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Social Fragmentation and Public Goods: Polarization, Inequality and Patronage in Uttar Pradesh and Bihar

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Abstract

A vast recent literature has stressed social fragmentation's negative impact on the provision of public goods. It has been established theoretically that social fragmentation engenders discord and thereby undermines public goods provision. Empirical research has produced mixed results about this relationship. On the one hand it rarely holds for all the goods and on another hand it appears attenuated at the micro-level. Three points ought to be considered. First, the negative role attributed to social fragmentation rests upon the actuality of a relationship between social antagonisms and ethnic diversity. Yet, such an actuality is to be proved. Second, should such a relationship exist, polarization indices would be more appropriate than the traditional fractionalization index used so far in the literature. Third, theoretical works have set aside the possibility of ethnic patronage in accessing public goods. Nevertheless, it is a central issue as patronage is common in developing countries. In this event, a positive relationship could be found between social fragmentation and the presence of public goods. This article aims at showing that such a positive relationship does exist, at least in parts of India, as a consequence of caste patronage. It also shows that polarization is irrelevant as social antagonisms do not seem to be an obstacle to the provision of public goods.

Keywords:	Political Economy; Patronage; Public Goods; Collective Action; Inequality; Olson; Caste; India.
JEL	H4; O1; O2

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1 Introduction

Public goods availability has become a central issue foe economic development and is a key concern of many developing societies. For instance, as Banerjee et al. (2007) recall "The National Election Survey in India, carried out by the Center for the study of Developing Societies in 1996, asks 10,000 voters an open-ended question: "What are the three main problems people like you face today?" Poverty was the most popular response [...] but public goods came in a close second. Nearly a fifth of all respondents listed problems associated with different types of public amenities as their main problem". The hitch is that developing societies that sorely feel the absence of public goods are also often highly socially fragmented.

It has been established for some time, both theoretically and empirically, that social fragmentation undermines public goods provision by hampering collective action. This negative impact may come in three ways. First heterogenous societies often exhibit strong differences in preferences regarding public goods characteristics and therefore encounter difficulties in voicing their claims to limited public resources. Second, individuals may be reluctant to work with other groups' members. The impact of group heterogeneity on group participation has been analyzed by Alesina and Ferrara (2000). The third issue arises from the fact that different groups may disagree on the sharing of the private benefits or on the allocation of their effort, due to potential free riding. Moreover, they fail to implement cooperation enforcement devices across groups. Banerjee et al. (2007) provide a theoretical framework for this issue and discuss how community characteristics such as the presence of an influential group, group size, cohesion and the distribution of benefits influence free riding [1]. According to their analysis, group inequality has ambiguous effects and can increase or decrease collective effort depending on the shape of the effort cost function. However, Bardhan et al. (2007) take a more clear-cut stand by showing that in some situations, inequality between groups increases efficiency in solving collective action problems.

This echoes the positive role that Olson (1965) attributed to inequality in collective action. In Olson's argument, should most of the benefits accrue to a small number of group members, they may be willing to bear the full cost of providing public goods. As inequality is often associated with social fragmentation, this argument points toward a positive role played by fragmentation on the provision of public

[1] The presence of devices aiming at promoting group cooperation is not taken into account here. As Banerjee et al. (2007) put it "some of these devices have been shown to be empirically important in mitigating free rider problems in public goods settings and our main reason for staying clear of them here is that strong enough coordination mechanisms can make almost any group outcome implementable. We believe a micro-founded theory of such coordination is required to make this approach interesting and sharpen its predictive power, and we are not aware of any such theory".

goods, through increased inequality and provided that public goods benefits are privatized. This point has been made by Alesina and Ferrara (2005). As they rightly point out "while pure public goods may be lower in more fragmented communities, the amount of publicly provided "private" goods - especially those that can be targeted to specific groups- may be larger. We can then have a positive correlation between fragmentation and ethnically based patronage". Patronage is common in developing countries. For instance, in India, on which this paper focuses, caste patronage is well evidenced in economic life (see for instance Srinivas (1955); Platteau (1995)) as well as in Indian politics (Chandra (2004)).

Empirically, fractionalization's negative impact on the level of public goods has first been brought out by Alesina et al. (1999). Focussing on US county, metro and city data, they found that more fragmented cities spend proportionally less on schooling, roads, and trash pickups but more on health and police. Interestingly, it may be argued that the last two goods are not independent from income in the United States, thereby suggesting that public goods may benefit from fractionalization provided that individual income comes in the equation.

As Banerjee and Somanathan (2001) point out, the authors use data for public goods that are contemporaneous to the fractionalization data, and given the high mobility environment of US cities, the analysis may be flawed with reverse causality due to a sorting effect analyzed by Tiebout (1956). Following their seminal work, other authors have tried to firmly establish the link between fractionalization and collective action or public goods. Miguel and Gugerty (2005) also found a negative relationship between ethnic fractionalization and school funding and infrastructure in Kenya. One caveat to their work is that it may not be immune from Tiebout's sorting as well, although the authors use different specifications to address this issue. Banerjee and Somanathan (2001) have tried to tackle the issue of reverse causality by using caste fragmentation data from the 1931 census to explain the provision of public goods in the 1970s and the 1980s, which makes sense given the low level of mobility in rural India. Regressing the proportion of villages in districts having access to a particular good, they found fractionalization had a negative impact on nearly half of the selected public goods, while it had a positive significant effect for 10% of them. Interestingly, the authors admit that the fragmentation measure may be a proxy for inequality and that the relatively rich can be effective in getting goods to their village. In a similar analysis, Banerjee et al. (2005) found that caste fragmentation has a significant negative impact on 10 out of 26 public goods and a positive significant impact on 3, thus providing more mixed results about the relationship. Moreover, Somanathan et al. (2006) found that caste heterogeneity had no impact on collective action regarding the preservation of a common forest in the Indian Himalayas. The detrimental role of social fragmentation in the provision of public goods is not definite, as evidenced by this short literature review.

Most of the empirical work has, so far, been conducted on a rather aggregate level and has primarily been concerned with the level of public goods. Micro data may bring out a different story. Indeed, little has been said on how these public resources and their usage are allocated across villages and even less across households. If fragmentation is a proxy for the presence of wealthy individuals who enjoy the political leverage to bring the needed goods to their villages, and who reap sufficient benefits from them to disregard free riding costs, fragmentation may prove beneficial to the provision of public goods. Similarly, the presence of caste patronage may prompt a positive relationship between social fragmentation and the presence of public goods. Informative micro analyses are those of Dayton-Johnson (2000), Bardhan (2000) and Khwaja (2009)and Anderson (2007). Their results, however, should be handled with care due to data scarcity. Looking at 48 irrigation systems and maintenance indicators in Mexico, Dayton-Johnson (2000) found that social heterogeneity has both a direct negative effect by lowering cooperative effort and a positive indirect one by making a group less likely to select the poorly performing allocation rule, so that its indirect effect on cooperation is positive. Economic inequality is found to lower cooperative effort, although its impact is U-shaped. Besides, economic inequality has an indirect effect on cooperation via its effect on the choice of the distributive rule. Bardhan (2000) found similar results looking at 48 irrigation systems maintenance in South India villages. The social homogeneity variable is hardly found significant, while inequality is found to have a significant U-shaped impact although it is twofold. On the one hand, inequality's direct effect is negative, while on the other hand, the indirect effect, working through the cost sharing rule is positive. Another interesting point, is that better off farmers tend to violate water allocations rules crafted by others and respect those defined by the elite. This suggests that the latter holds public resources access in a strong grip. For instance, Anderson (2007) showed how higher castes control the access to irrigation systems and are unwilling to sell water to lower castes. Khwaja (2009) also found a U-shaped effect of land inequality on projects maintenance in rural communities in Pakistan, although fragmentation's negative coefficient remained significant.

Micro data analysis do not help drawing a clearer picture of fragmentation's detrimental role to the provision of public goods, although they stressed the close link that it has with inequality and the distributive rule. They clearly emphasize that high levels of inequality do raise the likelihood of successful collective action through the definition of the allocation rule, which is often designed by better off individuals. One of the reasons may be found in Olson's argument, as discussed above. These analysis show how wealthy individuals have sufficiently high stakes in public goods to bear a large part of their provision costs and how they restrict their access to their peers.

This article aims at testing at a micro level the theoretical prediction according to which fragmentation may have a positive impact on the provision of public goods as castes elite would accommodate their caste members with access to the goods. Such a result would have strong implications in developing economies since universal access to public goods is key to development. It would emphasize the fact that one should not only look at the presence of public goods but also at the use that is made of them. The analysis is run using data collected in the Indian states of Uttar Pradesh and Bihar aggregated at village, hamlet and household levels. Section 2 presents the data, section 3 sets out the empirical strategy, while results are discussed in section 4. Section 5 concludes.

2 Data

The analysis is based on data collected in 1997-1998 by the World Bank in a Survey of Living Conditions in the Indian states of Uttar Pradesh and Bihar. The data cover 2,250 households spread across 342 neighborhoods or "tolas" in 120 villages in 25 districts. These two states form most of what has been referred to as India's poverty belt and caste relationships in this region are known to be confrontational, to put it mildly. For instance, in 1998 more than one fourth of hate crimes committed against scheduled castes in India were perpetrated in these 2 states alone[2]. In this section, we discuss the choice of the variables that are used in the empirical analysis as well as basic data.

2.1 Communities

Indian society has long been divided along two lines: caste and religion. Caste has long been and remains a rich field of investigation for anthropologists and sociologists, since it is a rare example of institutionalized hierarchical social fragmentation that has been ruling Indian everyday life for more than 3,000 years. Stringent caste specific rules govern, not to say limit, groups interactions. Restrictions are particularly strong in the field of marriage and commensality, but are not confined to these domains. Caste also includes a hierarchical feature that assigns every individual its place in the social ladder and thus impacts potential inter-group cooperation. Since the 1949 Indian constitution outlawed caste based discrimination and untouchability, a reservation policy has been set up for lower castes, thereby increasing inter-castes tensions as anti-reservation protests have shown. The number of castes, or "jatis" are estimated at 4,700, although due to the reservation policy, the Census of India groups them into 4 broad categories: the higher segment of society or forward castes (26% of the population), backward castes (52%), and outcasts such as dalits, labeled scheduled castes ("SC" 16% of the population) and

[2]source: India Ministry of Home Affairs, National Crime Records Bureau

tribes labeled scheduled tribes ("ST" 7%). The two last categories represent the weaker segment of society. A similar classification is used in our data where castes have been coded as "UP", "MID", backward agricultural caste ("BAC"), other backward agricultural castes ("OBC"), and scheduled castes ("SC"). In our sample, these groups account respectively for 15%, 3%, 30%, 22% and 31% of the Hindu population. It is worth noticing that this classification probably underestimates actual fragmentation. Indeed, it encompasses very different situations as Brahmins' prestige may be very different from another less well regarded caste, although both are labeled "forward caste".

While caste is clear-cut and a well established institution among Hindus, it is also a reality among other religious groups, although not in the same plain way. Muslims and Christians seem to have inherited from their Hindu ancestors' castes. In our sample, muslims are classified into upper castes (37.4% of the muslim population) and lower castes (62.6%). Two features of the caste system are of particular interest to our study, since they help at brushing aside the reverse causality issue associated with the fractionalization measure:

- caste membership is determined by birth and individual upward social mobility is ruled out
- social mobility of a caste as a group is fairly limited and may only occur over generations

Another social fragmentation factor is religion. India is reputed for its baffling religious diversity. Hindus represents 80.5% of the population. Muslims come as the second largest community with 138M members (13.4%) followed by Christians (2.3%) and Sikhs (1.9%). In the states of Uttar Pradesh and Bihar on which our analysis focuses, Hindus account for respectively 80.6% and 83.2% of the population while the rest of the population is muslim. In our sample, 90% of the households are Hindus and 10% muslims. Religion is an important factor of social division in India and is becoming increasingly so, as the riots that took place in the state of Gujarat in 2002 and its thousands of deaths have testified.

2.2 fractionalization and polarization measures

Social fragmentation has long been approached through the fractionalization index calculated as follows:

$$Frac = 1 - \sum_{1}^{n} {\pi_i}^2$$

where π_i is the population's share of the i^{th} group or caste, assuming that the population is split into n groups. The use of this index to test the relationship between social fragmentation and the provision of public goods rests upon the idea that social diversity induces a lack of cooperation or antagonisms which, in turn, hamper the provision of public goods through mechanisms exposed in the first section. Yet, the relationship between social diversity and conflict has not been firmly established. As Esteban and Ray (2008) summarize "By and large, it is fair to say that most of the literature fails to find any significant evidence of ethnic fractionalization as a determinant of conflict". According to Montalvo and Reynal-Querol (2005) the lack of explanatory power of ethnic heterogeneity on the incidence of conflict can be attributed to the inadequacy of the fractionalization index to capture social antagonisms. Indeed, the fractionalization index is largely influenced by the number of groups identified as it measures the probability that two randomly chosen individuals belong to the same ethnic group. It is a measure of diversity that does poorly at reflecting potential antagonisms. A richer framework would be the one designed by Esteban and Ray (1994) where the concept of polarization is defined as the sum of interpersonal antagonisms that can arise from

- a sense of group identification: individuals feel more closely tied to their groups when they are relatively large. This is captured by the parameter $\alpha \in [0; 1.6]$ As such, polarization puts the emphasis on the population frequency in each group.
- a sense of alienation with respect to other groups materialized by intergroup distances, noted b_{ij}.

The polarization index as defined in Esteban and Ray (1994) could be written as follows:

$$P_{ER} = P(\alpha, b) = K \sum_{1}^{n} \sum_{j \neq i} \pi_i^{1+\alpha} \pi_j b_{ij}$$

where π_i is the population's share of the i^{th} group and $K > 0$. The index depends on parameter K which is used for population normalization. Please note that for α=0, P_{ER} is extremely close to an intergroup Gini coefficient[3]. The larger α the further away the polarization measure moves from the Gini coefficient.

P_{ER} was initially designed as a measure of wealth or income polarization. As such it is difficult to implement since the indicator strongly depends on the identification and the selection of economic groups which may be arbitrary and by all means far from obvious. For computational simplicity, Montalvo and Reynal-Querol (2002) have derived a special class of polarization index where $b_{ij} = b_i = 1$. Polarization indices as defined in Montalvo and Reynal-Querol (2002) could thus be written

$$P_{RQ} = P(\alpha, 1) = \sum_{1}^{n} \pi_i^{1+\alpha} \pi_j$$

Please note that for $\alpha = 0$, $P_{RQ} = Frac$ and the larger α the weaker the correlation between the fractonalization index and the polarization measures. The correlation may even turn negative for large values of α. The parameter α may be understood as the polarization sensitivity.

[3]The difference between the two indices stems from the K parameter

Although the convenience of such an index is not to be proved, one reservation has to be expressed: it totally irons out the fact that intergroup relationships are strongly influenced by inequality in economic outcomes. We would argue, although this is not the subject at hand, that caste identity, albeit defined by birth, is highly dependent upon caste relative wealth. Since wealth is highly correlated with caste membership we would propose in accordance with Esteban and Ray (1994) the following polarization index

$$P^* = \sum_{1}^{n} \sum_{j \neq i} \pi_i^{1+\alpha} \pi_j |y_i - y_j|$$

where y_i is the mean wealth of the i^{th} caste divided by the population's mean wealth[4].

In order to test the relationship between social fractionalization and the presence of public goods, P_{RQ} and P^* will be alternatively introduced as explanatory variables for three values of $\alpha = [0; 0.8; 1.6]$. It should be kept in mind that the larger α the more emphasis is put on potential antagonisms. The impact of the polarization index would be expected to increase with α. Besides, should the impact of P_{RQ} differ from P^*, conclusions may be drawn about the importance of intergroup inequality.

Please note that our sample is highly fractionalized since our fractionalization index ranges from 0 to 0.8 with a mean of 0.61 and a standard deviation of 0.16. As a comparison, the index value reported by Alesina et al. (1999) in the US ranges from 0.02 to 0.61 with a mean of 0.26 and a standard deviation of 0.14 [5].

2.3 Selected Public Goods

Social fragmentation impacts the level of public goods provision since it hinders collective action. However, the canal through which the lack of collective action negatively impacts access to public goods has never been made quite clear. On the one hand, the absence of collective action prevents from making a clear case for goods provision to authorities via the political route. On the other hand, it also hinders populations from pooling resources to have the goods built by communities. One of the reasons why the route has never been designed very explicitly is that researchers have tended to test all kinds of goods without clearly distinguishing between those that require a political decision and hence a clear petition from all communities and those that can be produced locally. For instance, in India, a village wishing to connect to the electrical network needs to voice its demand at the district level and require approval from officials. On the other hand, paving a road to gain access to a village is of municipal competence. Goods

[4]Table 7 displayed in the annexes set out the correlation matrix across the polarization measures

[5]The index based on the 1971 Census of India reported by Banerjee and Somanathan (2007) at a district level ranges from 0.2 to nearly 1 and has a mean of 0.9

to be tested in our analysis belong to the two categories. We have tested for the presence of primary and middle schools as well as that of electricity, phone connection and of an anganwadi center (i.e. child development center). We have also included facilities that may be produced locally such as the presence of a waste disposal system which in our case takes the form of an open drain, as well as the presence of paved roads leading to the village and of a bus station. Should the impact of fractionalization differ in these two categories we may be able to draw conclusions on the canal through which a lack of collective action generates a lower level of public goods.

The government autonomy in implementing public goods should not be overlooked. This is what Banerjee et al. (2007) called the top down approach. For instance, the Indian state has made an important commitment to public goods provision. As Banerjee et al. (2007) remind "in 1968, the ruling Congress Party brought out the National Policy on Education, which made a commitment to universal primary education. The Minimum Needs Program of 1974-75 set down explicit norms about access to public goods in rural areas [...] Indira Gandhi made the removal of poverty (Garibi Hatao) the cornerstone of her successful election campaign in 1971". Since these campaigns had been on for more than 20 years up to 1997-98 when the data were collected, governments had time to make those goods available across the country, irrespective of village characteristics. This may be especially true of education, as the spread of educational facilities has long been a priority of many governments. Indeed in our sample, 94 out of the 120 villages had primary public schools. In villages without a public primary school, more than half households have access to it within less than 1km. However, as discussed earlier the production of some other public goods relies much more heavily on local initiative, especially so since the 1992 act that empowered local governments. To sum up, public goods may be classified along two lines: (a) those whose production brings third parties into play versus those whose production rests solely on local initiative and (b) those that have long been the target of poverty removal programs.

2.4 Wealth inequality

There are three reasons to control for economic inequality. First, fractionalization may be a proxy for inequality as the two are often correlated. Second, as the discussion on the polarization measures has brought to light, inequality may sharpen social divides and amplify existing antagonisms. This effect should be captured by the P^* index.

Third, wealth inequality may play a positive role of its own on the provision of public goods in two ways. First, wealthy individuals tend to have enough political leverage to bring public goods to their village. They may be the ones benefiting most from public goods and therefore they may be willing to undertake the cost of being free ridden. This is the Olson effect. For instance Foster and Rosenzweig

(1995) have found that the wealthier farmers are sooner ready to adopt high yielding varieties and thus create a knowledge about this new agricultural technology. The other farmers have freely benefited from this knowledge and have started adopting these varieties as well. Khwaja (2009) found a U-shaped relationship between wealth inequality and the maintenance of public goods by examining village level data in Pakistan. According to his findings, a small increase in inequality leads to lower levels of maintenance while stark inequality is often associated with better maintenance. Second, inequality within caste may be associated with caste patronage as the rich are in charge of making the publicly provided goods available to their communities members. In this event, we would expect fractionalization to have a positive impact on the provision of public goods and access to the latter to be somewhat restricted to specific dominant groups.

Wealth concentration is quite significant in our sample. On average, the largest landowner owns 31% of the village's lands, ranging from 0.14% to 0.92% with a standard deviation of 0.15. In villages where land is most equally distributed land value ranges from 0.4MRs to 0.9MRs, while in villages exhibiting the most unequal distribution, it ranges from 5,800Rs to 14MRs. The individual Gini coefficient ranges from 0.3 to 0.88 with a mean of 0.54 and a standard deviation of 0.11. Please note that the largest land owners are the upper castes in 45% villages of the sample, backward agricultural castes in 31%, muslims in 13%, Other backward castes in 8%, scheduled castes and tribes in 3%.

Drawing on both Olson's argument and on the possible occurrence of patronage, we are in a position to say that fractionalization may have a positive impact on the provision of public goods as the fractionalization index is (a) dependent on the number of groups that may engage in patronage activities (b)often associated with greater inequality and hence the presence of wealthy individuals who are willing to undertake the cost of bringing a public good to their villages . These are the two routes we propose to examine in our empirical strategy.

3 Empirical Strategy

Our analysis comes in three steps. First, we want to establish the relationship between the fractionalization/polarization indices and the presence of public goods such as schools, electricity, telephone, etc. A probit model is used for each public good and is detailed in the next paragraph. Secondly, we want to investigate whether this relationship is linked to the impact of wealth inequality on the provision of public goods. Although the P^* measure of polarization will provide some hints, we will include four different measures of wealth inequality that are detailed in a subsequent section. These estimations are referred to as the fractionalization / polarization model. Finally, in order to establish that the positive relationship is due to patronage we use a probit model to assess wether caste membership has any influence on households' access to the public good, and whether this influence depends on which caste is dominant in the village. These estimations are referred to as the patronage model. All the models are detailed in the following sections.

3.1 Specifications of the fractionalization model

The model is a probit regression and is specified in a rather standard form. The likelihood of village i to have the public good j is:

$$Pr(Y_{i,j} = 1) = F(\alpha P_i + \beta \pi_i + \gamma \sigma_i) \tag{1}$$

where F is the standard normal c.d.f. and P_i are the various polarization measures as per 2.2.for the different values of $\alpha = [0; 0.8; 1.6]$. Please recall that P_{RQ} comes down to the standard fractionalization index for $\alpha = 0$. π_i is a set of village population characteristics such as average income, the number and average size of households and the percentage of households whose primary source of living is their own farm. The first three population characteristics are expected to have a positive impact as public goods providers, such as utilities companies for instance, are more willing to service an area packed with potential solvent users. However, one may argue that larger groups encounter greater difficulties in coordinating collective action. Our intuition is that the positive population size effect will outweigh a potential negative one, as the impact of group size on collective action has not been evidenced or made plain and clear. We have also included a variable that represents the percentage of households whose primary source of livelihood is their own farm, to proxy urbanization level of the village. We expect this variable to have a negative impact on the provision of public goods. Finally, σ_i represents the number of third parties interventions such as government or NGO programs in the village. This variable is included in order to account for the institutions' autonomy in deciding to provide public goods as discussed in the selected public goods section. Please note that neither the number of programs nor the average or total money allocated are significantly correlated with fractionalization. In order to make the interpretation easier, the list of the variables used is provided in appendix as well as their summary statistics.

3.2 Measures of wealth inequality

As already mentioned, wealth inequality should be controlled for as (a) we need to ensure that economic inequality is not the relevant variable that fractionalization and / or polarization would proxy and (b) we want to determine if inequality plays a specific role and which form of inequality is the most relevant. To do so, three indicators of inequality will be included in (1) depending on the polarization measure considered. As discussed, intergroup inequality is already accounted for in the polarization indices P^* but not within group inequality. P_{RQ} does not account for any kind of inequality. This last measure will have to be introduced together with a Theil ratio and its decomposition, calculated following Deshpande (2000). Assume individuals are grouped into n mutually exclusive groups, $g_1, ..., g_n$, each with m_j individuals. Define y_j and π_j as group's j average wealth based on land value and population's share respectively and $\overline{y}$ as the population's average wealth. Let's write $R_j = \frac{y_j}{\overline{y}}$. Then between group inequality can be expressed as:

$$bgi = \sum_{j=1}^{n} \pi_j R_j \log R_j$$

and within group inequality as

$$wgi = \sum_{j=1}^{n} \pi j R_j T_j$$

with for every individual i belonging to group g_j i.e. $i \in g_j$

$$T_j \equiv \frac{1}{m_j} \sum_{i \in g_j} r_i \log r_i$$

where r_i is the ratio of individual wealth to mean wealth for group j. Overall inequality can then be written

$$Theil = bgi + wgi$$

This decomposition of the overall inequality into between group and within group inequality will prove very useful as it will allow us to control solely for intragroup inequality when the polarization measure does already include information about the intergroup wealth distribution as it is the case with P^*. We would also be in a position to identify not only whether inequality plays a significant role of its own but also which form of inequality prevails.

In the event of patronage, we would expect inequality within caste to play a positive role on the public goods provision, while inter-caste inequality would not be significant. Indeed, rich caste members would act as patron by endowing their poorer communities members with access to the public goods as caste solidarity would command as well as in exchange for social prestige. A lower level of intragroup inequality would limit the scope for patronage activity.

The third and last inequality measure to be introduced in (1) is denoted $rich$ and is calculated as the largest land value owned by the wealthiest household in the village divided by the average land values owned by the other households. Formally, for N households each owning a value y_i of land:

$$rich = \max_{i \in N}[y_i] \times \frac{N-1}{\sum_{i=1}^{N} y_i - \max_{i \in N}[y_i]}$$

This variable captures the upper hand of the distribution that is the presence of very wealthy individuals and is therefore useful to detect the Olson's effect contrary to the Theil index that reflects the overall distribution. In order to control for the rest of the distribution the $rich$ variable is included in (1) together with a Theil ration calculated over the distribution excluding the wealthiest individuals.

3.3 Specifications of the patronage model

We now turn to investigating the presence of patronage. We want to examine whether caste membership has an impact on having access to a specific public good provided the good is available in the village and whether this impact depends on what caste is dominant. For instance, we will assess whether a BAC household has significantly more access to the goods if it lives in a village where the BAC caste is the largest land owner. Let's note the main variables as follows

- $P(Y_{h,j})$ the likelihood for household h to have access to good j.
- L_h is the value of the land owned by household h
- C_h is a vector of dummies accounting for the household's caste membership
- D_i is a vector of dummies for the dominant caste c in village i where household h lives. A dominant caste is the caste that owns the largest share of land within the village.
- X_{hk} represent a vector of observations for household h on k variables such as literacy and age of the household's head and size of the household h.

The equation to be estimated is therefore

$$Pr(Y_{h,j} = 1) = F(\beta_k X_{h;k} + \alpha_1 L_h + \delta_c D_{i;c} + \gamma_1 C_h + \gamma_2 (C_h \times D_{i;c}) \quad (2)$$

$$+\alpha_2 (L_h \times D_{i;c}) + \alpha_3 (L_h \times C_h) + \alpha_4 (L_h \times C_h \times D_{i;c}))$$

where F is a standard normal c.d.f. In a first step the distance to the public good coded as a dummy equals to 1 if the household lives less than 500m away from the good will be the dependent variable. In a second step household's access will be the dependent variable. $P(Y_{h,j})$ will be the likelihood for household h for instance to have electricity available at home when the village is electrified, or to send children to schools when children of schooling age are present or to have toilets when a waste disposal system is available in the village.

By comparing coefficients γ_1 and γ_2 we could see whether being of the same caste as the dominant one does raise the likelihood of having access to the public good. Such an event would plead for patronage.

However, there could be a more indirect way to favor members of its own caste. Suppose that being wealthy has a positive significant impact on affording domestic electricity except when the household is of the same caste as the dominant one. This would be an indirect form of patronage. By comparing coefficients α_1, α_2 and α_3 we should be in a position to see whether the impact of wealth on having access to the good depends on the dominant caste and/or on the household's caste. By weighing these coefficients against α_4 we should see if wealth has a different impact depending on whether the household belongs to the same caste as the dominant one. Should such a scenario occurs, we would conclude as well to patronage.

3.4 Identification issues

3.4.1 Reverse causality

Many empirical works on the impact of fractionalization on the provision of public goods have been disturbed by a reverse causality issue evidenced by Tiebout (1956). First, let's recall that one of the premises for the negative impact of fractionalization on collective action is preferences' heterogeneity. According to Tiebout's model, individuals sort themselves to neighborhoods that provide them with the mostly desired public goods thereby homogenizing the neighborhoods. For instance, the poor may converge to areas that provide services valued by the poor. Together with Miguel and Gugerty (2005) and Banerjee and Somanathan (2007) we believe that this issue is not so manifest in developing countries. Indeed, Tiebout's model rests on the assumptions of perfect mobility and information, which are seldom found in developing countries. Unfortunately our data do not provide direct information on migrations. However, as Rosenzweig and Stark (1987) have shown, migrations in India are dominated by women for the purpose of marriage and their mobility helps in mitigating households' income risks and in smoothing consumption. The 2001 Census of India indicates that in the states of Uttar Pradesh and Bihar, 81% and 89% of migrants are women out of which 82% and 87% migrate for marriage purposes, thereby confirming that Tiebout's sorting may not play a significant role, at least in this part of India. Besides, as noted earlier, caste membership comes by birth and individual mobility is ruled out while collective mobility may only occur over generations.

3.4.2 Substitution

Banerjee and Somanathan (2001) and Banerjee and Somanathan (2007) brought out the issue of substitution across public goods. "Neglected populations may not get less of every public good - they may simply be given less valuable goods. Villages without access to a hospital may receive some type of less elaborated health facility for reasons of equity or as part of a political mechanism aimed at pacifying them". Two reasons lead to believe that substitution is not much of an issue in the analysis: (a) we use the presence of a particular public good in villages rather than budget shares and (b) selected public goods do not provide the same kind of services. It would make little sense to assume which public good is superior to the other, or if electricity should be preferred to schools. Banerjee and Somanathan (2001) have tried to address this issue by exploiting the fact that scheduled tribes are weak political groups and as such are unlikely to get the much coveted goods. Therefore, the goods for which the scheduled tribe coefficient is significantly positive may be assumed to be the less coveted goods. Unfortunately, we are not able to resort to this method as scheduled tribes are absent from the sample and scheduled castes can not play this role as they are increasingly becoming politically strong.

3.4.3 Omitted variables

It is very likely that different groups will want different goods. Brahmins for example may be very keen on having schools due to their traditional role as knowledge depositories, while traders will be more attached to roads. In this case, the heterogeneity measure would pick up the changes in the population's shares of the different groups. To control for this effect, we include the share of scheduled castes in equation (1) as a robustness check, although we are forced to recognize that this is quite a rough measure. We also include as a robustness check a variable that captures the fact that either the upper or the bac castes own the largest share of land and are therefore "dominant". Possible other omitted variables include topography measures, for it is much harder to build paved roads in a mountainous environment. Unfortunately, such data are unavailable and the number of village points (120) prevents us from including district fixed effects. However, as a robustness check a state dummy has been included in the estimation of equation (1). [6]. However, urbanization is proxied by the percentage of households whose primary source of income is their own farm.

[6]All these robustness checks are presented in tables 8, 9 and 10 in the appendix

4 Results

4.1 The Fractionalization / Polarization Model

Results from estimating equation (1) with the fractionalization index are presented in the table 1 of the appendix[7]. Fractionalization's coefficients are all positive except for the presence of public primary school, even though they are not significant for the presence of bus station, electricity and middle schools. As it will be shown later access to public primary schools is rather universal and relatively exempt from patronage since neither the household's wealth nor caste does influence access to public primary school. Besides, 20 years of poverty removal and education programs have made public primary schools widely accessible. On the other hand, as far as the other goods are concerned, some sort of patronage activities seem to be taking place. We would argue that this is the reason why coefficients for all the goods but public primary schools are positive.

Please note that the number of sponsored programs does significantly impact the presence of telephone, electricity and middle school, while the fractionalization index exhibit non significant coefficients for these last two goods. This suggests that social fragmentation may have no impact due to the fact that electricity and middle schools are targeted goods of poverty removal programs. Please note that neither the addition of the percentage of scheduled castes in the village nor the inclusion of the dominant caste variable has changed the results as table 8 and 9 show. Similarly, the inclusion of a state fixed effect has only slightly modified the coefficient for public primary school. Its p-value moved from 7.6% to 10.7%. The results obtained from estimating equation (1) are relatively robust to these changes.

The positive sign associated to the fractionalization coefficients is rather unexpected as theoretical as well as previous empirical works have evidenced a negative sign. Supposedly, fractionalization induces antagonisms that prevent communities to reach an agreement. If such a mechanism is at work, the stronger the polarization's degree the larger its negative impact on the provision of public goods. Table 2 exhibits the coefficients obtained by estimating equation (1) and by replacing the fractionalization's index by the two types of polarization defined above by P_{RQ} and P^*. Looking at the polarization index when intergroup inequality is not taken into account that is for P_{RQ}, two points should be made. First, as the index moves away from the fractionalization index towards a polarization measure,the coefficients lose significance, although they remain positive for an intermediate level of α. Second, for high levels of polarization coefficients become negative for 4 goods. Hence, the larger the emphasis is put on potential

[7]In order to save space and to make interpreting the results less cumbersome, control variables will not be set out in the other tables. Full tables are available upon request

antagonisms, the less significant is this measure. This points towards the idea that intergroup potential antagonisms play a very little role if any.

Coefficients related to P^* for $\alpha = 0$ suggest that intergroup inequality plays no significant role in the provision of public goods except for anganwadi centers. For very high levels of group identification, (i.e. for α large and stark polarization), polarization's coefficients exhibit a negative sign, although it is only significant for the presence of a waste disposal system. We would argue that P^* more accurately reflects potential antagonisms and the negative signs associated with the index coefficients are in line with theoretical predictions although evidence suggest that potential antagonisms are not significantly part of the story, nor is intergroup inequality.

4.2 Inclusion of the Wealth Inequality Measures

This last assertion is strengthened by the results presented in table 3A, where P_{RQ} has been introduced in equation (1) together with the Theil index. Please keep in mind that the Theil index is a measure of general inequality as it encompasses both within group inequality and between group inequality. The polarization coefficients have been little changed by this inclusion except for the presence of telephone connections for which coefficients lose significance although they remain close to the 10% level of significance. General inequality is not found to significantly impact the presence of public goods except for that of electricity and phone connections. Interestingly for these two last goods a higher degree of inequality is associated with an increase in the probability of having access to the goods. Tables 3B set out the results from similar estimations except that P_{RQ} is replaced by P^*. Again, results are not changed by the addition of the Theil index.

As mentioned, the Theil index is a measure of general inequality. It may be of some interest to break it out into between group and within group inequality. Tables 4 present the results from the estimating (1) when the polarization indices are entered together with these two measures of inequality . Please note that P^* is entered only together with the intra group index given that this polarization measures do already include a dimension of intergroup inequality. [8]. The first point to be made is that the inclusion of the two inequality measures has not altered the significance of the polarization coefficients except for the presence of phone connections. Second, coefficients signs have turned negative only for the presence of

[8] Correlation coefficients between the between group inequality index and the polarization indices are 0.9, 0.7 and 0.5 for the respective values of α =[0;0.8;1.6]

bus stations and middle schools. Interestingly, the goods for which polarization coefficients are negative are also the ones for which between group inequality coefficients are significant or close to significance. This could be a step in showing that fractionalization negatively impacts the presence of public goods when there actually is intergroup inequality and as a consequence potential group antagonisms. However, only low to medium levels of polarization seem to be detrimental to the presence of schools while intergroup inequality is beneficial. Again, this suggests that potential antagonisms arising from higher inequality are not part of the explanation of the negative impact of social fractionalization. Rather this negative impacts has to do with the number of groups within a society given that only the fractionalization's coefficients are significant and not the polarization ones. This points more towards explaining fractionalization negative impact by a coordination failure. Yet, these remarks solely apply to three goods out of eight. For the other goods, fractionalization's coefficients remain positive. It should be noted that within group inequality is found to have a significant or nearly significant impact on the presence of telephone, electricity, anganwadi centers and public primary schools. These impacts are positive except for the presence of anganwadi centers. It should be kept in mind that anganwadi centers were part of government programs designed to fight infant malnutrition and mortality. As such they are more oriented towards lower castes and tribes as well as deprived populations. Therefore, they are mostly implemented in poor areas where inequality is not so strong.

The positive role played by inequality be it inter or intra-group is rather quaint. There are two hypotheses that could be brought forward and that we wish to investigate. First, the presence of patronage that we will explore a a little later. Second, we wish to check for the presence of an Olson's effect and we do so by including the variable $rich$ described in section 3.2. together with a Theil index calculated over the rest of the distribution. Table 5 displays the results from the estimation. This specification yields the same results as in tables 4, as far as the polarization coefficients are concerned. The variable $rich$ exhibit a positive significant or close to significance coefficient for 4 goods and a negative significant one for waste disposal. The richer the wealthiest landowner, the more likely is the good to be present at the village level, all else being equal. This result does support the occurrence of the Olson's effect.

To sum up, only low levels of polarization have a significant positive impact on the presence of public goods provided the measure does not stress intergroup distance. These results go against the idea that larger social fragmentation generate larger antagonisms that prevent the villages from having the public goods as (a) fractionalization's coefficients are positive (b) polarization coefficients are not and (c) as more emphasis is put on potential intergroup conflicts, the less significant the results. Moreover, inequality, be it inter or intra-group seem to have a positive impact on the provision of public goods.

Why would only indices close to fractionalization be significant, while other measures of polarization are not? It should be kept in mind that the fractionalization index is closely and positively related to the number of groups and is maximized at the uniform population distribution over these groups. On the other hand, polarization decreases with the number of groups and is maximized when the population is concentrated on two equally sized groups. According to the results from table 2, a larger number of groups within a population is beneficial to the provision of public goods while intergroup inequality or antagonisms seem to play no role. On the other hand the presence of wealthy individuals is beneficial to the provision of public goods and so is intra group inequality. All these elements suggest that may be some patronage activities taking place. Wealthy individuals may support the costs of having the goods brought to their village and provide their poorer caste members with access to them. If every caste "leader" does the same for their caste affiliates, the larger the number of castes the more likely is the good to be provided. This is in very rough terms what might happen in the event of patronage. To investigate the occurrence of such a phenomenon we will present the results from the estimations of the patronage model.

4.3 The Patronage Model

The patronage model will be applied only to the case of the Backward Agricultural Caste ("BAC") for two reasons. First, together with the upper castes they are the dominant castes for the bulk of the sample. BAC castes members own the largest share of land in 31% villages present in the sample. Second, being an upper castes perfectly predicts attending schools or having access to electricity. This lack of variation prevents from analyzing upper caste potential patronage.

Table 6-A sets out the result from the estimation of equation (2) testing for the distance to schools and anganwadi centers. Being a BAC household does not significantly impact the probability to live less than 500m away from public primary schools and anganwadi centers but does negatively impact the distance to middle schools. However, living in BAC dominated village significantly increases the likelihood for a BAC household to live close to the schools and more than 500m away from the anganwadi centers. This last effect is explained by the fact that anganwadi centers are intended for deprived population and is partly compensated by the fact that these centers are significantly more likely to be present in BAC dominated areas. The increase in the probability for BAC households to live close to schools is not driven by the fact that these villages are more likely to have these facilities present. Indeed the coef-

ficients associated with the dummy for BAC dominated villages is significant but negative for the case of public primary schools and insignificant for middle schools. Wealth plays no role in the distance to the facilities, be it in BAC dominated villages or for BAC households. Please note that the difference in the coefficients associated with the BAC caste and the interacted term is significant but for the public primary schools, as reported at the bottom of the table.
Table 6-b presents the results from the estimation of the same equation except that the dependent variable does now represent direct access to the facilities *provided that they are available in the village*. Belonging to a BAC caste significantly reduces the likelihood of having toilets or of sending young children to anganwadi centers and has no effect on having electricity, except when the household lives in a village where the dominant caste is BAC. Indeed, in such a case, the likelihood of having toilets or of attending anganwadi centers turns from negative to positive and is nearly significant for the case of toilets. Similarly it positively impacts the probability of having access to electricity for domestic use and the coefficient is very close to the 10% level of significance (p-value equals to 10.4%), although the difference in the coefficients associated with the dummy and its interacted term is not significant as reported at the bottom of the table. However being a BAC household in a BAC dominated village does not significantly raise the likelihood of sending children to public primary school, even though the positive coefficient is not far from the 10% level of significance and the difference in the coefficients is also close to significance. These results are not driven by the fact that BAC dominated villages are more likely to have the facilities present. Coefficients for this dummy are all negative and insignificant. More surprising are the results obtained for middle school attendance. Being from a BAC caste increases the likelihood to attend middle school except when the village is dominated by this caste. One explanation may be put forward. Recall that the dominant caste is the one that owns the largest share of land. BAC caste households living in a BAC dominated village derive a relatively large income from land cultivation and returns to middle school education may be misvalued.

This evidence support the idea that members of the BAC caste enjoy a better access to public goods when their caste is dominant although results are more mixed as far as school attendance is concerned. Although BAC households tend to live closer to the facilities when they dominate, they do not significantly attend schools more often. These results point towards the idea that there are some form of caste patronage activities that do impact access to public goods. As argued earlier, this caste patronage may help explain why social fractionalization indices exhibit a positive significant influence on the presence of public goods, when polarization indices did not. Interestingly, patronage seems to be not so present in school attendance, as tables 6 have shown, while the fractionalization's coefficients were negative for these goods.

5 Conclusion

Social fractionalization has been found to have a positive effect on the provision of public goods at the micro level, while most of the previous empirical research attributed a negative effect looking at aggregated data. Polarization indices, which, arguably should do a better work at capturing potential social antagonisms that hinder the implementation of public goods are found irrelevant. One of the most plausible explanations for the fact that fractionalization is relevant while polarization is not is the presence of castes patronage. Indeed fractionalization is highly linked with the number of groups while polarization is more concerned with potential antagonisms. Therefore the larger the number of groups the higher the probability for a village to have access to public goods, while social antagonisms are not part of the story. The suspicion about patronage is reinforced by the positive impact on the provision of public goods of the presence of very wealthy individuals, in accordance with the Olson's effect, and by the fact that of all forms of inequality, within group inequality is the most relevant. It has been showed that access to some public goods is facilitated by belonging to the village's wealthiest caste. This result as well points towards the presence of caste patronage.

These results emphasize the need to look at local conditions and at the use which is made of public goods instead of focusing only at the provision level. Since universal access to public goods is the cornerstone of many development programs, policy makers should also remain vigilant that publicly provided goods do not become "privatized".

LIST OF VARIABLES AND SUMMARY STATISTICS AT THE VILLAGE LEVEL

Variables		Description	NB obs	Mean	sd
Paved Road		Dummy =1 if the road to the village is paved	119	0.54	0.5
Bus stations		Dummy=1 if the village is served by bus	119	0.17	0.38
Waste diposal		Dummy=1 if there is a waste diposal system in the village (open drain)	119	0.24	0.43
Telephone		Dummy=1 if there is a telephone in the village	119	0.24	0.43
Electricity		Dummy=1 if the village is electrified	119	0.53	0.5
Anganwadi center		Dummy=1 if there is an anganwadi center in the village	114	0.32	0.47
Pub. Prim. School		Dummy=1 if there is a public primary school in the village	119	0.79	0.41
Middle School		Dummy=1 if there is a middle school in the village	119	0.25	0.44
P_{RQ}	$\alpha = 0$	Equivalent to fractionalization index	120	0.60	0.17
	$\alpha = 0.8$	Medium polarization. Does not account for intergroup wealth inequality	120	0.23	0.06
	$\alpha = 1.6$	High polarization. Does not account for intergroup wealth inequality	120	0.1	0.03
P^*	$\alpha = 0$	Equivalent to a intergroup Gini coefficient	113	0.57	0.34
	$\alpha = 0.8$	Medium polarization accounting for intergroup inequality	113	0.22	0.12
	$\alpha = 1.6$	High polarization accounting for intergroup inequality	113	0.11	0.06
Theil		Theil measure of general inequality	113	0.89	2.88
Between group inequality		Please refer to definition in 3.2	113	0.24	0.27
Within group inequality		Please refer to definition in 3.2	113	0.64	2.87
Rich		Largest land value in the village divided by the average land value in the village excluding the largest from the average	113	6.60	7.94
Bac dominant		Dummy variable =1 if Bac caste owns the largest share of land.	118	0.31	0.45
avg household's income		Average households yeraly income	120	10 012.26	6 613.19
Number of hhlds		Number of households in the village	114	227.07	137.89
avg size of hhlds		Average size of households	120	6.28	1.18
Nb of sponsored programs		Number of sponsored programs in the last 12 months in the village	120	1.27	0.73
Nb of completed govt programs		NB of completed government programs in the last 12 months in the village	120	0.63	1.01
pctownfarm		% of village households whose primary source of living is their own farm	120	0.45	0.19
pct of illiterate hhlds heads		% of village households whose head is illiterate	120	0.51	0.17

LIST OF VARIABLES AND SUMMARY STATISTICS AT THE HOUSEHOLD LEVEL

Variables		Description	NB obs	Mean	sd
hh is bac caste		Dummy = 1 if the household belongs to a backward agricultural caste	2254	0.28	0.44
Rs value of land owned		Money value of the land owned by the household as declared by the interviewee	1671	216 173.40	508 550.10
hhld head is illiterate		Dummy = 1 if the household head is illiterate	2256	0.51	0.50
Size of household		Number of individuals living in the household	2255	6.30	3.18
Age of hhld heads		Age of the household's head	2256	46.7	14.15
distance < 500m to	Pub. Prim. School	Dummy=1 if the household lives less than 500m away from a public primary school	2252	0.67	0.47
	Middle School	Dummy=1 if the household lives less than 500m away from a middle school	2252	0.18	0.38
	Anganwadi center	Dummy=1 if the household lives less than 500m away from an anganwadi center	2252	0.26	0.44
Toilets		dummy=1 if the house is equipped with toilets provided a waste disposal system exists in the village	553	0.13	0.33
Elelctricity		Dummy=1 if the house is connected to the electricity network of the village	1197	0.17	0.38
Attended anganwadi		Dummy=1 if children in the household have attended anganwadi center provided they are of appropriate age and provided the center is present in the village	420	0.10	0.30
Attended Pub. Prim. School		Similar to anganwadi centers	841	0.94	0.23
Attended Middle School		Similar to anganwadi centers	283	0.54	0.50

TABLE 1 : BASIC SPECIFICATION WITH FRACTIONALIZATION MEASURE

	Paved Road	Bus station	Waste Disposal System	Telephone	Electricity	Anganwadi center	Pub. Prim. School	Middle School
Fractionalization	**2.187*** **	0.851	**2.571** **	**2.267*** **	0.310	**1.481** **	**-1.701* **	0.445
(P_{QR} $\alpha = 0$)	**(0.002)**	(0.497)	**(0.040)**	**(0.008)**	(0.681)	**(0.047)**	**(0.076)**	(0.591)
avg. households'	-0.000	0.000	-0.000***	-0.000	0.000	-0.000	-0.000*	-0.000
income	(0.234)	(0.561)	(0.004)	(0.754)	(0.138)	(0.110)	(0.065)	(0.694)
Number of hhlds	0.000	0.002**	0.002	0.001	0.001	0.001*	0.007***	0.004***
	(0.966)	(0.029)	(0.127)	(0.254)	(0.239)	(0.094)	(0.000)	(0.000)
avg. size of hhlds	-0.066	-0.228	0.358**	-0.188	-0.132	0.117	0.081	0.068
	(0.645)	(0.197)	(0.041)	(0.221)	(0.370)	(0.423)	(0.633)	(0.674)
Nb of sponsored	0.025	-0.423	-0.316	0.366*	0.300*	0.094	0.010	0.412**
programs	(0.901)	(0.107)	(0.321)	(0.079)	(0.092)	(0.641)	(0.972)	(0.031)
Nb of completed	0.271**	0.461**	-0.385*	-0.342*	0.115	0.460***	0.095	0.071
govt programs	(0.042)	(0.013)	(0.058)	(0.076)	(0.453)	(0.009)	(0.603)	(0.635)
pct. hhlds. whose main source of	-1.484**	-2.440***	-0.277	-1.409*	-0.700	-0.512	-0.092	-0.554
living is own farm	(0.034)	(0.008)	(0.701)	(0.073)	(0.315)	(0.477)	(0.913)	(0.495)
pct of illiterate	-1.210	-1.921*	-1.189	-2.174**	-2.342***	-1.290	-0.429	-2.347***
hhlds heads	(0.132)	(0.060)	(0.279)	(0.011)	(0.006)	(0.124)	(0.683)	(0.010)
Constant	0.566	1.310	-2.676*	0.159	1.164	-1.523	0.596	-1.340
	(0.628)	(0.338)	(0.072)	(0.900)	(0.356)	(0.204)	(0.688)	(0.272)
Observations	115	115	115	115	115	110	115	115
Wald χ^2	20.419	36.307	29.849	25.520	17.399	17.831	18.305	24.063
Pseudo R^2	0.117	0.240	0.222	0.162	0.110	0.135	0.201	0.200

Robust p values in parentheses; * significant at 10%; ** significant at 5%; *** significant at 1%

TABLE 2: COEFFICIENTS FOR THE VARIOUS POLARIZATION'S MEASURES

	Paved Road	**Bus station**	**Waste Disposal System**	**Telephone**	**Electricity**	**Anganwadi centers**	**Pub. Prim. School**	**Middle School**
$P_{RQ}\ \alpha = 0$	**2.187*** **	0.851	**2.571** **	**2.267*** **	0.310	**1.481** **	**-1.701***	0.445
	(0.002)	(0.497)	**(0.040)**	**(0.008)**	(0.681)	**(0.047)**	**(0.076)**	(0.591)
$P_{RQ}\ \alpha = 0.8$	**5.552*** **	0.428	2.448	**7.096** **	-0.181	**6.938** **	**-4.654***	1.646
	(0.009)	(0.906)	(0.250)	**(0.013)**	(0.939)	**(0.026)**	**(0.098)**	(0.534)
$P_{RQ}\ \alpha = 1.6$	3.684	-3.005	-4.584	3.059	-2.693	6.348	-4.843	6.243
	(0.356)	(0.619)	(0.273)	(0.488)	(0.535)	(0.181)	(0.287)	(0.208)
$P^*\ \alpha = 0$	0.331	0.488	-0.052	0.684	-0.217	**0.764***	0.026	0.381
	(0.350)	(0.382)	(0.905)	(0.113)	(0.546)	**(0.079)**	(0.951)	(0.333)
$P^*\ \alpha = 0.8$	-0.202	0.446	-1.347	1.916	-0.957	**2.029***	-0.361	1.522
	(0.846)	(0.790)	(0.295)	(0.112)	(0.357)	**(0.084)**	(0.763)	(0.218)
$P^*\ \alpha = 1.6$	-2.598	-3.070	**-5.598** **	3.380	-2.290	2.828	-1.810	3.669
	(0.210)	(0.397)	**(0.047)**	(0.143)	(0.264)	(0.199)	(0.450)	(0.132)

Robust p values in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

TABLES 3-A : POLARIZATION INDICES WITH THE THEIL INDEX

P_{RQ} indices

	Paved Road			Bus			Waste Disposal			Telephone		
P_{RQ} $\alpha = 0$	1.872** (0.032)			-0.487 (0.751)			2.262* (0.087)			1.456 (0.147)		
P_{RQ} $\alpha = 0.8$		3.528 (0.165)			-5.751* (0.074)			0.875 (0.748)			5.883 (0.134)	
P_{RQ} $\alpha = 1.6$			-0.755 (0.864)			-10.338 (0.116)			-7.717 (0.127)			2.028 (0.715)
Theil index	-0.018 (0.678)	-0.003 (0.944)	0 (0.995)	0.02 (0.471)	0.023 (0.383)	0.003 (0.902)	-0.016 (0.692)	0.002 (0.956)	-0.005 (0.912)	0.068* (0.063)	0.077** (0.025)	0.082** (0.017)
Obs.	109	109	109	110	110	110	109	109	109	110	110	110
Wald χ^2	16.151	13.645	12.038	36.337	33.401	35.901	29.171	28.568	28.646	23.476	21.995	20.336
Pseudo R^2	0.1	0.081	0.072	0.239	0.256	0.258	0.231	0.2	0.214	0.175	0.178	0.162

Robust p values in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

	Electricity			Anganwadi centers			Pub. Prim. School			Middle School		
P_{RQ} $\alpha = 0$	0 (1.000)			2.095** (0.029)			-2.083* (0.061)			-0.224 (0.799)		
P_{RQ} $\alpha = 0.8$		-1.081 (0.679)			6.123* (0.061)			-4.345 (0.154)			-0.352 (0.898)	
P_{RQ} $\alpha = 1.6$			-2.764 (0.556)			3.184 (0.520)			-2.677 (0.610)			4.594 (0.374)
Theil index	0.203** (0.025)	0.211** (0.022)	0.195** (0.026)	-0.506 (0.147)	-0.288 (0.371)	-0.189 (0.409)	0.214 (0.390)	0.131 (0.284)	0.111 (0.277)	0.02 (0.617)	0.017 (0.656)	0.023 (0.555)
Obs.	109	109	109	106	106	106	110	110	110	110	110	110
Wald χ^2	22.928	22.485	23.507	18.566	16.44	14.974	19.58	18.046	17.279	22.905	22.975	23.151
Pseudo R^2	0.157	0.158	0.159	0.159	0.153	0.138	0.222	0.202	0.187	0.193	0.192	0.197

Robust p values in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

TABLES 3-B : POLARIZATION INDICES WITH THE THEIL INDEX

P^* INDICES

	Paved Road			Bus			Waste Disposal			Telephone		
P^* $\alpha = 0$	0.303 (0.394)			0.481 (0.394)			-0.078 (0.861)			0.599 (0.175)		
P^* $\alpha = 0.8$		-0.235 (0.822)			0.42 (0.803)			-1.386 (0.287)			1.79 (0.151)	
P^* $\alpha = 1.6$			-2.577 (0.214)			-3.118 (0.395)			-5.569** (0.049)			3.425 (0.149)
Theil index	-0.004 (0.921)	0.001 (0.977)	0.002 (0.967)	0.002 (0.933)	0.013 (0.598)	0.02 (0.443)	0.004 (0.924)	0.007 (0.872)	0.005 (0.910)	0.072** (0.039)	0.075** (0.027)	0.080** (0.017)
Obs.	109	109	109	110	110	110	109	109	109	110	110	110
Wald χ^2	12.649	12	13.826	40.349	37.195	35.319	28.661	30.245	29.34	20.575	21.125	20.206
Pseudo R^2	0.075	0.072	0.081	0.248	0.238	0.247	0.2	0.208	0.228	0.176	0.177	0.176

Robust p values in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

	Electricity			Anganwadi Centers			Pub. Prim School			Middle School		
P^* $\alpha = 0$	-0.483 (0.250)			2.280*** (0.001)			-0.083 (0.848)			0.471 (0.224)		
P^* $\alpha = 0.8$		-1.471 (0.184)			3.818** (0.012)			-0.856 (0.564)			1.556 (0.197)	
P^* $\alpha = 1.6$			-2.747 (0.190)			3.806 (0.110)			-2.072 (0.383)			3.316 (0.162)
Theil index	0.326 (0.112)	0.294* (0.085)	0.241* (0.056)	-1.874*** (0.008)	-0.996** (0.034)	-0.465 (0.216)	0.135 (0.274)	0.352 (0.546)	0.15 (0.403)	0.008 (0.841)	0.011 (0.783)	0.016 (0.692)
Obs.	109	109	109	106	106	106	110	108	110	110	110	110
Wald χ^2	19.942	21.487	23.627	23.192	18.903	16.335	16.82	14.48	17.406	24.035	23.309	22.938
Pseudo R^2	0.165	0.167	0.166	0.218	0.18	0.152	0.185	0.2088	0.191	0.201	0.203	0.204

Robust p values in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

TABLES 4-A : POLARIZATION INDICES WITH INEQUALITY INDICATORS

P_{RQ} INDICES

	Paved Road			Bus station			Waste Disposal System			Telephone		
P_{RQ}	1.923**			-1.616			3.063**			0.852		
$\alpha = 0$	(0.043)			(0.291)			(0.037)			-0.408		
P_{RQ}		3.35			-6.783**			1.025			4.973	
$\alpha = 0.8$		(0.187)			(0.044)			(0.699)			(0.245)	
P_{RQ}			-0.233			-8.241			-8.673*			4.065
$\alpha = 1.6$			(0.959)			(0.220)			(0.093)			(0.483)
Between group	0.082	0.391	0.49	1.110**	0.910*	0.565	-0.923	-0.273	-0.38	0.645	0.726	0.86
inequality	(0.859)	(0.349)	(0.258)	(0.035)	(0.078)	(0.250)	(0.147)	(0.598)	(0.440)	(0.248)	(0.174)	(0.111)
Within group	-0.021	-0.009	-0.007	0.002	-0.002	-0.016	-0.018	0.003	-0.004	0.066*	0.070**	0.075**
inequality	(0.622)	(0.842)	(0.878)	(0.947)	(0.934)	(0.566)	(0.659)	(0.946)	(0.925)	(0.074)	(0.047)	(0.031)
Obs.	109	109	109	110	110	110	109	109	109	110	110	110
Wald χ^2	15.826	13.367	12.329	41.98	40.231	42.925	35.437	30.821	31.358	21.675	20.974	19.659
Pseudo R^2	0.098	0.08	0.072	0.272	0.284	0.27	0.251	0.206	0.223	0.174	0.181	0.173

Robust p values in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

	Electricity			Anganwadi Centers			Public Primary School			Middle School		
P_{RQ}	0.367			2.105**			-2.739**			-0.826		
$\alpha = 0$	(0.681)			(0.028)			(0.023)			(0.375)		
P_{RQ}		-0.619			6.542**			-4.766			-1.42	
$\alpha = 0.8$		(0.812)			(0.043)			(0.120)			(0.596)	
P_{RQ}			-3.507			4.271			-2.345			6.177
$\alpha = 1.6$			(0.460)			(0.417)			(0.666)			(0.290)
Between group	-0.249	-0.146	-0.222	-0.14	0.152	0.302	1.166*	0.641	0.419	0.819*	0.677*	0.781*
inequality	(0.573)	(0.725)	(0.597)	(0.791)	(0.768)	(0.569)	(0.092)	(0.283)	(0.457)	(0.065)	(0.092)	(0.066)
Within group	0.31	0.319	0.321	-1.199*	-1.097*	-1.001	0.102**	0.083**	0.082*	0.013	0.007	0.013
inequality	(0.118)	(0.111)	(0.142)	(0.067)	(0.092)	(0.109)	(0.035)	(0.043)	(0.067)	(0.730)	(0.851)	(0.731)
Obs.	109	109	109	106	106	106	110	110	110	110	110	110
Wald χ^2	20.709	19.589	20.493	21.688	18.161	16.129	20.538	19.725	18.716	24.631	24.86	24.315
Pseudo R^2	0.16	0.16	0.163	0.168	0.164	0.149	0.238	0.206	0.188	0.205	0.202	0.207

Robust p values in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

TABLES 4-B : POLARIZATION INDICES WITH INEQUALITY INDICATORS

P^* INDICES

	Paved Road			Bus station			Waste Disposal System			Telephone		
P^*	0.338			0.49			-0.065			0.62		
$\alpha = 0$	(0.338)			(0.381)			(0.883)			(0.156)		
P^*		-0.182			0.445			-1.381			1.842	
$\alpha = 0.8$		(0.861)			(0.790)			(0.284)			(0.138)	
P^*			-2.617			-3.085			-5.675**			3.512
$\alpha = 1.6$			(0.208)			(0.394)			(0.045)			(0.142)
Within group	-0.007	-0.004	-0.006	-0.008	-0.008	-0.011	0.003	0.004	0.001	0.070**	0.072**	0.075**
inequality	(0.871)	(0.920)	(0.897)	(0.730)	(0.732)	(0.651)	(0.940)	(0.922)	(0.979)	(0.047)	(0.036)	(0.027)
Obs	109	109	109	110	110	110	109	109	109	110	110	110
Wald χ^2	11.535	10.653	12.632	42.465	40.632	40.656	29.32	30.989	30.254	20.163	20.504	19.212
Pseudo R^2	0.07	0.065	0.075	0.249	0.239	0.247	0.204	0.212	0.233	0.166	0.166	0.165

Robust p values in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

	Electricity			Anganwadi Centers			Public Primary School			Middle School		
P^*	-0.213			0.818*			0.034			0.469		
$\alpha = 0$	(0.556)			(0.071)			(0.936)			(0.225)		
P^*		-0.937			2.088*			-0.327			1.51	
$\alpha = 0.8$		(0.368)			(0.083)			(0.784)			(0.209)	
P^*			-2.216			2.625			-1.738			3.215
$\alpha = 1.6$			(0.282)			(0.244)			(0.469)			(0.175)
Within group	0.316*	0.309	0.297	-0.986*	-1.008*	-1.005	0.093*	0.094*	0.090*	0.005	0.008	0.012
inequality	(0.098)	(0.103)	(0.112)	(0.099)	(0.096)	(0.101)	(0.086)	(0.087)	(0.083)	(0.897)	(0.841)	(0.769)
Obs.	109	109	109	106	106	106	110	110	110	110	110	110
Wald χ^2	19.793	20.227	21.286	17.922	17.111	16.423	17.765	18.116	18.756	23.4	22.72	22.359
Pseudo R^2	0.161	0.163	0.165	0.172	0.165	0.153	0.181	0.182	0.186	0.198	0.2	0.201

Robust p values in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

TABLES 5 : POLARIZATION INDICES WITH THE RICH MEASURE

P_{RQ} INDICES

	Paved Road			Bus			Waste Disposal			Telephone		
P_{RQ} $\alpha = 0$	1.585* (0.064)			-0.726 (0.617)			2.425* (0.075)			1.102 (0.268)		
P_{RQ} $\alpha = 0.8$		3.162 (0.209)			-5.657* (0.081)			1.017 (0.716)			4.809 (0.270)	
P_{RQ} $\alpha = 1.6$			-0.445 (0.918)			-8.58 (0.206)			-8.157 (0.127)			1.326 (0.807)
rich	0.027 (0.104)	0.031* (0.058)	0.032* (0.053)	0.027* (0.071)	0.027* (0.061)	0.023 (0.114)	-0.04 (0.107)	-0.029 (0.158)	-0.028 (0.141)	0.028 (0.135)	0.03 (0.107)	0.032* (0.088)
Theil index	0.917 (0.351)	1.033 (0.295)	1.142 (0.245)	-0.856 (0.408)	-0.727 (0.491)	-0.902 (0.374)	1.39 (0.266)	1.592 (0.198)	1.703 (0.166)	2.231* (0.067)	2.197* (0.067)	2.336* (0.054)
Obs	109	109	109	110	110	110	109	109	109	110	110	110
Wald χ^2	22.978	19.727	17.791	39.025	35.325	38.395	31.234	29.583	32.413	23.874	23.504	22.227
Pseudo R^2	0.121	0.109	0.101	0.27	0.284	0.28	0.272	0.239	0.253	0.188	0.191	0.181

Robust p values in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

	Electricity			Anganwadi Centers			Pub. Prim. School			Middle School		
P_{RQ} $\alpha = 0$	0.435 (0.603)			1.766** (0.046)			-2.178** (0.048)			-1.01 (0.278)		
P_{RQ} $\alpha = 0.8$		-0.523 (0.839)			6.464** (0.048)			-4.739 (0.132)			-2.353 (0.407)	
P_{RQ} $\alpha = 1.6$			-4.073 (0.387)			3.984 (0.433)			-3.567 (0.498)			4.955 (0.401)
rich	0.008 (0.590)	0.01 (0.501)	0.008 (0.592)	-0.021* (0.085)	-0.016 (0.199)	-0.013 (0.301)	0.018 (0.329)	0.01 (0.513)	0.008 (0.623)	0.032** (0.013)	0.030** (0.025)	0.031** (0.014)
Theil index	0.095 (0.921)	0.196 (0.838)	0.204 (0.832)	0.017 (0.987)	0.076 (0.942)	0.173 (0.867)	4.126*** (0.004)	3.892*** (0.006)	3.783*** (0.008)	2.264** (0.042)	2.174* (0.050)	2.041* (0.061)
Obs	109	109	109	106	106	106	110	110	110	110	110	110
Wald χ^2	20.431	19.21	19.765	19.656	17.648	15.724	30.783	29.651	27.594	29.904	30.521	31.096
Pseudo R^2	0.134	0.133	0.137	0.144	0.144	0.129	0.281	0.262	0.245	0.249	0.246	0.247

Robust p values in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

TABLE 6-A : PATRONAGE MODEL

DISTANCE TO SCHOOLS AND ANGANWADI CENTERS

	Distance < 500m to		
	Public Primary School	Middle School	Anganwadi center
hh is bac caste	0.019	-0.347***	0.055
	(0.863)	(0.005)	(0.597)
hhld bac x bac dominant	0.395**	0.802***	-0.406**
	(0.024)	0.000	(0.021)
Rs value of land owned	0	0.000**	0
	(0.346)	(0.024)	(0.966)
land value x hhld bac	0	0	0
	(0.697)	(0.919)	(0.478)
land value x bac dominant	0	0	0.000*
	(0.604)	(0.106)	(0.088)
land x hhld bac x bac dominant	0	0	0
	(0.136)	(0.131)	(0.368)
bac dominant caste	-0.211**	0.156	0.222**
	(0.031)	(0.182)	(0.027)
hhld head is illiterate	-0.078	-0.194**	-0.122*
	(0.248)	(0.012)	(0.080)
size of household	0.004	-0.004	-0.018*
	(0.670)	(0.694)	(0.073)
age of hhld's heads	0.004*	0.004	0.005**
	(0.092)	(0.139)	(0.030)
Constant	0.235*	-1.091***	-0.740***
	(0.072)	0.000	0.000
Observations	1644	1644	1644
Wald χ^2	21.165	55.945	28.361
Pseudo R^2	0.01	0.032	0.015
	Coefficient equality test		
	Ho: $\gamma_1 = \gamma_2$		
χ^2	2.13	15.23	3.37
$P > \chi^2$	0.1442	0.0001	0.0663

Robust p values in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

TABLE 6-B : PATRONAGE MODEL

HOUSEHOLD'S ACCESS

	Household has				
	Toilets	**Electricity**	**Attended Anganwadi**	**Attended Pub. Prim. School**	**Attended Middle School**
hh is bac caste	-0.568	0.044	-1.165**	-0.301	1.137***
	(0.102)	(0.791)	(0.017)	(0.190)	(0.006)
hhld bac x bac dominant	0.956	0.466	0.961	0.655	-1.273**
	(0.101)	(0.104)	(0.162)	(0.141)	(0.024)
Rs value of land owned	0.000***	0.000*	0	0	0.000**
	(0.002)	(0.080)	(0.550)	(0.631)	(0.021)
land value x hhld bac	0	0	0.000*	0	-0.000**
	(0.944)	(0.183)	(0.086)	(0.631)	(0.036)
land value x bac dominant	0	0.000***	0	0	0
	(0.531)	(0.001)	(0.947)	(0.441)	(0.665)
land x hhld bac x bac dominant	0	-0.000*	0	0	0
	(0.599)	(0.067)	(0.448)	(0.379)	(0.415)
bac dominant caste	-0.486	-0.303	-0.282	-0.153	0.391
	(0.122)	(0.115)	(0.368)	(0.596)	(0.194)
hhld head is illiterate	-0.590***	-0.586***	0.177	-0.027	-0.581***
	(0.003)	0.000	(0.364)	(0.875)	(0.007)
size of household	0.008	0.021	-0.001	0.043	-0.007
	(0.742)	(0.149)	(0.981)	(0.169)	(0.831)
age of hhld's heads	0.020***	0.015***	-0.002	-0.007	0.018**
	(0.002)	0.000	(0.793)	(0.293)	(0.026)
Constant	-2.008***	-1.775***	-0.932***	1.652***	-0.986**
	0.000	0.000	(0.007)	0.000	(0.023)
Obs.	396	895	324	676	226
Wald χ^2	57.006	100.956	10.052	5.811	50.802
Pseudo R^2	0.163	0.117	0.042	0.019	0.166
	Coefficient equality test Ho: $\gamma_1 = \gamma_2$				
χ^2	3.3	1.07	3.79	2.56	7.04
$P > \chi^2$	0.0693	0.3021	0.0515	0.1097	0.008

Robust p values in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

TABLE 7: POLARIZATION MEASURES CORRELATIONS

		P_{RQ}			P^*			Theil	bgi	wgi
		$\alpha = 0$	$\alpha = 0.8$	$\alpha = 1.6$	$\alpha = 0$	$\alpha = 0.8$	$\alpha = 1.6$			
P_{RQ}	$\alpha = 0$	1								
	$\alpha = 0.8$	0.83***	1							
	$\alpha = 1.6$	0.24***	0.71***	1						
P^*	$\alpha = 0$	0.54***	0.37***	-0.0353	1					
	$\alpha = 0.8$	0.42***	0.46***	0.21**	0.90***	1				
	$\alpha = 1.6$	0.20**	0.41***	0.41***	0.66***	0.90***	1			
Theil		0.16*	0.04	-0.12	0.12	0.06	-0.01	1		
Between group inequality		0.35***	0.15	-0.13	0.90***	0.74***	0.52***	0.1	1	
Within group inequality		0.13	0.02	-0.11	0.03	-0.01	-0.06	0.99***	0.01	1

TABLE 8: ROBUSTNESS CHECKS: INCLUSION OF DOMINANT GROUPS

	Paved Road	**Bus Station**	**Waste Disposal System**	**Telephone**	**Electricity**	**Anganwadi centers**	**Pub. Prim. School**	**Middle School**
Fractionalization	**1.998*** **	**0.745**	**2.383** **	**2.206** **	**0.108**	**1.395***	**-2.596** **	**0.352**
(P_{RQ} $\alpha = 0$)	**-0.007**	**-0.555**	**-0.042**	**-0.035**	**-0.897**	**-0.067**	**-0.016**	**-0.691**
Up caste dominant	0.436	0.18	0.154	1.423***	0.801**	0.225	0.979**	0.871**
	-0.217	-0.669	-0.673	-0.002	-0.022	-0.515	-0.01	-0.035
Bac caste dominant	0.244	0.165	-0.369	1.162**	0.705*	0.066	0.099	1.189**
	-0.5	-0.722	-0.365	-0.019	-0.053	-0.859	-0.807	-0.012
avg. households'	0	0	-0.000***	0	0	0	0	0
income	-0.196	-0.628	-0.002	-0.713	-0.129	-0.134	-0.144	-0.864
Number of households	0.001	0.002**	0.002*	0.002	0.002*	0.002**	0.011***	0.004***
	-0.612	-0.028	-0.07	-0.167	-0.074	-0.048	0	-0.001
avg. size of hhlds	-0.042	-0.207	0.392**	-0.181	-0.083	0.141	0.022	0.065
	-0.776	-0.25	-0.023	-0.257	-0.586	-0.347	-0.901	-0.691
Nb of sponsored	0.038	-0.397	-0.232	0.394*	0.376**	0.141	-0.043	0.327
programs	-0.864	-0.121	-0.433	-0.084	-0.038	-0.514	-0.884	-0.1
Nb of completed	0.227	0.424**	-0.382*	-0.436*	0.002	0.415**	0.207	0.007
govt programs	-0.116	-0.031	-0.077	-0.057	-0.991	-0.022	-0.301	-0.963
pct. hhlds. whose main	-1.461*	-2.453**	-0.137	-2.259**	-0.745	-0.36	-0.511	-1.204
source of living is own farm	-0.05	-0.011	-0.854	-0.015	-0.323	-0.637	-0.587	-0.19
pct of illiterate	-0.829	-1.748	-0.988	-2.307**	-1.855**	-0.916	-0.964	-2.365**
hhlds heads	-0.333	-0.103	-0.376	-0.022	-0.043	-0.317	-0.423	-0.011
Constant	-0.022	1.03	-3.046**	-0.557	-0.003	-2.136	0.898	-1.698
	-0.986	-0.466	-0.042	-0.691	-0.998	-0.104	-0.588	-0.185
Observations	113	113	113	113	113	108	113	113
Wald χ^2	19.081	28.731	30.386	29.553	19.779	18.041	21.796	24.603

Robust p values in parentheses; * significant at 10%; ** significant at 5%; *** significant at 1%

TABLE 9: ROBUSTNESS CHECKS: INCLUSION OF THE PERCENTAGE OF SCHEDULED CASTES IN THE VILLAGE

	Paved Road	**Bus Station**	**Waste Disposal System**	**Telephone**	**Electricity**	**Anganwadi centers**	**Pub. Prim. School**	**Middle School**
Fractionalization	**2.376*** **	**0.95**	**2.662** **	**2.194** **	**0.341**	**1.419* **	**-1.875* **	**0.354**
(P_{RQ} $\alpha = 0$)	**-0.001**	**-0.442**	**-0.041**	**-0.013**	**-0.65**	**-0.07**	**-0.051**	**-0.677**
% scheduled castes	-1.164	-0.374	0.726	-0.444	0.095	0.739	0.105	-0.032
	-0.117	-0.64	-0.441	-0.598	-0.888	-0.322	-0.891	-0.972
avg. households' income	0	0	-0.000***	0	0	0	0	0
	-0.241	-0.716	-0.006	-0.956	-0.134	-0.138	-0.131	-0.894
Number of households	0	0.002**	0.002	0.001	0.001	0.001	0.008***	0.003***
	-0.827	-0.028	-0.125	-0.413	-0.255	-0.169	0	-0.001
avg. size of hhlds	-0.078	-0.176	0.358**	-0.292*	-0.13	0.097	-0.033	-0.008
	-0.594	-0.352	-0.043	-0.066	-0.386	-0.541	-0.846	-0.965
Nb of sponsored	0.129	-0.403	-0.353	0.287	0.349**	0.181	0.033	0.342**
progams	-0.492	-0.111	-0.204	-0.134	-0.035	-0.339	-0.899	-0.044
Nb of completed	0.266*	0.444**	-0.408**	-0.191	0.092	0.390**	0.259	0.166
govt programs	-0.052	-0.019	-0.047	-0.296	-0.558	-0.033	-0.223	-0.278
pct. hhlds. whose main	-1.478**	-2.386***	-0.217	-1.372*	-0.693	-0.423	-0.271	-0.585
source of living is own farm	-0.033	-0.009	-0.762	-0.075	-0.321	-0.561	-0.751	-0.476
pct of illiterate	-1.03	-1.766*	-1.361	-2.428***	-2.320***	-1.188	-1.248	-2.781***
hhlds heads	-0.222	-0.096	-0.188	-0.006	-0.007	-0.179	-0.289	-0.002
Constant	0.669	0.943	-2.837*	1.087	1.049	-1.697	1.563	-0.584
	-0.579	-0.531	-0.08	-0.408	-0.415	-0.18	-0.318	-0.656
Observations	115	114	115	114	115	109	114	114
Wald χ^2	18.96	32.156	29.867	24.946	17.526	15.473	15.688	25.798
Pseudo R^2	0.129	0.221	0.226	0.156	0.107	0.127	0.226	0.2

Robust p values in parentheses; * significant at 10%; ** significant at 5%; *** significant at 1%

TABLE 10: ROBUSTNESS CHECKS: INCLUSION OF STATE FIXED EFFECT

	Paved Road	**Bus Station**	**Waste Disposal System**	**Telephone**	**Electricity**	**Anganwadi Centers**	**Pub. Prim. School**	**Middle School**
Fractionalization	**2.237***	**0.962**	**2.678**	**2.154**	**0.297**	**1.595**	**-1.815**	**0.231**
(P_{RQ} $\alpha = 0$)	**-0.002**	**-0.44**	**-0.042**	**-0.011**	**-0.728**	**-0.032**	**-0.107**	**-0.799**
Bihar	-0.306	0.583	0.636	0.033	-1.102***	-0.445	1.053***	-0.874**
	-0.382	-0.264	-0.126	-0.932	-0.003	-0.244	-0.01	-0.039
avg. households' income	0	0	-0.000***	0	0	-0.000*	0	0
	-0.225	-0.378	-0.007	-0.692	-0.317	-0.086	-0.174	-0.298
Number of households	0	0.002*	0.001	0.001	0.002*	0.002**	0.007***	0.004***
	-0.798	-0.081	-0.241	-0.254	-0.061	-0.05	-0.001	0
avg. size of hhlds	-0.072	-0.244	0.372**	-0.177	-0.152	0.112	0.048	0.091
	-0.62	-0.185	-0.04	-0.246	-0.315	-0.443	-0.784	-0.556
Nb of sponsored	0.038	-0.382	-0.179	0.267	0.165	0.129	0.308	0.2
progams	-0.843	-0.146	-0.491	-0.189	-0.324	-0.508	-0.299	-0.275
Nb of completed	0.206	0.582**	-0.22	-0.276	-0.035	0.372**	0.314	-0.025
govt programs	-0.145	-0.013	-0.285	-0.196	-0.813	-0.039	-0.145	-0.867
pct. hhlds. whose main	-1.799**	-2.077**	0.457	-1.319	-1.828**	-0.918	1.023	-1.279
source of living is own farm	-0.022	-0.03	-0.578	-0.102	-0.018	-0.231	-0.248	-0.151
pct of illiterate	-1.389*	-1.718*	-0.701	-2.105**	-3.146***	-1.529	-0.101	-2.933***
hhlds heads	-0.092	-0.096	-0.514	-0.014	-0.001	-0.105	-0.927	-0.003
Constant	0.951	0.628	-3.932**	0.168	2.922**	-1.074	-0.715	-0.062
	-0.463	-0.675	-0.022	-0.898	-0.044	-0.42	-0.652	-0.963
Observations	116	116	116	116	116	111	116	116
Wald χ^2	20.864	32.34	34.26	24.622	23.383	19.866	24.334	25.773
Pseudo R^2	0.122	0.256	0.241	0.153	0.169	0.144	0.251	0.231

Robust p values in parentheses; * significant at 10%; ** significant at 5%; *** significant at 1%

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