

# Public Work Programs and Social Capital: An Exploration of MGNREGA in India

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## 1. Introduction

Evaluations of public programs usually focus on whether policies have been able to achieve their intended goals and the pathways of such change occurring. For example, Desai et al. (2015) explore the myriad ways access to Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) has changed labour market outcomes, education and health outcomes, and broadly the impact of MGNREGA on development outcomes. However, with schemes becoming increasingly community driven and participatory, an important question that rarely gets posed is the impact of such schemes on social capital within the community. In this paper we seek to answer this question in the context of the MGNREGA program in India using multiple waves of the India Human Development Survey (IHDS) survey.

While developing social capital is not a frequent goal for public policy, the literature documents that many development outcomes are easier to achieve in the presence of social capital (Helliwell and Putnam 1995). However, there is little understanding of the causal relationship between social capital and public policy. In this paper, we study the impact of MGNREGA, a public works program, on social capital of rural households in India. The demand driven nature of the program creates variation in MGNREGA uptake that we exploit to understand how participating households have changed after the introduction of the scheme in comparison to the non-participating ones. Although MGNREGA was not primarily designed to create social capital, it may be an important, even if unintended, consequence of its community-based income generation strategy.

Dongier et al. (2003) comment on the role of community driven development in creation of social capital for the poor in developing countries; Narayan-Parker (1999) emphasizes investment in micro-level demand-driven service delivery for building organizational capacity of the poor; and Falk and Kilpatrick (2000) show how micro-level social interactions affect

meso and macro social, cultural, and political outcomes by providing learning that facilitates social capital creation.

Evidence suggests that the quality of political institutions, public goods provision, and infrastructure is influenced by the extent of social cohesion in the community (Alesina et al, 2003; Alesina and Ferrara, 2005; Easterly and Levine, 1997; Easterly et al, 2006). In the public works scheme considered here, the village level self-governance organisation (*Gram Panchayat*) has a pivotal role to play through its planning, monitoring, and auditing activities (Chakraborty, 2007). Thus, social cohesion may well affect the quality of MGNREGA provision at the village level and in turn prove to be an important pathway through which its community based activities lead to social capital. Therefore, we study the impact of MGNREGA participation on social capital within the context of village level fragmentation with respect to caste groups, as measured by ethnic fractionalization index.

The remainder of the paper is organised as follows. We discuss the program and importance of social capital in Section 2, the data we use in Section 3, the research methods we employ in section 4, and present our findings in section 5.

## **2. Literature**

The importance of social capital as a public good and its influence on socioeconomic development has gained momentum in recent decades. Evidence suggests that social capital is associated with economic growth (Helliwell and Putnam, 1995; Whiteley, 2000 and Helliwell 2005), better governance (Putnam, 1993), and low communal violence (Varshney, 2001). Several studies show better education outcomes in terms of academic achievement, low absenteeism rates, and lower probability of dropping out in households with stronger networks and higher community trust and activity (Coleman, 1988; Grootaert et al., 2002a; Iyengar, 2011; Knaul, 1999; Teachman et al., 1996). The role of social capital in achieving better health and welfare has been underscored by various other studies (Harpham et al, 2006; Viswanath et al, 2006; Bakeera et al, 2010; Mukherji, 2013).

Social capital is particularly important for the poor as it provides them an opportunity to exercise agency and mitigate risk in an environment characterized by social exclusion and market failures. There is evidence in support of higher income and expenditure levels of rural households with higher social capital in Burkina Faso and Tanzania (Grootaert et al., 2002b; Narayan and Pritchett, 1999). Woolcock (1998) suggests a low stock of social capital in

communities with class, sex, and ethnic inequalities and where poverty is left unchecked by social safety nets.

India's MGNREGA, passed in 2005, is one of the largest public works program in the world that guarantees 100 days of gainful employment to any rural household that demands it. It provides for unskilled labor employment at minimum wage rates. The Act mandates at least one-third of all beneficiaries have to be women. The program was initially launched in 200 backward districts in February, 2006 and covered the rest of the country by April, 2008. Studies have shown that the program has led to reduction in poverty and increase in monthly per capita expenditure, food security, saving, private sector wages, educational attainment, women empowerment, and accumulation of non-financial assets (Desai et al, 2015; Ravi and Engler, 2015; Imber and Papp, 2015; Afridi et al., 2013; Deininger and Liu, 2013).

We contribute to the current literature in several ways. First, our work contribute to the growing evidence on what creates, influences, or builds social capital. Further, we estimate the impact of a household's participation in a community based public works program on its stock of social capital. We also explore if this impact is mediated by village-level caste heterogeneity.

### **3. Data**

The IHDS survey is a nationally representative multi-topic panel survey covering 384 districts in India and is conducted jointly by University of Maryland and National Council of Applied Economic Research (NCAER), New Delhi. It surveyed 41,554 households in 2004-05 and re-interviewed 83% of these households in 2011-12. Since MGNREGA was introduced between these two survey periods, in the year 2006, it makes it an ideal dataset for a pre-post analysis. It provides information on income, consumption, assets, employment, debt, social networks, community based organizations, trust, and confidence in institutions along with detailed information on participation in MGNREGA in the second round of the survey. Owing to MGNREGA being a rural program, we restrict our analysis to rural households who were interviewed in both rounds, resulting in an analytical sample of 27,308 households in 273 districts and 32 states/UTs.

Although the term social capital is not concretely defined or measured, there is consensus in the literature on understanding it as the nature and extent of a community's personal and institutional relationships that facilitate coordination and cooperation for mutual benefit (Coleman, 1988; Putnam, 1995; Woolcock, 1998). Woolcock and Narayan (2000) outline four

perspectives to social capital—the communitarian view, the networks view, the institutional view, and the synergy view. We focus on the first two views by studying membership in community-based organizations (CBO) and social networks (SN).

We construct a CBO index by aggregating responses on membership in nine different groups or organizations resulting in an index ranging from 0 to 9. Similarly, we construct the SN index based on addition of three components of whether the household has a personal acquaintance in health, education, and government sectors, resulting in an index ranging from 0 to 3. Additionally, we create two separate indices for social networks; first, an index based on any personal acquaintance irrespective of their caste group and second, based on personal acquaintances belonging to a different caste/community than the respondent's.

We compute village level caste-based fractionalization index based on the commonly used Ethno-Linguistic Fractionalization index (ELF) that reflects the probability that two randomly selected individuals from a population belong to different groups (Alesina et al., 2003). Considering four caste groups i.e. General, Scheduled Caste, Scheduled Tribe, and Other Backward Classes in our data, the ELF ranges from 0 to 0.75 where 0 indicates villages with the most homogenous caste composition.

We determine a household's exposure to the program in two ways—whether it has any non-zero MGNREGA income and whether the household has at least one member working under MGNREGA for more than 240 hours per year. Out of 27,308 rural households in our sample, 22% report non-zero MGNREGA income and 11% report at least one member working for more than 240 hours a year under MGNREGA.

Table 1 shows preliminary descriptive analysis on MGNREGA participation and social capital of households over the two survey periods. We find that 54% participating and 46% non-participating households had no personal acquaintance in any of the health, education, or government services in round one; this reduced to 31% for both categories by round two suggesting larger social networks among participating households in wave 2. Additionally, 48% MGNREGA households report an increase in their social network as opposed to 43% non-MGNREGA households; and, 22% MGNREGA households report worse networks as opposed to 24% non-MGNREGA households. The statistics also imply higher baseline levels of social exclusion of participating households. The direction of this relationship is same for the other two indicators of social capital, albeit the magnitude is low. We propose our identification and estimation strategy for further analysis in the next section.

#### 4. Methodology

In order to establish a causal impact of MGNREGA on household's social capital, we use a difference-in-difference (DID) estimation strategy with the following regression equation:

$$\begin{aligned} SocialCapital_{htv} = & \beta_0 + \beta_1 NREGA_h + \beta_2 Time_t + \beta_3 ELF_v + \beta_4 (Time_t \times ELF_v) + \\ & \beta_5 (NREGA_h \times ELF_v) + \beta_6 (NREGA_h \times Time_t) + \\ & \beta_7 ((NREGA_h \times Time_t) \times ELF_v) + \overrightarrow{\beta_8 X_{htv}} + \varepsilon_{htv} \end{aligned}$$

where,  $Social\ Capital_{htv}$  is the CBO or SN index of household  $h$  in time period  $t$  within village  $v$ ,  $\beta_1$  is treatment group specific effect that accounts for average permanent differences between households that demand MGNREGA and those who don't,  $\beta_2$  accounts for time trend common to both MGNREGA and non-MGNREGA households, and  $\beta_3$  is the effect of village-level ELF. The second-level interactions  $\beta_4$  and  $\beta_5$  control for time-varying effect of ELF and time-invariant characteristics of treatment group that varies with ELF respectively.  $\beta_6$  is the true treatment (MGNREGA) effect on social capital in a perfectly homogenous village while controlling for time-varying household characteristics associated with social capital as captured by  $\overrightarrow{\beta_8}$ . The third-level interaction  $\beta_7$  captures the difference in this treatment effect in more heterogeneous villages as indicated by their ELF values.

Although, the DID estimation strategy using household panel controls for all time-invariant unobservable household characteristics that may be associated with social capital and MGNREGA enrolment, we must be cautious of the assumption that change in social capital of MGNREGA households would have been similar to that of non-MGNREGA households had the program not been rolled out. In order to overcome the possibility of a self-selection bias, we use Coarsened Exact Matching to match participating households to non-participating ones using observable household characteristics from the first wave of the survey.

#### 5. Preliminary Results

Tables 2 and 3 present our preliminary findings of the treatment effect of MGNREGA income and MGNREGA work on social capital outcomes. Columns (1) and (2) provide regression estimates for the two Social Network Outcomes whereas column (3) provides the estimates for the CBO Membership Outcome. We reduce the imbalance between the treated and control groups by matching them on household characteristics such as religion, caste group, number

of household members, household head's level of education, Below Poverty Line (BPL) card possession, and average level of consumption per capita in the first survey period. We also match the households on their baseline level of social capital outcome and we do this separately for each of the outcomes, resulting in three different analytical samples.

We now discuss the effect of program participation, indicated by non-zero MGNREGA income (Table 2). The coefficients in columns (1) and (2) indicate that participating households, on average, had lower baseline social network for both any caste or different caste networks. In perfectly homogenous villages, we find that both types of social networks have increased more for participating households than non-participating households over the two survey periods. MGNREGA households are able to create 0.28 units more network when we do not account for caste affiliations and 0.19 units more network with a different caste group. However, as indicated by the negative three-way interaction coefficient, this treatment effect reduces in more heterogeneous villages for both social network outcomes. Our findings suggest better functioning or provision of the scheme in more homogenous villages in that we see higher treatment effect sizes in such villages than those in less homogenous ones.

As for the CBO Membership outcome, outlined in column (3), we find that the story is just the reverse. MGNREGA households had more number of CBO memberships at the time of baseline. However, over the two survey period, we find that they registered in 0.16 units fewer CBOs as compared to non-MGNREGA households in perfectly homogenous villages. And this treatment effect turns positive in highly heterogeneous villages. Further analysis of each type of the nine CBOs considered here is required to make an informed inference of our results.

Table 1: Descriptive analysis of MGNREGA participation and social capital indices

	Total Sample		Non-MGNREGA Income Households		MGNREGA Income Households		MGNREGA >240 hours Workers Households	
	2004-05	2011-12	2004-05	2011-12	2004-05	2011-12	2004-05	2011-12
Social Network (any) (% households)								
0	47.9	30.7	46.3	30.6	54.0	30.9	52.7	33.1
1	20.9	21.5	21.5	21.6	18.9	21.3	18.1	21.6
2	16.3	29.9	16.8	29.4	14.3	32.0	14.5	29.6
3	14.9	17.8	15.5	18.4	12.8	15.8	14.7	15.8
Same	-	31.8	-	32.4	-	29.8	-	31.0
Improve	-	44.2	-	43.3	-	47.8	-	44.8
Worse	-	23.9	-	24.3	-	22.4	-	24.3
Social Network (different caste) (% households)								
0	66.6	38.8	66.3	38.9	67.9	38.5	67.6	40.7
1	15.2	22.3	15.7	22.6	13.7	21.6	13.6	21.5
2	11.3	25.6	11.2	24.7	11.4	28.7	11.4	26.1
3	7.0	13.3	6.9	13.9	7.1	11.3	7.4	11.7
Same	-	34.3	-	34.5	-	33.8	-	34.9
Improve	-	47.5	-	47.5	-	48.0	-	46.2
Worse	-	18.1	-	18.0	-	18.2	-	18.9
CBO membership (% households)								
0 (none)	63.4	60.2	63.5	60.7	63.0	58.2	62.0	58.9
> 0	36.6	39.8	36.5	39.3	37.0	41.8	38.0	41.1
Same	-	50.9	-	50.8	-	51.6	-	51.8
Improve	-	25.6	-	25.6	-	27.0	-	26.7
Worse	-	23.5	-	23.6	-	21.4	-	21.5

Table 2: Treatment Effect Estimates of MGNREGA Income on Social Capital Outcomes

Treatment	(1) Social Network (Any Caste)	(2) Social Network (Different Caste)	(3) CBO Membership
MGNREGA (Income) <sup>†</sup>	-0.15*** (0.04)	-0.12*** (0.03)	0.17*** (0.03)
Time	0.46*** (0.03)	0.75*** (0.02)	0.26*** (0.02)
ELF	0.15*** (0.04)	0.18*** (0.04)	0.04 (0.04)
MGNREGA (Income)*Time	0.28*** (0.05)	0.19*** (0.05)	-0.16*** (0.04)
Time*ELF	-0.25*** (0.05)	-0.28*** (0.05)	-0.21*** (0.05)
MGNREGA (Income)*ELF	0.18* (0.08)	0.41*** (0.07)	-0.16* (0.07)
MGNREGA (Income)*Time*ELF	-0.44*** (0.10)	-0.63*** (0.10)	0.33*** (0.09)
Observations	20587	21473	20702

1) \*\*\* p<0.001, \*\* p<0.01, \* p<0.05

2) <sup>†</sup> MGNREGA (Income) refers to households that have non-zero income earned under the MGNREGA scheme

3) Control variables used: Religion, Caste, Number of household members, Household head's level of education, possession of BPL card, Income quintile (Rural, excluding MGNREGA income), Loan status, and district fixed effects

Table 3: Treatment Effect Estimates of MGNREGA Work >240 hours per year on Social Capital Outcomes

Treatment	(1) Social Network (Any Caste)	(2) Social Network (Different Caste)	(3) CBO Membership
MGNREGA (Work) <sup>‡</sup>	-0.03 (0.05)	-0.09* (0.04)	0.18*** (0.04)
Time	0.53*** (0.02)	0.78*** (0.02)	0.24*** (0.02)
ELF	0.20*** (0.04)	0.24*** (0.04)	0.03 (0.03)
MGNREGA (Work)*Time	0.06 (0.06)	0.17** (0.06)	-0.18** (0.06)
Time*ELF	-0.35*** (0.05)	-0.35*** (0.05)	-0.16*** (0.04)
MGNREGA (Work)*ELF	0.06 (0.10)	0.39*** (0.09)	-0.20* (0.09)
MGNREGA (Work)*Time*ELF	-0.21 (0.13)	-0.67*** (0.12)	0.26* (0.12)
Observations	20587	21473	20702

1) \*\*\* p<0.001, \*\* p<0.01, \* p<0.05

2) <sup>‡</sup> MGNREGA(Work) refers to households who have at least one member working >240 hours under MGNREGA



3) Control variables used: Religion, Caste, Number of household members, Household head's level of education, possession of BPL card, Income quintile (Rural, excluding MGNREGA income), Loan status, and district fixed effects

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