

# Pro-social Behavior, Local Leaders and Access to Social Welfare Programs

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Effective utilization of social welfare programs can have a substantial impact on poor households. This paper focuses on two important pathways that can improve households' access to these programs. The first pathway is the role of behavioral characteristics such as trust, trustworthiness and cooperation that form the backbone of social and economic interactions, and can lead to information sharing about the most effective use of social programs. The other pathway is the role of local leaders in facilitating access to welfare programs, with concentration of influence among these leaders potentially enabling or reducing utilization. We use novel experimental and survey data on pro-sociality and concentration of political influence to examine if these two channels are important in predicting households' utilization of public programs. While both pro-sociality and concentration of political influence have a positive effect on reported public program utilization, village level pro-sociality has a substantially bigger impact. Overall, increases in pro-sociality in villages with high concentration of influence are associated with greater utilization of public programs, suggesting that these factors are complimentary.

Key words: Utilization of welfare programs, Concentration of influence, Pro-sociality, Field experiment, India.

JEL classification: H4, O1, C9, C2

## I. INTRODUCTION

The provision of public goods and services forms a vital part of the social infrastructure facilitating economic growth and development.<sup>1</sup> Effective provision and utilization of public goods and services is of particular importance in developing countries because the marginal effect of public good provision on household welfare is likely to be large. In most developing countries, the government rather than the private sector is the dominant provider of public goods through various forms of social assistance programs. In India, for example, widely available social welfare programs include early childhood support, healthcare, schooling and workfare. While a large literature examines how economic factors influence the government provision of public services,<sup>2</sup> and how the composition of government alters the types of and beneficiaries from social welfare programs,<sup>3</sup> the influence of behavioral factors on access to public services remains relatively less understood.

Behaviour characterised by the explicit concern about society as a whole could play an important role in the provision of and access to social programs. More socially cohesive communities might have a better understanding of the types of public programs required and may be able to advocate for these more effectively. Once programs are in place, pro-social norms might imply wider information sharing about how to use the program. For example, Aizer and Currie (2004) document the importance of women's racial and ethnic ties in increasing utilization of publicly-funded maternity care in California. Debnath *et al.* (2015) find that information sharing within caste-based community ties is an important determinant of the use of a state funded health insurance program in the Indian state of Andhra Pradesh. Also using data from India, Kumar and Somanathan (2015) argue that social connections between program facilitators and low-caste citizens enable eligible households to benefit from social welfare policies. Berg *et al.* (2015) find that social distance matters significantly in the dissemination of information.<sup>4</sup> Additionally, a large literature points to the role of social capital and trust on overall economic development (see, for example, Arrow, 1972; Fukuyama, 1995; Knack and Keefer, 1997; Glaeser *et al.*, 2000; Zak and Knack, 2001). However, the role of behavioral characteristics such as trust, trustworthiness or local cooperation that form the basis of social cohesion in facilitating effective access to social welfare programs is poorly understood.

Local administrators also have an important role in facilitating access to welfare programs. For instance, in the case of public health, a local politician might help organize health camps that screen patients. Local politicians can also facilitate access to workfare programs, which can be positive if the role of the politician is to inform residents about the presence of the program or eligibility criteria. Conversely, if corrupt politicians take bribes for accessing public programs, their role might be welfare reducing. The existing literature on the role of local leaders has focused on the effect of political competition on different outcome measures, typically relying on aggregate measures of political competition including the margin of election victory (close elections), the extent of ideological disagreement among voters, and the heterogeneity and diversity of different groups in the electorate (see, for example, Jones, 2013)). Ashworth *et al.* (2014) conduct a direct test of local government efficiency in non-competitive environments and find that the number of parties competing in the election positively affects the productive efficiency of municipal policy. Using cross-country analysis, de Paola and Scoppa (2011) find that political competition improves the quality of elected leaders. From a sample of 47 developing countries, Fumagalli *et al.* (2013) find that increased political competition is associated with a reduction in the prevalence of obesity and undernourishment. Acemoglu *et al.* (2014) use the number of ruling families as a measure of political competition and find that chieftaincies with more ruling families have better developmental outcomes including child health and educational attainment. They argue that a greater number of ruling families help to discipline chiefs, forcing them to govern better. In the context of India, Bardhan *et al.* (2010) find that electoral competition helps improve the implementation of land reforms and Gille (2015) finds that low caste local leaders can facilitate low caste individuals to apply for jobs reserved under the affirmative action policies. The literature therefore suggests that the concentration of local leaders and also the concentration of political influence has an important effect on the welfare of communities.

This paper contrasts the effects of both pro-social behaviour and the concentration of political influence on the provision of public services. Pro-social behaviour within a community may vary with the concentration and type of leaders in power. For instance, when leadership is controlled by a small number of elites, strong pro social behaviour which may indicate a cohesive community and voice may reduce the capture of community services by elites. This pro-social behaviour may have less of an effect in communities that already have a large number of leaders representing the communities varied interests. To understand the relationship between pro-social behaviour and the concentration of political influence, we ask whether (or how) the concentration of leaders

and pro-social behaviour jointly influence the provision of local services. Our empirical analysis further explores whether these two factors act as complements or substitutes. By answering these questions, we help advance the literature by revealing the specific factors that drive public good provision and access to welfare programs. By illustrating the value of activities that build social trust and cooperation, our findings point towards policies that could facilitate access to social welfare programs.

We examine the importance of the two pathways identified in improving access to social welfare programs using data from a lab-in-the-field experiment and surveys conducted in 40 villages in Southern India. Following a constitutional amendment in 1992, community led development was mandated in all villages in India, with the village leader being democratically elected, making this setting well-suited for examining the research questions at hand. Using the experiment, we elicit incentivized data on pro-sociality of the population. Our surveys collect information on influence, concentration of authority, and the utilization of welfare programs within these villages. Our approach towards collecting information on pro-sociality and also towards understanding the role of leaders and the role of concentration of power within the village (as opposed to simply political competition) are both novel and unique.

We establish a direct measure of pro-sociality using behaviour in a lab-in-the field-experiment. This has the advantage that individuals are incentivized, and therefore more likely to correctly reveal their pro-sociality. In contrast, indirect measures such as heterogeneity of caste or ethnicity are used in most papers as measures of social distance within the community, with lower social distance between different agents as an assumed proxy for greater pro-sociality at the community level (see, for example Kumar and Somanathan, 2015). We measure the concentration of political influence within a village by asking subjects to identify the most influential people (including both formal and informal elites) within the community. In many countries, particularly developing ones, focusing exclusively on formal political elites which is common in the literature can result in significant measurement error, specifically because of the presence of informal elites such as past political leaders, school-teachers, doctors or bureaucrats. The presence of these informal elites can however be a double edged sword. On the one hand these informal elites can check the extent of power enjoyed by the political elite; on the other hand too much power in their hands can lead to patronage or rent seeking. From an empirical perspective, excluding informal elites can significantly bias the measurement of power dynamics within the community. These measures

of pro-sociality and concentration of influences within the village offer a new perspective on the factors that effect access to social welfare programs.

Our results show that higher village level pro-sociality is associated with significantly greater utilization of public programs, although the correlation of concentration of political influence with program access is positive as well. Increases in pro-sociality in villages with high concentration of political power are associated with greater utilization of public programs, suggesting that these factors are complimentary.

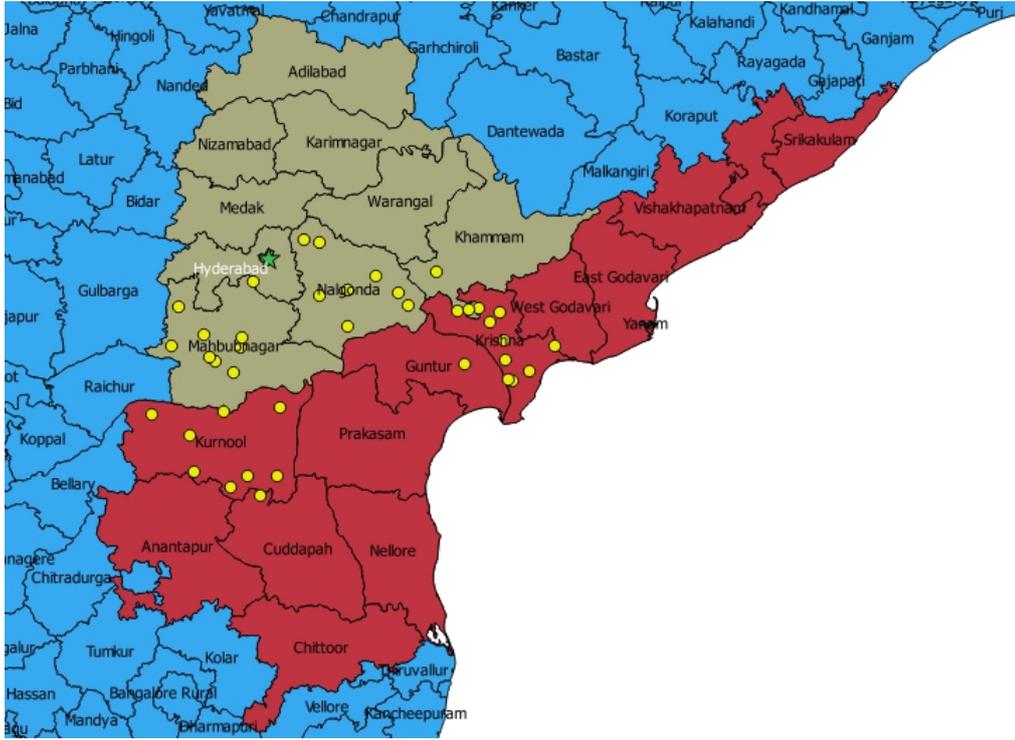
## II. RESEARCH STRATEGY AND SETTING

### (a) *Experimental Design*

Our research approach consists of conducting a lab-in-the-field experiment that measures pro-social behavior, combined with surveys on attitudes and perceptions associated with governance, the use of public programs, influential individuals in the community, and individual and household level demographic and socio-economic characteristics. The experiment and surveys were conducted in 40 villages that were randomly selected using the data from the 2001 census of India, located in Khammam, Mahbubnagar, Nalgonda, Guntur, Krishna and Kurnool districts in the states of Telangana and Andhra Pradesh (see Figure 1 for the location of the villages).<sup>5</sup> Four members of the research team visited each village the day before the session to recruit participants. The research team informed villagers of the event and distributed flyers that contained information about participation requirements including eligibility (age 18 or older, literate with basic numeracy skills), participation fee and the potential for monetary earnings, time and location of the session. Flyers were also posted at prominent village landmarks such as community centers, temples and mosques, bus stops and local tea shops. One session was conducted in each village.

We conducted two incentivized experimental games to elicit preferences towards pro-social behavior: a *trust game* and a variant of the *public goods game*. The trust game measures the degree to which individuals can trust one another and the extent of their trustworthiness. The participants were endowed with  $E = \text{Rs. } 200$  and randomly assigned the role of a Sender or a Receiver. The Sender can decide to transfer any part ( $S$ ) of this endowment to an anonymous Receiver. The amount transferred  $S \in [0, E]$  gets tripled before reaching the Receiver, who in turn is asked

**FIGURE 1**  
VILLAGE LOCATIONS IN ANDHRA PRADESH AND TELANGANA



Notes: The area in red denotes current Andhra Pradesh, that in green denotes current Telangana. Hyderabad is the capital of both Andhra Pradesh and Telangana. Yellow dots denote the villages where the experimental sessions were conducted. When the experiments were conducted, all the villages were a part of the same state of Andhra Pradesh.

to choose whether to transfer any money  $R$  out of the tripled amount  $(3S)$  back to the Sender,  $R \in [0, 3S]$ .<sup>6</sup> Theory suggests that in the one-shot version of this game that we implemented, the Receiver sends no money back, and the Sender, anticipating this, does not transfer any money in the first stage. Nonetheless, positive transfers are frequently observed in experiments both by the Receiver and the Sender. Any transfer made by the Sender in this game can be interpreted as a measure of trust, and any amount returned by the Receiver as an indicator of trustworthiness.

In the public goods game, participants were placed in groups consisting of four individuals. One member of the group is randomly chosen as the leader. Each subject is provided an endowment  $E = \text{Rs. } 200$  and has to choose an amount  $c_j \in [0, E]$  to contribute to the group account. He/she could keep the rest  $(E - c_j)$  in a private account. The earnings for each subject from this task is  $(E - c_j) + 0.5 \sum_{j=1}^4 c_j$ .

Prior to making their actual choices, the leader makes a non-binding proposal of how much to contribute to the group account. The rest of the members of the group are privately informed of this

non-binding proposal, though the identity of the leader is never revealed. The leader's non-binding suggestions are shown to increase group contributions by providing a focal point or a common signal for group members (Levy *et al.*, 2011). Given our goal of understanding whether pro-social behaviour such as cooperativeness can improve public good provision, we use the average village contribution towards the group account as a measure of cooperation.<sup>7</sup>

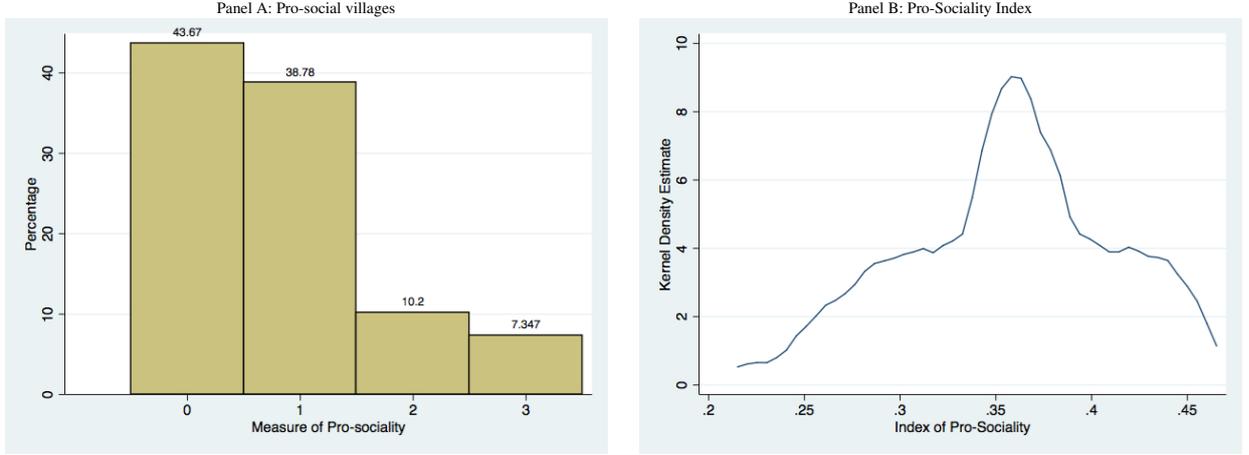
Each session had 24 participants. Once the participants were seated, the experimenter read out the instructions and administered a set of control questions in private before the experiment commenced.<sup>8</sup> The ordering of the games was fixed: all subjects participated in the trust game, then the public goods game followed by the post-experiment survey. Groups were rearranged after the trust experiment so that participants who were paired together in the trust game were never in the same group in the public goods task (they were informed of this at the start of the experimental session). There was no communication between the two games, ruling out the possibility of reputation building on the part of the participants through their actions in the trust task. No feedback was provided to the subjects in between the two games and subjects were paid on the basis of the outcomes in one of the two games, randomly determined after the post experiment survey had been conducted. The only game that subjects received any feedback for was the one for which they were paid.<sup>9</sup> The average payoff for participants was Rs. 420, or approximately two days wage for a semi-skilled laborer.<sup>10</sup> Including the post-experiment survey, each session lasted four hours on average.

The post-experiment individual survey collected information on attitudes towards governance, influence (political and otherwise) corruption, and on individual and household level demographic and socio-economic characteristics. Participants answered these questions privately after participating in the experiment but before being paid. Panel B of Table 1 presents select descriptive statistics of the survey participants. About 60% of the participants are men with more than 36% having attained some secondary schooling. The survey participants are overwhelmingly Hindu with an equal distribution of high caste, Scheduled Caste and Other Backward Caste.

### *(b) Measuring Village Pro-Sociality*

Using the data from the incentivized experiments, we create two different measures of village level pro-sociality. Our first measure combines three separate behavioural traits. First, a village

**FIGURE 2**  
**DISTRIBUTION OF VILLAGE LEVEL PRO-SOCIALITY**



Notes: Panel A presents the histogram for village level pro-sociality using the conservative measure of pro-sociality. Panel B presents the distribution of the pro-sociality index.

is categorized as a *highly trusting village* if the average level of trust (measured by the average amount sent by all trustors within the village) is greater than the 75<sup>th</sup> percentile of village level trust across the survey villages. Second, a village is categorized as a *highly trustworthy village* if the average level of trustworthiness (measured by the average amount returned by all trustees within the village) is greater than the 75<sup>th</sup> percentile of the village level trustworthiness across the survey villages. Third, a village is categorized as a *highly cooperative village* if the amount contributed to the public good is greater than the 75<sup>th</sup> percentile of average amount contributed to the group account in the public goods game across the survey villages. Combining these three measures, we define a village as *pro-social* if it is simultaneously highly trusting, highly trustworthy and highly cooperative. This is a very conservative definition of pro-sociality and, as Panel A of Figure 2 shows, only 7.3% of the villages are categorized as *pro-social* when defined in this manner.<sup>11</sup>

Following Gneezy *et al.* (2015), we create an alternative index of pro-sociality that is an accumulation of the different behavioural tasks, at the village level, defined as follows:

$$\begin{aligned} \text{Index of Pro-Sociality} = & \frac{1}{3}(\text{Village level Average Proportion Sent by Trustors}) \\ & + \frac{1}{3}(\text{Village level Average Proportion Returned by Trustees}) \\ & + \frac{1}{3}(\text{Village level Average Proportion Contributed to the Public Good}) \end{aligned}$$

The average value of this index (across the sample villages) is 0.36, and consistent with Panel A in Figure 2, Panel B of Figure 2 shows considerable variation in the extent of pro-sociality across the different villages, as captured by this index (the range of this index is 0.23–0.45).

(c) *Measuring Village Concentration of Influence*

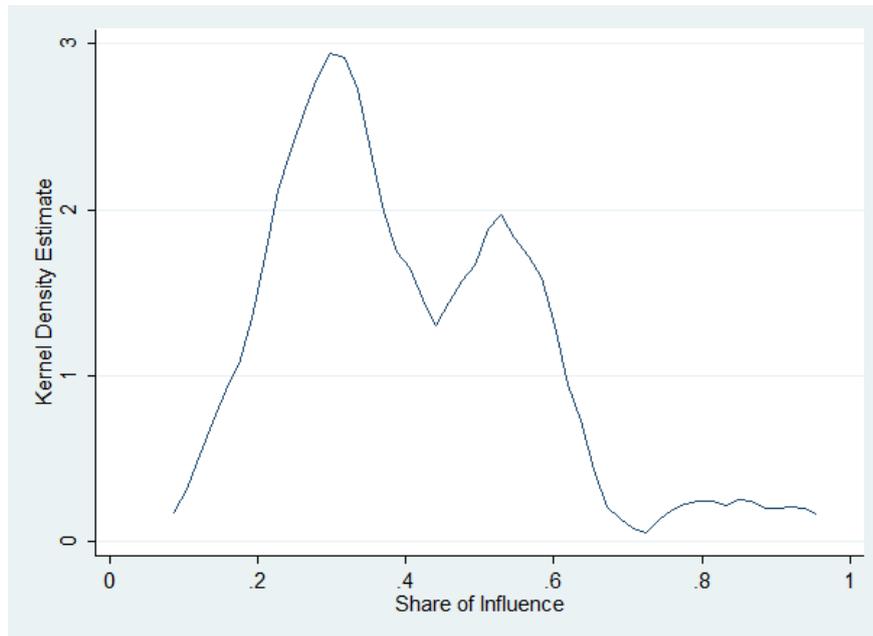
We construct four distinct measures of concentration of influence of leaders in the village using information from the survey. Every participant in our survey was asked the following question: *What is the position of the most influential person in the village?*<sup>12</sup> Using responses to this question, we construct our first measure of concentration: a Herfindahl index of influence. We hypothesize that the greater the number of influential positions within the village the lower the concentration of power within the village. We assume that each village  $v$  is a separate market made up of elites  $i$  competing for power. Let  $I_{iv}$  be the number of individuals that report that an elite of type  $i$  is the most influential person in village  $v$  and  $N(= \sum_v \sum_i I_{iv})$  is the sample size. We then define  $s_{iv} = I_{iv}/N$  as the share of influence of an elite of type  $i$  in village  $v$ . The index of concentration of influence in village  $v$  is therefore

$$(1) \quad H_v = \sum_i s_{iv}^2$$

By definition,  $H_v \in [0, 1]$  and a larger index value denotes a concentration of political influence. At the extreme i.e., when  $H_v = 1$ , every individual reports that an elite of type  $i$  is the most influential person within the village. This is the case where we have complete concentration (or monopolization) of influence within the village and we argue that in this case there is low political competition within the village. Figure 3 presents the distribution of the Herfindahl index across the villages in our sample. The mean value of the index across the sample is about 0.4 and the peak of the distribution is attained at around 0.35.

Our second measure of concentration of political influence captures the influence of the village head. Our data set has unique information on the position of influential elites within each village. Each village within India is governed by a village council or Gram Panchayat (GP). Each village council consists of a chief (village head), a deputy (assistant-village head) and councillors or ward members. Village councils do not enjoy any taxation power and about 95% of its revenue comes from state and national grants. Therefore, the council's principal task is to decide the allocation

**FIGURE 3**  
DISTRIBUTION OF HERFINDAHL INDEX ACROSS THE DIFFERENT VILLAGES



of the yearly grant across different local public programs and then supervise their implementation. While all council members play a role in deciding the final resource allocation, the village council head can exert substantial influence in decision-making. This is because the village council head leads the sub-committee of planning and finance within the council and all proposed projects must be approved by this sub-committee to be implemented. Besley *et al.* (2012) and Chattopadhyay and Duflo (2004b) provide evidence of considerable discretionary power enjoyed by the village council head.

We create a dummy variable *Village Head Monopoly* that takes the value of 1 if the current village head is considered the most influential person by at least 50% of the participants in the village. A village where the village head has a monopoly on influence can be considered to be one with higher concentration of power or influence. Using this definition, 55% of the villages in our sample can be categorized as having a village head monopoly.

One potential problem with the village head monopoly measure is that in villages where the village head does not have a monopoly influence, influence or power might be concentrated in the hands of other political elites such as an ex-politician or in the hands of informal elites. Alternatively,

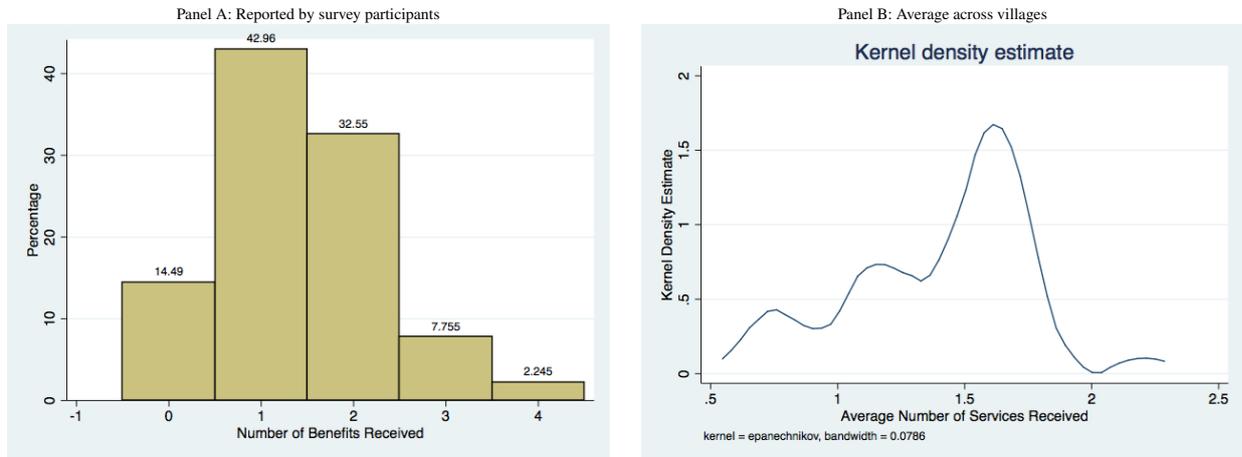
the village might not have a single position with monopoly influence. For this reason, we create a third measure: *concentration of political influence*. This measure of concentration of influence takes three values: *High, Medium, Low*. A village is categorized as having *high concentration of political influence* if at least 50% of the individuals surveyed in a village list the current village head as the most influential person within the village. A village has *medium concentration of political influence* if at least 50% of the individuals surveyed in the village list a different political elite (not including the current village head) as being the most influential person within the village. The set of other political elites include ex-village heads, members of the state legislative assemblies (state parliaments), members of the national parliament and ward members. Finally, a village has *low concentration of political influence* when no single elite is considered the most influential by 50% of the individuals surveyed within the village. 55% of villages in our sample are characterized by high concentration of political influence, 12.5% by medium concentration of political influence and 32.5% by low concentration of political influence.

Finally, influential political elites may behave differently compared to non-political or informal elites who do not hold formal positions of political office. To take into account this variation, we define a fourth measure of concentration of political influence: *political elites are more influential than informal elites*. The share of influence of political elites is the proportion of the sample within a village that report that a political elite (politician who currently holds formal positions) is the most influential person in the village. We correspondingly define the share of influence of informal elites as the proportion of the sample within a village that report that an informal elite (elites who do not hold formal positions within the village) is the most influential person within the village. Our final measure is again a binary variable, political elites more influential, which takes the value of 1 if the share of influence of political elites exceeds the share of influence of informal elites. 72.5% villages in our sample are characterized by political elites being more influential.

#### *(d) Utilization of Social Welfare Benefits*

Survey participants reported the social welfare schemes their household benefited from in the last five years. The list of schemes included Public Distribution System (PDS),<sup>13</sup> Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS),<sup>14</sup> Anganwadi program,<sup>15</sup> Rajiv Yuva Kiranulu,<sup>16</sup> Aarogyasri,<sup>17</sup> and others. Our outcome variable is a numeric variable that measures

**FIGURE 4**  
UTILIZATION OF SOCIAL WELFARE BENEFITS



Notes: Panel A presents the histogram for the number of benefits received reported by individual participants. Panel B presents the distribution of the number of services received.

the number of government schemes that a household has benefited from in the last five years. All households are eligible for these schemes, and all schemes, while operated by the state or central government, rely significantly on either local elites or within village networks to facilitate use. The average household benefits from 1.4 public schemes (out of a maximum of 6) with 4 as the maximum number any household reports benefits from. Almost 43% of households report receiving more than the median number of services. The data also reveals substantial variation in the number of benefits received by households. Panel A of Figure 4 shows about 14.5% of the survey respondents report not having received any benefits from the village council. The majority report receiving one (43%) or two (33%) services. Panel B of Figure 4 shows considerable variation across villages in terms of the average number of services utilized.

### III. RESULTS

We begin by presenting the means of selected characteristics of our sample. Panel A of Table 1 reports the villages level characteristics. The villages in our sample are quite large. On average, the villages in the sample have 949 households with more than 4 members per household. While the fraction of villages with a health center is quite low, a majority of villages have a registered private medical practitioner. Few villages in the sample have a bank, the majority of the residents of the village are workers, and literacy rates are quite low as only 30% of adult males and 22% of adult females are literate.

**TABLE 1**  
**CHARACTERISTICS OF**  
**EXPERIMENTAL VILLAGES AND**  
**SAMPLE**

<b>Panel A: Village Characteristic:</b>	
Number of households	949.6
Total population	4087.7
Fraction villages with primary health centres	0.13
Fraction villages with registered private medical practitioners	0.53
Total expenditure	185451.7
Distance to nearest town	32.95
Fraction with banking facilities	0.13
Land under irrigation	304.28
Male to female ratio	1.01
Fraction SC	0.24
Fraction ST	0.07
Fraction Male literate	0.3
Fraction Female literate	0.22
Workers in population	0.55
Population under 6 years of age	0.12
Sample Size	40
<b>Panel B: Sample Characteristics</b>	
Currently working	0.579
No Income in Last month	0.182
Male	0.605
Age in years	27.636
Household size	4.81
Religion (Hindu)	0.849
Caste (Open Category)	0.224
Caste (Scheduled Category)	0.238
Caste (OBC)	0.399
Own schooling:	
No Schooling	0.022
Primary schooling	0.172
Secondary School	0.359
Father's schooling:	
No schooling	0.55
Primary Schooling	0.222
Sample Size	960

**Notes:** Panel A Source: Village Directory (2001) and the Primary Census Abstract (2011), Census of India. Panel B Source: Post Experiment Survey.

Table 2 presents the raw (unconditional) correlations between the variables of interest. We find that on average villagers have access to a greater number of services in villages with high concentration of political influence relative to villages with low concentration of political influence. Interestingly, the extent of concentration in leader influence has an inverted u-shaped relationship with the average number of public schemes households use. In contrast, the extent of pro-sociality of the village and the average number of schemes households receive are positively related. On average, households in pro-social villages utilized 1.81 schemes, compared to 1.37 schemes in villages that are not pro-social.

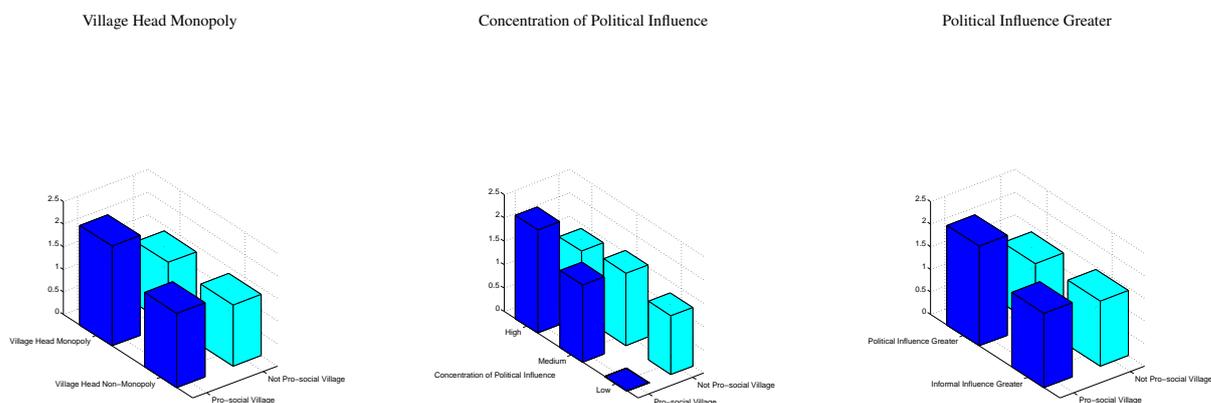
Figure 5 shows systematic complementarity between concentration of political influence and pro-sociality of the village in terms of utilization of government welfare schemes. The number of

**TABLE 2**  
**BENEFITS RECEIVED, BY POLITICAL INFLUENCE AND PRO-SOCIALITY**

Village Head Monopoly	No	Yes		Diff. (Yes-No)		
	1.39 -0.04	1.41 -0.04		0.02		
Concentration of Political Influence	High	Medium	Low	Diff. (Medium-High)	Diff. (Low-Medium)	Diff. (Low-High)
	1.44	1.58	1.25	0.142*	-0.323***	-0.181***
	-0.04	-0.07	-0.06			
Political Influence > Informal Influence	No	Yes		Diff. (Yes-No)		
	1.48 -0.06	1.38 -0.03		-0.11		
Pro-Social Village	No	Yes		Diff. (Yes-No)		
	1.37 -0.03	1.83 -0.10		0.464***		
Index of Pro-Sociality	High	Medium	Low	Diff. (Medium-High)	Diff. (Low-Medium)	Diff. (Low-High)
	1.53	1.43	1.24	-0.10	-0.191***	-0.295***
	-0.06	-0.04	-0.06			

Notes: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ . Differences calculated using t-tests.

**FIGURE 5**  
**COMPLEMENTARITY BETWEEN PRO-SOCIALITY AND POLITICAL INFLUENCE**



Notes: The cells represent the number of benefits received for each combination of political influence and pro-sociality of village.

schemes the household has utilized is systematically higher when leader influence is concentrated (irrespective of which measure is used) and the village is pro-social. We will return to this issue below.

We next examine the relationship between the three key variables (number of benefits received, concentration of political influence in the village and village pro-sociality) using a multivariate regression framework. We start with the simple regression given by:

$$(2) \quad B_{iv} = \beta_0 + \beta_1 \text{Influence}_v + \beta_2 (\text{Pro-Sociality})_v + \gamma Z_{iv} + \varepsilon_{iv}$$

Here,  $B_{iv}$  denotes the number of benefits received by citizen  $i$  in village  $v$ ;  $\text{Influence}_v$  is the measure of leader influence within the village and  $(\text{Pro-Sociality})_v$  is the measure of village level pro-sociality.  $Z_{iv}$  is a set of individual, household and village level characteristics that include age, gender, educational attainment, father's education, work status at the time of the survey, income earned in the month immediately prior to the survey, dummies for caste and religion and finally the size of the village (measured by the number of households in the village) and the proportion of scheduled caste households in the village (as a measure of overall village level fragmentation). We add district fixed effects to account for any unobserved geography or administration related effects.

Table 3 presents the corresponding regression results. In general, while an increase in the concentration of political influence (using all measures) is associated with an increase in the number of services accessed by the household, the coefficient estimates are generally not statistically significant. Conversely, an increase in pro-sociality (irrespective of measure used) is significantly associated with an increase in the number of services accessed by the household. For example, controlling for concentration of influence, columns 1–4 show that households in a pro-social villages report receiving 0.4 more services. Given that on average households in non pro-social villages report receiving 1.37 services, this corresponds to a 30% increase in benefits received. In terms of relative magnitudes, the pro-sociality effects are approximately double the effects of an increase in concentration of political influence. For example, the results in column 2 show that relative to a village where the village head has no monopoly, households in villages where the village head has a monopoly has access to 0.24 more services. In contrast, utilization of public programs is 0.44 greater in villages that are pro-social relative to those that are not. Columns 5–8 indicate

**TABLE 3**  
POLITICAL INFLUENCE, PRO-SOCIALITY AND SERVICES PROVIDED. BASELINE RESULTS

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<b>Political Influence</b>								
Herfindahl Index	0.237 (0.244)				0.213 (0.224)			
Village Head Monopoly (dummy)		0.061 (0.087)				0.037 (0.083)		
Concentration of Political Influence High (dummy)			0.196* (0.112)				0.162 (0.101)	
Concentration of Political Influence Medium (dummy)			0.236 (0.163)				0.196 (0.140)	
Political Influence > Informal Influence (dummy)				-0.022 (0.128)				-0.023 (0.108)
<b>Pro-Sociality</b>								
Pro-Social Village (dummy)	0.430*** (0.149)	0.445*** (0.140)	0.428*** (0.145)	0.433*** (0.158)				
Index of Pro-sociality					2.065*** (0.684)	2.111*** (0.713)	1.912*** (0.652)	2.100*** (0.749)
Constant	1.031*** (0.242)	1.072*** (0.231)	1.038*** (0.232)	1.123*** (0.243)	0.326 (0.349)	0.358 (0.345)	0.392 (0.343)	0.399 (0.371)
<b>Selection on Unobservables: Pro-sociality</b>								
$\delta$	4.939	7.827	5.061	5.346	1.245	1.232	1.300	1.235
$\beta$ (Lower Bound)	0.417	0.438	0.416	0.422	1.921	1.982	1.710	1.969
R <sup>2</sup>	0.101	0.100	0.107	0.099	0.102	0.101	0.106	0.101
Sample Size	960	960	960	960	960	960	960	960

**Notes:** The dependent variable is the number of services household benefited from. Regressions control for respondents' age, gender, educational attainment, father's education, work status, prior month income, caste & religion dummies, total and SC households in village and district fixed effects. Standard errors clustered at village level. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ . Value of  $\delta$  imposes  $\beta = 0$ . Oster approach is for pro-sociality variables only.

that using the pro-sociality index, as we move from non pro-social to a fully pro-social village, the average number of benefits received by the household increases by 2.

We next examine the relationship between concentration of political influence and pro-sociality. The unconditional effects have been presented in Figure 5. To do this, we estimate an extended version of equation (2), where we include the interaction term  $(Influence \times Pro\_Sociality)_v$ . The rest of the variables are defined as before. The estimated equation is as follows:

$$(3) \quad B_{iv} = \beta_0 + \beta_1 Influence_v + \beta_2 (Pro\_Sociality)_v + \beta_3 (Influence \times Pro\_Sociality)_v + \gamma Z_{iv} + \epsilon_{iv}$$

Corresponding to the two different measures of pro-sociality, Tables 4 and A.1 present the regression results. The results are largely consistent across the two measures of pro-sociality. The results presented in Table 4, which use the pro-sociality dummy, show that the effect of pro-sociality is stronger though there is evidence of complementarity, consistent with the results presented in Figure 5. For example, column 1 of Table 4 indicates that in a not pro-social village, an increase in

**TABLE 4**  
**COMPLEMENTARITY BETWEEN PRO-SOCIALITY AND CONCENTRATION OF INFLUENCE**

	(1)	(2)	(3)	(4)
Pro-Social Village (dummy)		0.270*** (0.096)	0.457*** (0.148)	0.231** (0.110)
Herfindahl Index	0.157 (0.251)			
Herfindahl Index × Pro-Social Village	0.922** (0.358)			
Village Head Monopoly (dummy)		0.034 (0.089)		
Village Head Monopoly × Pro-Social Village		0.504*** (0.102)		
Concentration of Political Influence High (dummy)			0.214 (0.130)	
Concentration of Political Influence Medium (dummy)			0.291* (0.167)	
Concentration of Political Influence High × Pro-Social Village			0.310** (0.126)	
Concentration of Political Influence Medium × Pro-Social Village			-0.434 (0.295)	
Political Influence > Informal Influence (dummy)				-0.064 (0.128)
Political Influence > Informal Influence × Pro-Social Village				0.562*** (0.105)
Constant	1.064*** (0.243)	1.072*** (0.231)	1.012*** (0.238)	1.135*** (0.245)
Additional Effect of Pro-sociality	0.922** (0.358)			
Additional Effect of Pro-sociality in High Concentration of Political Influence Village		0.774*** (0.076)	0.767*** (0.085)	
Additional Effect of Pro-sociality in Medium Concentration of Political Influence Village			0.022 (0.213)	
Additional Effect of Pro-sociality in Village where Political Influence Greater than Informal Influence				0.793*** (0.069)
Sample Size	960	960	960	960

**Notes:** The dependent variable is the number of services household benefited from. Pro-Sociality is a binary variable that takes a value of 1 if the village is Pro-social and 0 otherwise. Regressions control for respondents' age, gender, educational attainment, father's education, work status, prior month income, caste & religion dummies, total and SC households in village and district fixed effects. Standard errors clustered at village level. \*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.1$ .

the concentration of political influence (measured by the Herfindahl Index) does not have a statistically significant effect on the number of public services a household in the village can access (the coefficient estimate is positive but not statistically significant). In a pro-social village, an increase in concentration of influence has a large and statistically significant effect on the number of services. The results in columns 2–4 all imply that benefits received are higher in a pro-social village, irrespective of whether influence is concentrated or not. However, in most cases the difference in difference estimate ( $Influence \times Pro\_Sociality$ )<sub>v</sub> is positive and statistically significant implying that the effect of pro-sociality is stronger in a village where influence is concentrated.

The complementarity results are qualitatively the same, albeit quantitatively weaker in Table A.1, where we use the index measure of pro-sociality. Table A.1 indicates that irrespective of whether or not influence is concentrated, an increase in pro-sociality is associated with a significant increase in benefits received.

#### IV. ADDRESSING SELECTION BIAS

Selection bias is a potential issue in our analysis: villages that are pro-social might be systematically different from those that are not. Pro-sociality of villagers could be correlated with omitted (unobserved) variables that influence current development and social outcomes through other channels. For example, lower pro-sociality might be correlated with ethnic fractionalization, but ethnic fractionalization may also be negatively related to the overall prosperity of the village, leading to greater need for public welfare programs.

To what extent are our results driven by selection bias? To examine this issue, we follow Altonji *et al.* (2005) and Oster (2014) and compute the unobservable selection that would be required to negate the effects of pro-sociality in village governance under the assumption of proportional selection on observables and unobservables.<sup>18</sup> To understand the idea behind the bounds approach that we adopt here, consider the following regression.

$$(4) \quad y = \beta_0 + \beta \mathbf{X} + \Phi_1 + \Phi_2 + \varepsilon$$

where  $\mathbf{X}$  denotes the variable of interest (in this case the extent of political competition within the village),  $\Phi_1$  is a vector of observables and  $\Phi_2$  is a vector of unobservables. Denote  $\check{R}^2$  as the  $R^2$  from a regression of  $y$  on  $\mathbf{X}$ ;  $\tilde{R}^2$  as the  $R^2$  from a regression of  $y$  on  $\mathbf{X}$  and  $\Phi_1$ ; and  $R_{max}$  as the  $R^2$  from the hypothetical regression given by equation (4). We make the following assumptions  $Cov(\Phi_1, \Phi_2) = 0$ ;  $Cov(\Phi_1, \varepsilon) = 0$ ;  $Cov(\Phi_2, \varepsilon) = 0$ ; and  $Cov(\mathbf{X}, \varepsilon) = 0$ . We assume proportional selection so that

$$(5) \quad \delta \frac{Cov(\Phi_1, X)}{Var(\Phi_1)} = \frac{Cov(\Phi_2, X)}{Var(\Phi_2)}$$

where  $\delta$  is the degree of proportionality.  $\delta$  measures the strength of unobservable selection relative to observable selection.  $\delta = 1$  implies that the controls and the unobservables are equally important, i.e., equal selection on unobservables as observables. Oster (2014) shows that estimating the true coefficient  $\beta$  is possible by using the coefficients on  $\mathbf{X}$ , with and without controls for

observables;  $\tilde{R}$  and  $\tilde{R}$ ;  $R_{max}$  and a value of  $\delta$ . As  $\delta$  is unknown in practice, Oster (2014) suggests computing bounding values for  $\beta$ , given assumptions on  $\delta$  and  $R_{max}$ . The  $\delta$  thus computed measures the strength of unobservable selection relative to observable selection. A value of  $\delta = 1$  implies equal selection on observables and unobservables. A larger value of  $\delta$  means that selection on unobservables needs to be much stronger to obtain a zero effect of  $\mathbf{X}$ .

We can then compute bounds for  $\beta$  using the values of  $\delta \in [0, 1]$  and  $R_{max} \in [1.3\tilde{R}]$ . If the bounds on  $\beta$  exclude zero then we can argue that our results are robust to selection on unobservables. Similarly, Oster (2014) shows that estimating the value of  $\delta$  for which the true effect  $\beta = 0$  is possible assuming  $R_{max} \in [1.3\tilde{R}]$ .  $\delta = 1$  is a useful heuristic cut off as it suggests that unobservables would need to be equal to observables to nullify the effect of political competition.

Table 3 reports the coefficient of pro-social behaviour when unobservables are equal to observables ( $\beta$ ) and values of  $\delta$ 's that would negate any effect of pro-sociality on services provided. We can interpret  $\beta$  as the lower bound while the original coefficient estimate of pro-sociality as the upper bound. None of the bounds for our estimates include zero. The values of  $\delta$  for which  $\beta$  would be equal to zero are always greater than 1 suggesting that for the effects of pro-sociality on village services to be negated, the unobservables need to be much stronger than the observables. This indicates that our results are not driven by unobservables.

## V. DISCUSSION

This paper examines the relationship between pro-social behavior, and the concentration of political influence and their effect on the utilization of welfare programs. The methodology used allows for a novel approach and helps construct unique measures for both social connectedness and political influence of local leaders.

We find that the additional effect of pro-sociality is large, positive and statistically significant in villages characterized by concentration of influence, irrespective of which measure of concentration of influence is used. A potential explanation for our result is that the concentration of political influence may affect pro-social behaviour – villages controlled by a small number of people are less politically competitive which could reduce fractionalization and therefore mitigate instability within the village. A stable village with uniformity in interests implies greater experience with

reciprocal behavior within the village, facilitating the use of welfare programs. Alternatively, high levels of pro-sociality may reduce the need for competing political groups, in turn decreasing the number of influential leaders. More concentrated political leadership is more effectively able to advocate for and facilitate utilization of public programs. While we do not take a strong stand on the direction of causality, our results indicate that pro social behaviour can be welfare improving in local communities.

Our finding that pro-sociality strongly influences utilization of public programs has important lessons for policy. Most central and local governments, particularly in developing countries, are cash strapped and finding resources to monitor and improve utilization of welfare schemes by beneficiaries can be difficult. Improving social cohesion by encouraging peer mentoring and co-operation is relatively less resource intensive and could be an alternative channel for increasing the effectiveness of social welfare programs, leading to long term economic development.

## APPENDIX

**TABLE A.1**  
**COMPLEMENTARITY BETWEEN THE PRO-SOCIALITY INDEX**  
**AND CONCENTRATION OF INFLUENCE**

	(1)	(2)	(3)	(4)
Herfindahl Index	-0.128 (0.300)			
Index of Pro-sociality		2.044*** (0.703)	1.686** (0.647)	2.134*** (0.713)
Pro-sociality Medium × Herfindahl Index	0.342 (0.227)			
Pro-sociality High × Herfindahl Index	0.623** (0.306)			
Village Head Monopoly × Index of Pro-sociality		0.136 (0.229)		
High Concentration of Political Influence × Index of Pro-sociality			0.429 (0.293)	
Medium Concentration of Political Influence × Index of Pro-sociality			0.498 (0.384)	
Political Influence > Informal Influence × Index of Pro-sociality				-0.048 (0.291)
Constant	1.041*** (0.225)	0.372 (0.342)	0.464 (0.337)	0.384 (0.354)
Sample Size	960	960	960	960

**Notes:** The dependent variable is the number of services household benefited from. Pro-sociality is defined using an index. Regressions control for respondents' age, gender, educational attainment, father's education, work status, prior month income, caste & religion dummies, total and SC households in village and district fixed effects. Standard errors clustered at village level. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

## NOTES

1. See the extensive literature cited in Besley and Ghatak (2006).
2. Banerjee *et al.* (2005) and Banerjee and Somanathan (2007) discuss how the economic structure affects service provision by the government in India.
3. Pande (2003), Chattopadhyay and Duflo (2004b) and Chattopadhyay and Duflo (2004a) show that quotas for the disadvantaged minority and women in India in positions of head of the village council result in a change in the composition of the public goods that are provided by the village councils.
4. Conversely, such social cohesion might come at a price: the types of social welfare programs provided could be “second-best” for everyone. Indeed, if public services reflect the needs of a majority or dominant community, then access and use might actually increase. Empirical studies on social fragmentation and public services have shown that group heterogeneity on ethnic, linguistic or religious lines decreases public good provision (see, for example Montalvo and Reynal-Querol, 2005).
5. At the time of our field work, all six districts were a part of the same state of Andhra Pradesh.
6. We use the strategy method to obtain the decisions of the Receiver. The Receiver is asked to specify an amount to return for every possible amount chosen by the Sender. The amount that can be transferred is restricted to specific integer amounts. The Receiver hence provides conditional responses, i.e., how much to return for each of eight possible choices made by the Sender.
7. The proposed contribution by the leader is non-binding therefore standard economic theory suggests that the proposal stage should have no impact on citizens’ contribution decision.
8. The instructions were read out in Telugu. The English version of the instructions (which were translated into Telugu and then back-translated into English by a research assistant fluent in both English and Telugu) are in the Appendix.
9. Another feature of the experiment was that each participant was randomly assigned a particular status or profession, which remained unchanged through the session. The status was either Low (referred to in the experiment as a landless laborer) or High (referred to as a local politician). Each group in the public good game had an equal number of high and low status subjects. Inducing status based on common professions in the village that are perhaps at the extreme ends of the power or influence spectrum, helps measure pro-social behavior towards both kinds of villagers and, when aggregated at the village level, provides a useful average indicator of pro-sociality of the village.
10. The exchange rate was 1 USD = Rs. 55 at the time the sessions were conducted.
11. At a more disaggregated level 27% of villages are highly trusting, 27% are highly cooperative and 27% are highly trustworthy. However only 7.3% of villages satisfy all three conditions simultaneously.
12. This question was open ended, 16 categories are subsequently created and these include sarpanch (village head), up-sarpanch (deputy village head), Gram Panchayat worker (Village revenue officer), ex-village revenue officer, ward members, ex-politicians, ex-village head, agricultural worker, Mandal government member, business owner, teacher, doctor, market chairman and non-political elder.
13. PDS is the food security system established by the Government of India that distributes subsidized food and non-food items to India’s poor. Major commodities distributed include staple food grains,

such as wheat, rice, sugar and kerosene through a network of public distribution shops established in several states across the country.

14. The MGNREGS is a workfare program funded by the Government of India that aims to increase livelihood security of people in rural areas of the country by guaranteeing hundred days of wage employment each year to rural households.
15. The Anganwadi program was initiated by the Indian government in 1975 as part of the Integrated Child Development Services program to combat child hunger and malnutrition. A typical Anganwadi centre also provides basic health care, including contraceptive counselling and supply, nutrition education and supplementation, and pre-school activities.
16. The Rajiv Yuva Kiranalu is a Government of Andhra Pradesh program aimed at building job specific skills among the unemployed and placing them in appropriate private sector jobs.
17. Aarogyasri is a Government of Andhra Pradesh program which provides free health care in both government and private hospitals to households below the poverty line.
18. The discussion in this section follows Oster (2014).

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