO villages. As a statistical test, we employ the null hypothesis that observable characteristics of CO villages and non-CO villages are the same. Second, we test H_2: Whether CO members (*T*-group) are systematically poorer and more vulnerable than non-members (C_1-group) within CO villages. As a statistical test, we employ the null hypothesis that observable characteristics of *T*-group and C_1-group households in CO villages are the same.

To focus on targeting—rather than on impact—throughout this paper, we mainly analyze the predetermined and exogenous factors that reflect the targeting performance of the PHKN, which makes non-CO villages a valid counterfactual.[7] We conduct both bivariate and multivariate regression analyses to obtain robust results. The reason we conduct regression analyses is that many of variables are correlated so that partial correlation controlling for other variables may be more meaningful. The multiple regressions exactly controls for other variables.

4.1 Inter-Village Comparison

Testing H_1 is an *inter*-village targeting analysis. If, in the course of testing H_1, we find that CO villages are poorer than non-CO villages, say the CO villages have lower adult literacy, access to basic amenities, and higher susceptibility to the natural disasters, etc., we will conclude that the PHKN targets poorer villages. This finding would reflect the net effect of two mechanisms: that the PHKN endogenously approaches poorer villages, and that poorer villages elect themselves in approaching the PHKN.

Hypothesis H_1 is tested both using village-level characteristics and household-level characteristics. We compare (i) CO villages and non-CO villages, and (ii) households living in CO villages and households living in non-CO villages. Considering PHKN's community mobilization process described in Section 2,we testH_1 by altering the definitions of "CO villages" and "non-CO villages." As the results are qualitatively

[7]As robustness check, we also investigate factors that are potentially endogenous to PHKN interventions, particularly in the village-level multivariate analysis.

similar, we report only the results based on the default definition in this paper due to the space limit (Khan, 2013). To implement (ii), we compare the weighted sum of *T*- and C_1-group households (those living in CO villages) and that of C_2-group households (those living in non-CO villages). As the sampling probability is different across villages and across the three groups of sample households (*T*, C_1, and C_2), we employ the weighted average when we use household-level observations to test H_1.

4.2 Intra-Village Comparison

Hypothesis H_2 is tested using household-level characteristics. It is a comparison between the *T*-group (member households in CO villages) and the C_1-group (non-member households in CO villages). In other words, this is an *intra*-village targeting analysis. If we test H_2 and we find that member households have worse access to amenities and are more vulnerable to natural disasters than non-member households, we infer that the member households are poorer than then on-member households. This would reflect the self-selection of households, as we analyze H_2 only using households in CO villages.

In the bivariate analysis (the comparison of means between *T* and C_1 households), we employ the weighted average to control for the difference in sampling probability. In the multivariate analysis (regression analysis), we also add village fixed effects to the list of explanatory variables, to cleanly identify the difference.

5 Empirical Results

5.1Comparison of CO and Non-CO Villages using Village Characteristics

Table 1 shows empirical results comparing CO and non-CO villages using village-level variables in a bivariate way. It reports statistical tests of equality of means.

CO villages are characterized by a literacy rate lower than that of non-CO villages by 8 percentage points. Both village types are similar in their population size. Non-CO villages have a higher level of occupational diversification, which is an indication of their higher standard of living. The two sets of villages are similar in their access to basic amenities like clean drinking water and market access roads, where as they are noticeably different in accessibility to natural gas, cable TV,and internet. Non-CO villages have better access to the aforementioned amenities, which are generally associated with economically better-off areas. Non-CO villages tend to have more grocery shops called *Karyana* shops and hence a better village

market place.

We find no difference between the two sets of villages in access to formal health facilities, whereas CO villages have better access to informal health services, e.g., trained TBAs, than CO villages. Similarly, the villages are similar in the availability of formal educational facilities, whereas CO villages have better access to informal education facilities, e.g., community-based schools, than non-CO villages. The strong presence of informal institutions and facilities in CO villages suggests minimal presence and/or effectiveness of government at the grass-root level in the study area and PHKN's provision of these informal services.

DSFs provide a basis for local governance. No difference is found between CO and non-CO villages in terms of the presence of a traditional DSF (e.g. *jirga*)—a characteristic exogenous to PHKN interventions and is evenly spread across all the villages. However, the number of nontraditional DSFs in CO villages is significantly larger than that in non-CO villages;[8]this reflects the strong presence in the CO villages of local-governance institutions essential to the effective use of local information, the presence of accountability, and hence better targeting performance (Mansuri and Rao,2004).

Regarding the incidence of damage due to the 2010floods, the damages were higher in CO than in non-CO villages. This suggests that CO villages tend to be more vulnerable to natural disasters.

Table 2 shows the regression results using the dummy for CO villages as the dependent variable and variables analyzed in Table 1 as the explanatory variables. As the multivariate analysis is meant to be used solely for descriptive purposes, we employ a linear probability model.[9]Owing to the small sample size and inherent multicollinearity issues, we opt for a reduced-form regression model.[10] In Model 1, we employ as explanatory variables only those time-invariant variables that are clearly determined prior to PHKN interventions, with the objective of analyzing only the targeting result. We include some potentially endogenous variables in Models 2–5, but only as robustness checks. The aforementioned endogenous variables are nontraditional DSFs (*dsf*), availability of CBS (*cbsch*), and availability of TBAs (*tba*).

The results of the multivariate analysis agree with those of the bivariate analysis, with varying levels of statistical significance. Once we control for other factors, the literacy rate is no longer associated with the presence of a CO in a village. The pattern of pro-poor targeting persists, regarding the access to natural gas, internet, and grocery shops, and susceptibility to disasters. These results provide slightly weaker evidence

[8] This illustrates PHKN's facilitation in bringing about a local-governance system that is more inclusive than traditional institutions. Analysis in this vein is left to future research.
[9]The Probit results are qualitatively the same as the results reported in this paper.
[10]A number of variables have a potential association with some other variables, or do not show variation in the bivariate comparison; they are not included as explanatory variables in multivariate analysis.

than that suggested through the bivariate analysis but the direction of targeting remains robust.

Unexpectedly, the coefficient on market road access (*rd_length*) becomes significantly negative in multivariate regressions. This suggests that CO villages are more likely to be at shorter distances from a major market than non-CO villages, when controlling for other factors. Although this is against our expectation of pro-poor targeting, we interpret this as a reflection of a cost-minimization strategy on the part of PHKN—especially in the wake of rising transportation costs.

When we add the potentially endogenous variables (*dsf*, *cbsch*, and *tba*) to Models 2–5, positive and significant correlations are derived; this accords with the results of the bivariate analysis. What is important here is that the inclusion of the potentially endogenous variables does not qualitatively alter coefficients on the more predetermined variables.[11]

To summarize the village-level analysis using village characteristics, we found that a village that is closer to a major market, lacks amenities, and is prone to natural disasters is more likely to be targeted by PHKN and hence form a CO. This suggests that the overall targeting by PHKN is pro-poor. The results of both bivariate and multivariate analysis support this.

5.2 Comparison of CO and Non-CO Villages using Household Characteristics

Table 3 shows empirical results comparing households in CO villages and households in non-CO villages using household-level variables in a bivariate way.

The two sets of households are similar in demography, whereas the education level is higher in non-CO villages than in CO villages. We also find a sharp contrast regarding household assets. Except for the livestock assets, the T and C_1 group households are poorer than those in the C_2 group in terms of housing conditions (i.e., house flooring and access to drainage) and access to amenities (i.e., gas, internet, and cable TV). The livestock asset level is higher among the T and C_1 group households than those in the C_2 group, probably reflecting the PHKN's facilitating role for the poor households to accumulate livestock. Overall, the bivariate analysis shows a tendency that the T and C_1 group households are poorer than C_2 group households in various aspects. Moreover, the T and C_1 group households are highly vulnerable to shocks (e.g., wild boar attacks), compared to the C_2 group; this result reflects village-level PHKN placement and supports our earlier claim of pro-poor targeting by the PHKN, that is, the PHKN can successfully outreach

[11] See Khan (2013) for a quantitative analysis of the causal impact of PHKN's interventions.

environmentally vulnerable segments of society. A larger number of the T and C_1 group households are native, compared to the C_2 group households; however, among the former, there is a lower proportion of households with higher social status. Both of these characteristics suggest that CO villages are homogenous and the least socially empowered, which once again confirms that PHKN targets the marginalized segments of Pakistani society. We find an interesting difference between the CO village households and non-CO village households, based on their networking with the local elite. The T and C_1 group has better networking with the local elite than the C_2 group households.

Table 4 shows multiple regression results to predict the probability of households belonging to the T and C_1 group households against the C_2 group households. The coefficients on most of the explanatory variables bear signs that are similar to the one seen in the bivariate analysis. A significantly small proportion of the T and C_1 group households use natural gas for cooking, while a significantly larger proportion of the same exhibit radio ownership and usage, compared to the C_2 group households. The use of radio could be interpreted as the sign of relative poverty. The C_2 group households have larger landholdings than the T and C_1 group households. On the other hand, the T and C_1 group households have stronger networking with the local elite than the C_2 group households.

To summarize the findings of village-level analysis using household characteristics, we found that villages whose households have poor access to basics amenities (e.g. natural gas),less land assets, and strong networking with the local elite are more likely to be served by PHKN.

5.3 Intra-Village Analysis Comparing Member and Non-Member Households

Within CO villages, what kinds of households are more likely to be a member? To address this issue, the results of bivariate comparison between member and non-member households in CO villages are reported in Table 5. Mostly, the two groups are highly similar. At the 5 percent level, only two variables show a statistically significant difference: Member households are more likely to be affected by the 2010 floods than non-member households; member households are less connected with the local elite than non-member households. Although significant only at the 10 percent level, member households are more likely to be affected by wild boar attacks than non-member households. In contrast, the two groups of households have similar characteristics in demography, education, and assets. We interpret these patterns as an outcome of self-selection, that is, the households prone to natural disasters and have less network connections, even within the

same village, are more likely to join a CO. These findings thus support the pro-poor targeting of PHKN interventions within CO villages.

Table 6 shows multiple regression results to predict the probability for a household living in a CO village to participate in a CO. We regress a dummy that represents the *T* group households on a set of household-level variables from Table 5, as well as all village dummies as explanatory variables, for a subsample of CO villages. The results confirm that the two groups are highly similar. There are two variables whose coefficients are statistically different from zero at the 1 percent level: A significantly smaller proportion of the *T* group households use natural gas for cooking; the *T* group households have better access to cable TV than the C_1 group households. Although the sign is the same, these two variables were associated with insignificant differences in the bivariate analysis. The negative correlation with the gas access is a sign of pro-poor targeting. On the other hand, we interpret the positive correlation with cable TV as more aware and socially sensitized are more likely to become CO members owing to their access to independent and vibrant electronic media on cable TV than the state-run terrestrial TV network. The higher probability for households prone to natural disasters to be a member is confirmed from the regression analysis as well, statistically significant at the 5 percent level.

To summarize the findings of household-level analysis within CO villages, we found that member households and non-member households are somewhat similar in their characteristics. If something, the tendency for the poor and less-connected to become a member was found. Regarding vulnerability to natural disasters, we found that more vulnerable households were more likely to join a CO.

6 Conclusion

In this paper, we quantitatively investigated the targeting performance of the CBD approach using detailed primary data at the village and household levels. The village-level data was collected through a census survey, whereas the household-level data was collected from a random sampling survey that covered both member and non-member households of a woman-led and women-focused NGO in rural Pakistan.

We found that villages whose households are poorer in terms of access to amenities and more susceptible to natural disasters are more likely to have a CO of the NGO. The correlation involving the networking showed an interesting contrast: Villages where networking with the local elite is strong are more likely to form a CO,

while within such villages with a CO, households whose networking with the local elite is weak are more likely to become a member. In contrast to the sharp contrast between CO villages and non-CO villages, the difference between member and non-member households within CO villages was not highly significant. In other words, the NGO's pro-poor targeting functioned well at the selection of recipient villages, whereas we found no evidence of anti-poor targeting within CO villages.

To conclude, the women-focused NGO has been able to target villages and households that are poor and vulnerable to natural disasters. The results suggest that the CBD approach through woman-led and women-focused NGOs is able to improve targeting performance of a poverty reduction policy. the higher likelihood of more socially endowed villages joining the NGO may raise concerns about potential elite capture. The results for within-village analysis presented here and our preliminary analysis using the same dataset and later rounds of primary data (see Chap. 4, Khan, 2013, for details) do not support these concerns, however.

In the current paper, we were not able to separately identify the endogenous placement effect and the self-selection effect. In future research, we intend to overcome this shortcoming by having further rounds of surveys and through collection of recall data.

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Table 1. Comparison of CO villages and non-CO villages (bivariate analysis)

Variable	Definition	Mean for each group		Difference (A)-(B)		
		(A) CO villages (n =40)	(B) Non-CO villages (n =65)	Mean		(S.E.)
Demography						
lit_rate	Adult literacy rate (%)	49.13	57.54	-8.41	*	(3.86)
vil_pop	Village Population	2252	2612	-360		(369)
agri_prof_~c	%age of total population in agriculture	55.28	52.06	3.21		(4.36)
services	%age of total population in services	16.80	22.11	-5.31	+	(2.97)
self_emp	%age of total population in self empl.	5.60	9.14	-3.54	*	(1.47)
lab_nform	%age of total population in non-farm labor	15.10	11.58	3.52		(2.29)
other_prof	%age of total population in others	7.23	5.11	2.12		(1.65)
Basic amenities, infrastructure, and shops						
irrigated_~e	Connection to canal irrigation (dummy variable)	0.250	0.292	-0.042		(0.090)
rd_length	Length of the road (in km) connecting the village with a major market	14.13	15.51	-1.38		(2.22)
cln_drnk_wat	Clean drinking water availability (%age of total village population)	71.38	76.52	-5.15		(6.64)
gas	Availability of gas connection in the village (dummy var.)	0.025	0.323	-0.298	**	(0.064)
c_tv	Avail. cable TV connection (dummy var.)	0.175	0.323	-0.148	+	(0.084)
i_net	Avail. internet connection (dummy variable)	0.100	0.354	-0.254	**	(0.077)
kar_shop	Avail. Karyana (grocery) shop (dummy var.)	0.725	0.877	-0.152	+	(0.082)
veg_shop	Avail. vegetable shop (dummy var.)	0.625	0.492	0.133		(0.100)
frt_shop	Avail. fruit shop (dummy var.)	0.325	0.431	-0.106		(0.097)
Existence of medical facilities in the village (dummy variables)						
bhu	Basic Health Unit (Govt)	0.125	0.185	-0.060		(0.072)
rhu	Rural Health Center (Govt)	0.025	0.062	-0.037		(0.039)
dr_bhu_rhu	Doctor's presence in BHU or RHC	0.125	0.215	-0.090		(0.074)
tba	Avail. traditional birth attendant (TBA)	0.825	0.646	0.179	*	(0.085)
Existence of education institutions in the village (dummy variables)						
prim_school	Primary school (1st to 5th grades)	0.850	0.877	-0.027		(0.070)
mid_sch	Middle school (6th to 8th grades)	0.325	0.369	-0.044		(0.096)
hi_scho	High school (9th to 10th grades)	0.250	0.200	0.050		(0.085)
cbsch	Community based school	0.250	0.092	0.158	*	(0.078)
d_madra	Deni Madrassah (religious school)	0.475	0.446	0.029		(0.101)
Dispute settlement forums (DSF) (dummy variables)						
jirga	Avail. Jirga - traditional DSF	0.850	0.769	0.081		(0.078)
dsf	Avail. non-traditional DSF	0.925	0.769	0.156	*	(0.067)
ler	Locally elected representative is from the village	0.650	0.738	-0.088		(0.094)
Susceptiblity to natural disasters						
dis_prone_~l	Village is prone to disaster (dummy var.)	0.975	0.831	0.144	**	(0.053)

Notes: 1. The standard errors(SE) are reported in parenthesis, estimated under the assumption that allow unequal variance of two groups. 2. The definition of a CO village is the default definition (listed as having a CO or similar activities in the PHKN village list). 3. ** $p < 0.01$, * $p < 0.05$, + $p < 0.1$. 4. The table is prepared by the authors.

Table 2. Correlates of village-level participation (multiple regression results)

	Dependent variable: CO village - dummy *(d_co1)*				
	Model 1	Model 2	Model 3	Model 4	Model 5
Village-level variables					
lit_rate/100	-0.1812	-0.0471	-0.1163	-0.1657	-0.0208
	(0.300)	(0.329)	(0.329)	(0.300)	(0.294)
vil_pop/1000000	-0.0069	0.0008	-0.0038	0.0082	0.0131
	(0.039)	(0.038)	(0.034)	(0.038)	(0.034)
agri_prof_prc	-0.0021	-0.0030	-0.0040	-0.0022	-0.0034
	(0.003)	(0.003)	(0.003)	(0.002)	(0.002)
Basic amenities, infrastructure, and shops					
irrigated_village	-0.0420	-0.0440	-0.0700	-0.0980	-0.1150
	(0.139)	(0.137)	(0.136)	(0.139)	(0.134)
rd_length	-0.013**	-0.014**	-0.013**	-0.012**	-0.012**
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
cln_drnk_wat	0.0001	-0.0007	-0.0003	-0.0010	-0.0010
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
gas	-0.436*	-0.380*	-0.436*	-0.354*	-0.419*
	(0.195)	(0.179)	(0.193)	(0.177)	(0.175)
i_net	-0.2180	-0.2140	-0.1980	-0.2380	-0.2140
	(0.182)	(0.167)	(0.172)	(0.172)	(0.162)
kar_shop	-0.1600	-0.1580	-0.1500	-0.1930	-0.1770
	(0.151)	(0.157)	(0.147)	(0.134)	(0.140)
Access to education and medical facilities					
prim_school	-0.0490	-0.0310	-0.0520	-0.0600	-0.0480
	(0.144)	(0.146)	(0.144)	(0.137)	(0.139)
mid_sch	-0.0730	-0.0740	-0.0750	-0.1110	-0.1060
	(0.111)	(0.109)	(0.110)	(0.113)	(0.111)
hi_scho	0.0950	0.0590	0.0860	-0.0060	-0.0190
	(0.154)	(0.157)	(0.152)	(0.155)	(0.155)
d_madra	0.1520	0.1600	0.1030	0.1590	0.1190
	(0.116)	(0.116)	(0.112)	(0.116)	(0.113)
bhu	0.0960	0.0350	0.0650	0.0900	0.0230
	(0.164)	(0.165)	(0.164)	(0.158)	(0.156)
Susceptibility to natural disasters					
dis_prone_vil	0.2550	0.2830	0.1970	0.2980	0.2570
	(0.156)	(0.155)	(0.159)	(0.152)	(0.155)
Potentially endogenous variables					
dsf		0.246*			0.1640
		(0.118)			(0.130)
cbsch			0.289*		0.260*
			(0.138)		(0.128)
tba				0.312**	0.252*
				(0.097)	(0.104)
Intercept	0.852**	0.5630	0.926**	0.679*	0.5860
	(0.284)	(0.310)	(0.290)	(0.299)	(0.329)
R-squared	0.291	0.321	0.327	0.352	0.393
F-statistics for zero slop	6.045	4.503	6.985	5.901	8.110
Level of Significance	0.000	0.000	0.000	0.000	0.000

Notes: 1. In addition to those explanatory variables listed above, intercept, Mansehra dummy, and Abbottabad dummy are also included. 2. Estimated by OLS (linear probability model), with robust standard errors (reported in brackets). 3. The number of observations is 105. 4. * p<0.1, ** p<0.05, *** p<0.01 . 5. Number of observations is 105. 6. The table is prepared by the authors.

Table 3. Household-level comparison of CO villages and non-CO villages (bivariate analysis)

Variable	Definition	Weighted mean for each group: (T and C_1) Households in CO villages (n=483)	Weighted mean for each group: (C_2) Households in non-CO villages (n=100)	Difference: (T and C_1)-(C_2) Mean		(S.E.)
Demography						
hhsize	Number of household members	6.088	6.681	-0.593		(0.561)
fem_rate	Ratio of female over male members	1.127	1.042	0.085		(0.125)
fem_hh	Dummy for a female-headed household	0.097	0.050	0.046		(0.031)
hh_edu	Years of education of the household head	5.847	6.846	-0.999		(0.840)
hh_lite	Literacy dummy of the household head	0.701	0.744	-0.043		(0.077)
hh_age	Age of the household head	50.164	50.518	-0.354		(1.953)
Education						
educ_yrs	Average years of education of adult household members	5.603	7.018	-1.415	**	(0.538)
fem_edu	Av. yrs of education of female members	2.170	2.912	-0.742	**	(0.251)
mal_edu	Av. yrs of education of male members	3.594	4.623	-1.030	*	(0.469)
d_lit	Adult literacy rate	0.746	0.775	-0.029		(0.035)
fem_lite	Female literacy rate	0.318	0.321	-0.003		(0.029)
mal_lite	Male literacy rate	0.428	0.454	-0.026		(0.034)
Household asset indicators						
h_floor	The flooring of the house is paved (dummy var.)	0.083	0.461	-0.378	**	(0.098)
drainge	The house has drainage (dummy var.)	0.424	0.819	-0.394	**	(0.057)
gas	The house is connected with gas for cooking (dummy var.)	0.001	0.822	-0.821	**	(0.045)
land_val	Value of land owned (Rs.1,000,000)	0.491	0.670	-0.179		(0.374)
livestock_val	Value of livestock owned (Rs.1,000,000)	0.015	0.003	0.012	**	(0.002)
radio	The household has and uses a radio (dummy)	0.334	0.290	0.044		(0.097)
internet	The household uses internet (dummy)	0.000	0.167	-0.167	*	(0.085)
cab_tv	The house is connected with cable TV (dummy)	0.003	0.341	-0.338	**	(0.102)
Susceptibility to natural disasters						
fldaffected_hh	Affected by 2010 floods	0.329	0.289	0.040		(0.084)
wildboar_attack	Suffered damages due to attacks by wild boars	0.333	0.066	0.268	**	(0.034)
Social status						
native	Native household	0.961	0.768	0.194	*	(0.086)
sol_status	Social status is high	0.927	1.000	-0.073	**	(0.018)
networking	Blood or non-blood relation with local elite	0.408	0.058	0.350	**	(0.063)

Notes: 1. Means are weighted to reflect differences in sampling probability. 2. The standard errors are reported in parenthesis. 3. ** $p < 0.01$, * $p < 0.05$, + $p < 0.1$. The table is prepared by the authors.

Table 4. Correlates of village-level participation (household-level multiple

	Model 1	Model 2	Model 3
	Dependent Variable:		
Explanatory Vars	Dummy representing T or C_1 household with C_2		
Village-level variables			
lit_rate/100	-0.300	-0.300	-0.298
	(0.304)	(0.305)	(0.307)
vil_pop/1000000	0.051	0.051	0.052
	(0.026)	(0.026)	(0.027)
agri_prof_~c	-0.002	-0.002	-0.002
	(0.001)	(0.001)	(0.001)
rd_length/100	0.015	0.017	0.007
	(0.768)	(0.769)	(0.767)
cln_drnk_wat	-0.001	-0.001	-0.0013
	(0.001)	(0.001)	(0.001)
Household education			
d_lit	0.052		
	(0.055)		
fem_lite		0.059	
		(0.060)	
mal_lite		0.044	
		(0.065)	
fem_edu/10			-0.003
			(0.054)
mal_edu/10			-0.013
			(0.067)
Household asset indicators			
h_floor	0.041	0.041	0.043
	(0.040)	(0.040)	(0.041)
drainge	-0.054	-0.054	-0.052
	(0.037)	(0.037)	(0.038)
gas	-0.690***	-0.691***	-0.691***
	(0.132)	(0.132)	(0.133)
land_val	-0.027**	-0.027**	-0.027**
	(0.008)	(0.008)	(0.009)
radio	0.051*	0.051*	0.052*
	(0.023)	(0.023)	(0.024)
internet	-0.151	-0.147	-0.141
	(0.141)	(0.141)	(0.142)
cab_tv	-0.04	-0.04	-0.038
	(0.090)	(0.090)	(0.090)
Household level susceptibility to natural disasters			
fldaffecte~h	-0.025	-0.025	-0.025
	(0.025)	(0.025)	(0.025)
wildboar_a~k	0.037	0.038	0.039
	(0.028)	(0.029)	(0.028)
Household level social status and networking			
native	0.296**	0.296**	0.299**
	(0.104)	(0.104)	(0.104)
sol_status	-0.081	-0.08	-0.081
	(0.047)	(0.046)	(0.047)
networking	0.137*	0.137*	0.138*
	(0.054)	(0.054)	(0.054)
Intercept	0.809***	0.812***	0.840***
	(0.214)	(0.214)	(0.210)
R-squared	0.578	0.579	0.578
F-statistics for zero slope	71.067	68.376	68.953
Level of Sig.	0.000	0.000	0.000

Notes: 1. Standard errors in parentheses. 2. * p<0.05, ** p<0.01, *** p<0.001.
3. The number of observations is 583. The table is prepared by the authors.

Table 5. Comparison of member and non-member households within CO villages (bivariate analysis)

	Weighted mean for each group		Difference: (T) - (C_1)	
	(T) Member households in CO villages (n=249)	(C_1) Non-member households in CO villages (n=234)	Mean	(S.E.)
Demography				
hhsize	6.403	5.899	0.504 +	(0.280)
fem_rate	1.123	1.130	-0.007	(0.095)
fem_hh	0.088	0.102	-0.014	(0.033)
hh_edu	6.098	5.697	0.401	(0.533)
hh_lite	0.738	0.680	0.058	(0.054)
hh_age	50.046	50.235	-0.189	(1.598)
Education				
educ_yrs	5.767	5.505	0.262	(0.262)
fem_edu	2.157	2.178	-0.021	(0.209)
mal_edu	3.773	3.486	0.287	(0.216)
d_lit	0.763	0.735	0.028	(0.027)
fem_lite	0.317	0.318	-0.002	(0.023)
mal_lite	0.447	0.417	0.030	(0.023)
Household asset indicators				
h_floor	0.115	0.063	0.052 +	(0.029)
drainge	0.456	0.406	0.051	(0.058)
gas	0.000	0.002	-0.002	(0.002)
land_val	0.553	0.454	0.100	(0.133)
livestock_val	0.016	0.014	0.002	(0.003)
radio	0.319	0.343	-0.023	(0.055)
internet	0.000	0.000	0.000	(0.000)
cab_tv	0.008	0.000	0.008	(0.006)
Susceptibility to natural disasters				
fldaffected_hh	0.405	0.284	0.121 *	(0.053)
wildboar_attack	0.397	0.296	0.101 +	(0.054)
Social status				
native	0.977	0.952	0.025	(0.021)
sol_status	0.936	0.922	0.014	(0.031)
networking	0.322	0.460	-0.138 *	(0.055)

Notes: 1. Means are weighted to reflect differences in sampling probability. 2. The standard errors are reported in parenthesis. 3. ** $p < 0.01$, * $p < 0.05$, + $p < 0.1$. The table is prepared by the authors.

Table 6. Correlates of household-level participation within CO villages (multiple regression results)

	Model 1	Model 2	Model 3
	Dependent Variable:		
Explanatory Vars	Dummy representing T household with C_1 household as the reference (d_t)		
Household Education			
d lit	0.025		
	(0.058)		
fem lite		-0.018	
		(0.074)	
mal lite		0.080	
		(0.100)	
fem edu			0.001
			(0.009)
mal edu			0.020*
			(0.009)
Household level susceptibility to natural disasters			
h floor	0.097	0.094	0.089
	(0.066)	(0.063)	(0.064)
drainge	0.031	0.030	0.038
	(0.046)	(0.047)	(0.046)
gas	-0.380***	-0.373***	-0.386***
	(0.037)	(0.039)	(0.038)
land val	-0.002	-0.003	-0.003
	(0.013)	(0.015)	(0.015)
radio	0.007	0.007	0.003
	(0.041)	(0.042)	(0.043)
cab tv	0.479***	0.487***	0.472***
	(0.057)	(0.058)	(0.076)
Household level susceptibility to natural disasters			
fldaffecte~h	0.107*	0.108*	0.110*
	(0.046)	(0.047)	(0.043)
wildboar a~k	0.094*	0.091*	0.087
	(0.042)	(0.041)	(0.042)
Household level social status and networking			
native	0.272	0.184	0.255
	(0.133)	(0.119)	(0.131)
sol status	-0.054	-0.056	0.015
	(0.083)	(0.084)	(0.040)
networking	-0.104	-0.112	-0.11
	(0.074)	(0.075)	(0.087)
Village fixed affect	Yes	Yes	Yes
Intercept	0.118	0.113	0.088
	(0.151)	(0.152)	(0.137)
R-squared	0.075	0.076	0.079
F-stat for zero slopes	122.43	88.81	26.20
Level of Sig.	0.000	0.000	0.000

Notes: 1. The number of observations is 483 (only a subsample of households belonging to CO villages is used). 2. Standard errors in parentheses. 3. * p<0.05, ** p<0.01, *** p<0.001. 4. The table is prepared by the authors. 5. "F-stat for zero slopes shows the F-statistics for the null hypothesis that all slopes are zero except for the intercept and village fixed effects.