Social Fragmentation and Public Goods Revisiting the Olson's Effect 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. This is a key issue, given that public goods availability has been reckoned as crucial to economic development, while developing countries' societies often exhibit high degrees of fragmentation. Although it has been well established both empirically and theoretically that fragmentation is detrimental to collective action, two caveats ought to be considered. First, a high level of social fragmentation is often associated with greater inequality, which, as Olson pointed out, may be beneficial to collective action. In Olson's argument, should most of the public goods benefits accrue to a small number of group members, they are encouraged to invest in group activities, given that their stakes in the collective action are quite high. Second, should access to publicly provided goods be restricted to the elite, a positive relationship may be found between fragmentation and ethnically based patronage. Given that both patronage and inequality are common in developing countries, it is surprising that fragmentation has never been found to have a positive effect on the provision of public goods. This article aims at showing that not only does this positive relationship exist, but it is linked to the presence of wealthy individuals who are in a position to deny access to public goods to other groups members.

Keywords: Political Economy; 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 for 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. As discussed earlier, 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. 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. 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 fragmenta-

tion may have a positive impact on the provision of public goods as (a) it proxies high levels of inequality and (b) in the event that the elite restrict their access to their own members. 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 tribes labeled scheduled tribes ("ST" 7%). The two last categories represent the weaker segment of society. A similar classification is

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

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.
Caste and religious heterogeneity is measured by the now popular fractionalization index,

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

where π_i is the population share of the i^{th} caste. Please note that caste encompasses all the Hindus castes as well as Muslims'. In doing so we have assumed that the gap between two Hindus castes is as large as between an Hindu and a Muslim caste. This hypothesis may be discussed, although in the absence of additional information it seems sensible. Our fractionalization index ranges in villages from 0 to 0.78 with a mean of 0.53 and standard deviation of 0.17. In tolas, it ranges from 0 to 0.8 with a mean of 0.48 and a standard deviation of 0.25. This suggests that both villages and tolas are rather fragmented. 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.[3]

2.2 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 need to voice their 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 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

[3]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.

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.

2.3 Wealth inequality

Two main reasons may explain why wealth inequality may have an impact on public goods' provision. First, wealthy individuals tend to have enough political leverage to bring public goods to their village. Second, 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.

Wealth concentration is quite significant in our sample. The 20% richest own on average 57% of the village total land value with a standard deviation of 0.13. This concentration varies greatly from one village to another. In villages where land is most equally distributed land value ranges from 400,000Rs to 900,000Rs, while in villages exhibiting the most unequal distribution, it ranges from 5,800Rs to 14MRs. A Gini coefficient has been calculated at village level. It ranges from 0.13 to 0.88 with a mean of 0.52 and a standard deviation of 0.12.

Drawing on Olson's argument, we are in a position to say that fractionalization may have a positive impact on the provision of public goods as fractionalization is often associated to greater inequality and hence on the presence of wealthy individuals who are willing to undertake the cost of bringing a public good to their village. Public good privatization may be another explanation for the positive role of inequality and fractionalization. If the wealthy are able to restrict public goods usage, the free riding problem associated to collective action will fade away. This is the argument 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 index and the presence of public goods such as schools, electricity, telephone, etc. A logistic 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 and we do so by replacing the fractionalization index by two different measures of inequality that are discussed later in this section. These estimations are referred to as the fractionalization model. Finally, in order to establish that the positive relationship is due to the systematic exclusion of certain groups from public goods usage, we use a logistic model at the household level to assess its probability of accessing a specific public good given a set of characteristics, including the group to which it belongs. The probability is then decomposed using the Oaxaca-Blinder method. Further details on this last estimation are provided in the next subsection.

3.1 Specifications of the fractionalization model

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

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

where F is the logistic c.d.f. π_i is a set of village/tola 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 the village urbanization level. 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. Please note that this variable is only available at village level and not at tola level. 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 to fractionalization. In order to make the interpretation easier the list

of the variables used is provided in appendix as well as the variables' summary statistics and correlation matrices.

Our aim is to determine whether fractionalization has an impact on public goods provision as it proxies wealth inequality. Therefore, we include in equation (1) a Gini coefficient of land value. Drawing on Khwaja (2009) experience, we also include the square of the Gini Coefficient to account for a potential non linear effect of inequality. In a second step, we wish to establish that inequality plays a significant role as it increases the chance of having very wealthy individuals who can exert political influence. Gini may not be the appropriate indicator since it measures inequality of the entire distribution, whereas we are more concerned with the upper hand of the distribution. The presence of such wealthy individuals is represented by an indicator labeled *wealth* constructed as follows:

$$wealth = \frac{\bar{W}_{i,10}}{\bar{W}_i}$$

where $\bar{W}_{i,10}$ is the average land value owned by the top percentile in village or tola i and $\bar{W}_i$ is the average land value owned in village or tola i. This variable is then entered in (1) instead of and together with the fractionalization index.

3.2 Specifications of the discrimination model

We now turn to the impact of belonging to a specific group on the access to three public goods: electricity, school attendance and the availability of toilet systems. First, we turn to estimating the probability that household i has access to public good j in the following manner

$$Pr(Y_{i,j} = 1) = F(X_{i,k}\widehat{\beta_k}) \tag{2}$$

where F is the c.d.f. and $X_{i,k}$ represent a vector of observations, for household i on k variables such as caste, income, value of the land owned, literacy of the household head, and size of the household. $\widehat{\beta_k}$ is the associated vector of coefficient estimates. Should caste have a significant impact on the probability of having access to the public good, we may, so far, not be in a position to tell whether this impact is due to discrimination or differences in characteristics among castes. In order to do so we follow the Oaxaca (1973) and Blinder (1973) method of decomposing group differences extended to logistic models by *inter alia* Nielsen (1998) and Fairlie (2006). Let's assume that there are N households (indexed $i = 1...N$) that belong to c castes, each caste containing N_c households. The likelihood for household i belonging to caste c to have access to good j (provided this good is available in the village) is

$$Pr(Y_{i,j} = 1) = F(X_i^c\widehat{\beta_j^c}) \tag{3}$$

where $X_i^c = X_{ik}^c, k = 1...K$ represents the vector of observations, for household i of caste c on K variables which determine the likelihood of it having access to the public good and $\widehat{\beta_j^c} = \widehat{\beta_{jk}^c}, k = 1...K$ is the associated vector of coefficient estimates for that caste. In order to make the presentation less cumbersome, we will not compare all the caste groups against each other. We will, in a first step, run the decomposition analysis by focusing on two groups: the untouchables ($scst$) which is the weakest group and other castes ($others$). Therefore, $c = scst, others$. The average probability of group c having access to good j can then be written:

$$\overline{P}_j^c = P(X_i^c \widehat{\beta_j^c}) = N_c^{-1} \sum_{i=1}^{N_c} F(X_i^c \widehat{\beta_j^c}) \tag{4}$$

Let's now write the average probability for a $scst$ household to have access to public good j if it was treated as a non scst-household:

$$\overline{P}_j^* = N_{scst}^{-1} \sum_{i=1}^{N_{scst}} F(X_i^{scst} \widehat{\beta_j^{others}}) \tag{5}$$

The difference in average probabilities for a $scst$ and an $other$ household can then be written

$$\overline{P}_j^{others} - \overline{P}_j^{scst} = \overline{P}_j^{others} - \overline{P}_j^* + \overline{P}_j^* - \overline{P}_j^{scst} \tag{6}$$

The second substraction on the right hand side of the equation may be referred to as the discrimination effect, while the first substraction is the part of the difference in average probabilities that can be ascribed to differences in characteristics.

3.3 Identification issues

3.3.1 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 rules out while collective mobility may only occur over generations.

3.3.2 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 and tolas 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 negative 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. Moreover, it should be noted that substitution would be an issue, should the fragmentation coefficient change sign from one good to another. As it will be seen in the results section, this is not the case.

3.3.3 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. 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 [4]. However, urbanization is proxied by the percentage of households whose primary source of income is their own farm.

4 Results

Before delving into the results, we have to reckon that results at the tola level are much more informative than at the village level for two reasons. First, the number of village data points (117) may reduce variations, whereas 320 tola points do not. Second, the decision to give a village access to a particular good may have long come under district authorities and it is difficult to rule out their autonomy in making such decisions. However, choice of school location within the village or the decision to connect a neighborhood to the village electricity network relies much more on local initiative. Since, we are concerned with the determinants of collective action, local initiative is of greater interest since they are less disturbed by other parties' decisions.

Results from estimating equation (1) are presented in table 1-A at the village level and table 2-A at the tola level. Fractionalization's coefficients are all positive both at the village and tola levels, even though they are not significant for electricity, schools and bus stations at the village level. Whenever fractionalization's coefficients are not significant at the village level, coefficients attributed to the variable indicating the number of NGOs' or government sponsored programs are positive and significant, thereby suggesting that social fragmentation has no impact due to the fact that both electricity and schools are targeted goods of poverty removal programs. Organizations implementing those programs seem autonomous in making their decisions. Besides, these programs seem efficient in implementing public goods. On the other hand, whenever fragmentation is found to have a significant effect, so are the coefficients for the number of government programs implemented, although they come in both positive and negative. Reasons for the sign change are not clear. Still, it seems that high levels of fractionalization are positively associated with a larger number of government programs [5]. Lastly, population density indicators and average income have neither a significant nor a large impact on the presence of public

[4] However, as a robustness check we have included a state dummy in the estimation of equation (1) both at the village and tola levels and district fixed effects at the tola level. Such inclusions did modify neither the significance nor the sign or the size of the coefficients but did significantly reduce the size of the sample. Results are available upon request.

[5] Regressing the number of government programs by the fractionalization index, the percentage of households whose primary source of living is their own farm and the percentage of households whose head is illiterate, yields a positive and significant, though at a 10 percent level, relationship between fractionalization and the number of completed government programs. Unfortunately we do not have the necessary data to run a finer analysis of the relationship. Indisputably, political data and analysis would be required

goods. The variable representing the percentage of the population whose primary source of income is their own farm is significantly detrimental to the availability of roads, phone connections, bus stations and electricity. This accounts for the fact that the variable may be proxying low levels of urbanization of the villages that increases the cost of connecting them.

Turning to results at tola level, two points should be made. First, fractionalization coefficients are once again positive and often significant. Second, social heterogeneity is significantly beneficial to the presence of electricity and middle schools, while it was not at the village level. As discussed earlier in this section, while electrifying a village may be third parties autonomous decision, connecting or implementing a school in a specific neighborhood depends on local initiative. The point is that third parties interventions is important and may blur the results, stressing the importance of choosing the appropriate level of aggregation. As later results will suggest, social heterogeneity positive impact is indeed related to the positive role of wealth inequality in bringing electricity or implementing a middle school to the tola and to restricted access to them. On the contrary, as later results will bring to light, access to primary school is not restricted on the ground of caste membership. Universal access that follows many years of education programs, may explain why fractionalization is never found to have an impact on the presence of primary schools. Please note that including the percentage of scheduled castes does not change the results, as set out in tables 1-B and 2-B, and the variable is almost never significant, disproving that scheduled castes favor specific goods.

Tables 1-C and 2-C present the results when Gini coefficients are entered into equation (1) both alone and in its quadratic form at the village and tola level respectively. At the tola level, fractionalization's coefficients are far from being significant across goods when entered with Gini indicators, while the latter have significant or almost significant positive effects on the presence of all goods but electricity. This suggests that fractionalization's positive effect was indeed a proxy for inequality's beneficial role. Interestingly, fractionalization had no significant impact on the presence of anganwadi centers and public primary schools, while inequality does have a positive one. Please recall our basic argument: fractionalization may have a positive impact on the presence of public goods since it proxies the presence of wealthy individuals who are large contributors to their provision and as such, tend to restrict their access to their peers. In the event of universal access, the wealthier may still be larger consumers of these goods, which explains the positive relationship between inequality and social fragmentation, while the others still benefit from them, which explains the absence of relationship between fractionalization and the presence of the goods. This seems to be the case of public primary schools. Moreover, it should be noted that inequality's U-shaped impact has not been found in the results.

At the village level, including Gini indicators did not make the significance of fractionalization's coefficients totally disappear. Consistent with results from table 1-A, fractionalization is far from being significant for schools and bus stations. However, they come close to significance for both electricity and paved road. On the other hand, Gini indicators are almost never found significant when entered with fractionalization, whereas they are in most goods when entered alone. This points towards the idea that fractionalization is not a proxy for wealth inequality, although the picture at the village level is quite blurred. Looking at the tola level results brings out a more plain scenario. The difference in the clarity of the results between the village and tola levels emphasizes once again the importance of looking at micro data and choosing the appropriate level of aggregation.

As discussed earlier, Gini indicators may not be the most appropriate tools for solving the problem at hand, since they encompass the whole distribution when we are more concerned with inequality at the top hand of the distribution. For this reason, Gini is replaced by the $wealth$ indicator. Results are presented in tables 1-D and 2-D. Similar patterns seem to emerge. At the village level, fractionalization's coefficients are significant or close to significance when wealth indicators are not and vice versa. Similar conclusions may be drawn from the results at the tola level. One of the issues we may be facing is that of multicollinearity, since the correlation coefficient between fractionalization and wealth is 0.48 and significant. In this case, the estimates from equation (1) when both $wealth$ and fractionalization are entered are difficult to interpret. This correlation is not so surprising given that patterns of land distribution closely mimic social hierarchy. Hence the more fragmented the village, the more likely is the presence of upper castes who own land whose value is much larger than the average. Please note that this problem was less acute with Gini coefficients, since their correlation coefficient is 0.35 and significant.

To sum up, explaining fractionalization's positive impact on the presence of public goods by inequality seems sensible but not definite, although data provide some support. Fragmentation's positive effect remains puzzling especially as it goes against previous empirical results. Going back to the theory, fractionalization's impact has been proved positive due to the presence of wealthy individuals who restrict their access to their own groups members. We now turn to testing whether one group, in this particular case the scheduled castes, is being denied access to electricity, waste disposal and education by estimating equation (2). Results are presented in table 5. Controlling for different characteristics, being a scheduled caste significantly reduces the likelihood of having access to electricity from 0.16 to 0.07, of having lavatories from 0.11 to 0.03 and sending children to middle schools from 0.42 to 0.24. Please recall that fractionalization had a significant positive impact on the presence of electricity, waste disposal system and middle schools either at village or tola level. However, this was not the case regarding the

availability of primary schools and indeed, results from table 5 show that access is not significantly restricted. As pointed out earlier, the availability of primary education has been a goal of many NGOs or publicly sponsored programs and they seem to have been quite successful since the average probability of sending a child to primary school for the total sample is 0.67 and does depend neither on income, nor on group membership. Average probabilities to have access to these goods for scheduled castes and other groups are detailed in the table below (estimation of equation (4)):

	Electricity	**Toilets**	**Middle school**
Total sample	0,157	0,112	0,422
Other groups	0,200	0,153	0,516
Scheduled caste	0,065	0,028	0,237
Difference	0,136	0,124	0,279

However, the difference in average probabilities may well be coming from systematic differences in characteristics between the two groups. For instance, a household whose head is illiterate is significantly less likely to get access to the public goods. There may be a greater share of illiterate heads among scheduled castes. To distinguish between the part of the difference in average probabilities that can be ascribed to discrimination and systematic difference in characteristics, a Oaxaca-Blinder decomposition has been performed, as discussed in section 3. The table below presents the results.

	Electricity	**Toilets**	**Middle school**
Difference	0,136	0,124	0,279
ascribed to discrimination	0,082	0,064	0,182
ascribed to group difference in characteristics	0,054	0,060	0,097

It is striking to see that more than half of the difference in average probabilities may be attributed to discrimination. Scheduled castes are being denied access to these public -or should we say from now on "collective"- goods on the sole basis of their caste membership. This echoes the results found by Anderson (2007). The author explained the difference in income between upper castes and lower castes by the latter's restricted access to irrigation systems and dysfunctional private water markets.

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. This positive effect seems to proxy the positive role played by high levels of inequality although most of its effect can be explained by the exclusion of less favored groups from public goods

access. The results emphasize the need to both look at local conditions and the use which is made of public goods instead of focusing only at their 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". Conditions preventing such a situation may be the object of future research.

LIST OF VARIABLES AND SUMMARY STATISTICS

	Variable name	Description	Nb obs	Mean	S.D.
Village level	fracvil	Fractionalization index calculated at the village level.	118	0,52	0,17
	avgincvil	Average households' yearly income.	120	10 021,62	6 621,33
	nbhhldvil	Number of households in the village.	118	232,20	140,64
	avgsizehhvil	Average number of individuals within households.	120	6,29	1,18
	nbspspgm	Number of sponsored programs in the last 12 months in the village.	120	1,28	0,73
	nbgvtpgmcomp	Number of completed government programs in the village in the last 12 months.	120	0,63	1,01
	pctownfarm	Percentage of village households whose primary source of living is their own farm.	120	0,45	0,19
	pcthdilitvil	Percentage of village households whose head is illiterate.	120	0,51	0,17
	pctvilscst	Percentage of village households that belong to scheduled castes.	118	0,28	0,21
	Ginilandvil	Gini coefficient at the village level based on households land value in Rupees.	120	0,52	0,12
	Ginilandvilsq	Square of the above Gini coefficient.	120	0,29	0,13
	wealthvil	Wealth indicator as per section 3.1.	120	3,21	1,03
Tola level	fractola	Fractionalization index.	342	0,32	0,28
	avginctola	Average households' yearly income.	326	9 961,05	10 733,48
	nbhhldtola	Number of households in the tola.	342	6,59	6,07
	avgsizehhtola	Average number of individiuals within tola households.	342	6,24	1,92
	pctownfarmtola	Percentage of tola households whose primary source of living is their own farm.	342	0,46	0,32
	pcthdilittola	Percentage of tola households whose head is illiterate.	342	0,52	0,31
	pcttolascst	Percentage of tola households that belong to scheduled castes.	342	0,25	0,33
	Ginilandtola	Gini coefficient at the tola level based on households' land value in Rs.	256	0,40	0,17
	Ginilandtolasq	Square of the above Gini coefficient.	256	0,19	0,13
	wealthtola	Wealth indicator as per section 3.1.	316	2,12	1,01
Household level	hdilit	Dummy = 1 if household's head is illiterate.	2 254	0,51	0,50
	income	Household's yearly income.	1 834	9 933,73	16 449,72
	ownfarm	Dummy = 1 if household's primary source of living is its own farm.	2 238	0,46	0,50
	hhsize	Number of individuals within the household.	2 254	6,29	3,19
	hdage	Age of the household's head.	2 254	0,28	0,45
	scsthh	Dummy = 1 if the household belongs to a scheduled caste.	2 254	46,73	14,16

TABLE 1-A: DEPENDENT VARIABLE: PRESENCE OF PUBLIC GOOD j AT THE *village* LEVEL

	Paved road	**Bus**	**Waste disposal**	**Telephone**	**Electricity**	**Anganwadi**	**Pub. Prim School**	**Mid. School**
$fractionalization$	2.175*	2.817	5.950***	4.816***	1.811	3.411**	-0.277	1.917
	(0.072)	(0.287)	(0.001)	(0.003)	(0.188)	(0.016)	(0.853)	(0.292)
avg. households' income	-0.000	0.000	-0.000***	-0.000	0.000*	-0.000	-0.000	-0.000
	(0.351)	(0.435)	(0.006)	(0.889)	(0.095)	(0.196)	(0.119)	(0.772)
avg. number of households	-0.000	0.004*	0.002	0.002	0.001	0.002	0.011***	0.006***
	(0.972)	(0.055)	(0.268)	(0.370)	(0.327)	(0.181)	(0.001)	(0.001)
avg. size of households	-0.173	-0.403	0.628**	-0.278	-0.212	0.167	0.174	0.220
	(0.468)	(0.234)	(0.042)	(0.313)	(0.392)	(0.508)	(0.566)	(0.435)
Nb of sponsored progams	0.168	-0.656	-0.510	0.477	0.588**	0.393	0.204	0.585**
	(0.591)	(0.208)	(0.410)	(0.161)	(0.027)	(0.249)	(0.702)	(0.039)
Nb of completed govt programs	0.362	0.746**	-0.764**	-0.573*	0.090	0.706**	0.094	0.062
	(0.104)	(0.040)	(0.034)	(0.090)	(0.729)	(0.042)	(0.786)	(0.793)
pct. hhlds. whose main source of living is own farm	-2.518**	-4.584***	-0.900	-3.031**	-1.184	-1.307	-0.116	-0.933
	(0.030)	(0.010)	(0.463)	(0.037)	(0.334)	(0.279)	(0.937)	(0.535)
pct. of illiterate hhlds heads	-1.752	-3.042	-1.665	-3.119**	-3.461**	-1.837	-0.482	-3.388**
	(0.177)	(0.117)	(0.415)	(0.040)	(0.019)	(0.204)	(0.794)	(0.027)
Observations	117	117	117	117	117	112	117	117
Wald Chi2	13.856	33.252	32.030	24.706	17.052	15.858	14.873	19.866
Pseudo R squared	0.090	0.248	0.246	0.173	0.121	0.148	0.172	0.189

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

TABLE 1-B: DEPENDENT VARIABLE: PRESENCE OF PUBLIC GOOD j AT THE *village* LEVEL

INCLUDING THE PROPORTION OF SCHEDULED CASTES

	Paved road	**Bus**	**Waste disposal**	**Telephone**	**Electricity**	**Anganwadi**	**Pub. Prim School**	**Mid. School**
$fractionalization$	2.767**	3.259	6.129***	4.956***	1.557	3.150**	-0.304	1.547
	(0.026)	(0.198)	(0.003)	(0.004)	(0.263)	(0.039)	(0.837)	(0.420)
avg. households'	-0.000	0.000	-0.000***	-0.000	0.000*	-0.000	-0.000	-0.000
income	(0.389)	(0.369)	(0.006)	(0.890)	(0.097)	(0.168)	(0.117)	(0.740)
avg. Number	-0.001	0.003	0.002	0.001	0.002	0.002	0.011***	0.006***
of households	(0.608)	(0.106)	(0.310)	(0.432)	(0.248)	(0.107)	(0.001)	(0.001)
avg. size of	-0.223	-0.402	0.624**	-0.281	-0.191	0.174	0.177	0.235
households	(0.353)	(0.208)	(0.045)	(0.302)	(0.438)	(0.492)	(0.555)	(0.423)
Nb of sponsored	0.255	-0.553	-0.517	0.505	0.562**	0.335	0.202	0.523*
progams	(0.435)	(0.294)	(0.421)	(0.141)	(0.046)	(0.339)	(0.707)	(0.063)
Nb of completed	0.410*	0.742**	-0.754**	-0.560*	0.066	0.694**	0.091	0.042
govt programs	(0.069)	(0.039)	(0.036)	(0.094)	(0.805)	(0.047)	(0.792)	(0.864)
pct. hhlds. whose	-2.682**	-4.729**	-0.939	-3.080**	-1.146	-1.278	-0.105	-0.842
main source of	(0.025)	(0.010)	(0.439)	(0.034)	(0.357)	(0.290)	(0.943)	(0.571)
living is own farm								
pct. of illiterate	-1.557	-3.042	-1.609	-3.083**	-3.589**	-1.907	-0.502	-3.508**
hhlds heads	(0.245)	(0.119)	(0.431)	(0.042)	(0.012)	(0.207)	(0.786)	(0.030)
pct. of scheduled	-1.843*	-1.442	-0.674	-0.533	0.977	1.146	0.108	1.026
castes hhlds	(0.091)	(0.332)	(0.737)	(0.724)	(0.373)	(0.379)	(0.919)	(0.468)
Observations	117	117	117	117	117	112	117	117
Wald Chi2	17.061	33.286	31.812	25.353	20.645	16.879	15.050	19.925
Pseudo R squared	0.108	0.254	0.248	0.174	0.126	0.154	0.172	0.192

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

TABLE 1-C (*part 1*): DEPENDENT VARIABLE: PRESENCE OF PUBLIC GOOD j AT THE *village* LEVEL

INCLUDING GINI COEFFICIENTS

	Paved road			**Bus**			**Waste disposal**			**Telephone**		
$Gini$	2.978*	0.403	2.275	4.473**	0.067	3.839	-0.678	7.176	-2.920	6.214***	15.768	5.042**
	(0.075)	(0.964)	(0.201)	(0.050)	(0.996)	(0.123)	(0.728)	(0.436)	(0.201)	(0.005)	(0.230)	(0.029)
$Gini^2$		2.486			3.875			-7.530			-8.353	
		(0.759)			(0.750)			(0.371)			(0.463)	
$fractionalization$			1.712			1.878			6.673***			3.709**
			(0.174)			(0.498)			(0.000)			(0.022)
avg. households' income	-0.000	-0.000	-0.000	0.000	0.000	0.000	-0.000***	-0.000***	-0.000***	-0.000	-0.000	-0.000
	(0.306)	(0.284)	(0.348)	(0.680)	(0.723)	(0.569)	(0.004)	(0.005)	(0.009)	(0.490)	(0.525)	(0.589)
avg. number of households	0.001	0.001	0.000	0.004**	0.004**	0.004**	0.003*	0.003*	0.002	0.003	0.003	0.002
	(0.724)	(0.712)	(0.938)	(0.029)	(0.029)	(0.033)	(0.069)	(0.080)	(0.324)	(0.106)	(0.120)	(0.210)
avg. size of households	-0.181	-0.170	-0.180	-0.383	-0.373	-0.400	0.530*	0.501*	0.661**	-0.269	-0.290	-0.278
	(0.460)	(0.498)	(0.460)	(0.226)	(0.247)	(0.239)	(0.075)	(0.094)	(0.036)	(0.344)	(0.319)	(0.330)
Nb of sponsored progams	0.085	0.088	0.124	-0.798*	-0.797*	-0.759	-0.646	-0.677	-0.474	0.361	0.353	0.428
	(0.796)	(0.792)	(0.702)	(0.095)	(0.090)	(0.128)	(0.274)	(0.257)	(0.439)	(0.238)	(0.259)	(0.195)
Nb of completed govt programs	0.364	0.366	0.337	0.763**	0.777**	0.736*	-0.553*	-0.568*	-0.703**	-0.748**	-0.752**	-0.766**
	(0.109)	(0.108)	(0.142)	(0.045)	(0.043)	(0.064)	(0.084)	(0.080)	(0.043)	(0.034)	(0.033)	(0.029)
pct. hhlds. own farm	-2.112*	-2.057*	-2.373**	-3.848**	-3.790**	-4.126**	-0.262	-0.388	-0.839	-2.318*	-2.503*	-2.856**
	(0.053)	(0.064)	(0.037)	(0.031)	(0.040)	(0.017)	(0.824)	(0.749)	(0.489)	(0.092)	(0.074)	(0.036)
pct. of illiterate hhlds heads	-2.195*	-2.195*	-1.880	-3.351*	-3.313*	-3.042	-2.004	-2.019	-1.520	-3.754**	-3.905***	-3.511**
	(0.090)	(0.090)	(0.153)	(0.068)	(0.076)	(0.108)	(0.252)	(0.251)	(0.474)	(0.012)	(0.008)	(0.027)
Observations	117	117	117	117	117	117	117	117	117	117	117	117
Wald Chi2	13.097	14.141	15.328	32.470	33.972	34.493	27.967	27.716	35.540	20.948	20.883	25.301
Pseudo R squared	0.088	0.088	0.099	0.264	0.265	0.272	0.172	0.175	0.258	0.178	0.182	0.211

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

TABLE 1-C (*part 2*): DEPENDENT VARIABLE: PRESENCE OF PUBLIC GOOD j AT THE *village* LEVEL

INCLUDING GINI COEFFICIENTS

	Electricity			**Anganwadi**			**Pub. Prim. School**			**Mid. School**		
$Gini$	-0.196	-14.384	-1.203	0.761	31.084*	-0.424	0.780	-3.119	1.079	4.661**	15.441	4.299**
	(0.907)	(0.105)	(0.504)	(0.698)	(0.057)	(0.842)	(0.722)	(0.740)	(0.697)	(0.010)	(0.216)	(0.035)
$Gini^2$		13.657			-27.391*			3.776			-9.464	
		(0.112)			(0.053)			(0.681)			(0.384)	
$fractionalization$			2.090			3.509**			-0.556			1.068
			(0.123)			(0.021)			(0.773)			(0.585)
avg. households' income	0.000	0.000	0.000*	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000*	-0.000	-0.000	-0.000
	(0.118)	(0.191)	(0.090)	(0.178)	(0.239)	(0.210)	(0.123)	(0.106)	(0.097)	(0.630)	(0.690)	(0.703)
avg. number of households	0.002	0.002	0.001	0.003*	0.003*	0.002	0.011***	0.011***	0.011***	0.007***	0.007***	0.006***
	(0.228)	(0.170)	(0.367)	(0.068)	(0.075)	(0.196)	(0.001)	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)
avg. size of households	-0.209	-0.139	-0.210	0.178	0.131	0.165	0.180	0.203	0.183	0.237	0.210	0.237
	(0.399)	(0.577)	(0.396)	(0.449)	(0.576)	(0.517)	(0.550)	(0.490)	(0.548)	(0.426)	(0.482)	(0.424)
Nb of sponsored progams	0.542**	0.576**	0.613**	0.313	0.276	0.402	0.212	0.226	0.188	0.499*	0.481*	0.522*
	(0.044)	(0.044)	(0.021)	(0.378)	(0.394)	(0.236)	(0.694)	(0.675)	(0.728)	(0.066)	(0.081)	(0.062)
Nb of completed govt programs	0.151	0.174	0.101	0.723**	0.745**	0.711**	0.068	0.074	0.088	-0.012	-0.020	-0.026
	(0.568)	(0.517)	(0.698)	(0.036)	(0.033)	(0.041)	(0.839)	(0.828)	(0.800)	(0.964)	(0.940)	(0.920)
pct. hhlds. own farm	-1.033	-0.732	-1.295	-1.010	-1.370	-1.352	-0.058	0.066	0.002	-0.385	-0.527	-0.545
	(0.386)	(0.545)	(0.298)	(0.394)	(0.295)	(0.268)	(0.969)	(0.966)	(0.999)	(0.786)	(0.720)	(0.712)
pct. of illiterate hhlds heads	-3.711**	-3.774**	-3.404**	-2.068	-2.718*	-1.838	-0.442	-0.449	-0.536	-3.610**	-3.786**	-3.480**
	(0.012)	(0.011)	(0.020)	(0.125)	(0.051)	(0.206)	(0.810)	(0.809)	(0.779)	(0.030)	(0.022)	(0.038)
Observations	117	117	117	112	112	112	117	117	117	117	117	117
Wald Chi2	15.859	20.070	18.574	11.579	12.530	16.090	15.097	15.286	15.255	22.643	22.393	24.518
Pseudo R squared	0.108	0.121	0.124	0.119	0.146	0.148	0.173	0.174	0.174	0.213	0.217	0.216

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

TABLE 1-D (*part 1*): DEPENDENT VARIABLE: PRESENCE OF PUBLIC GOOD j AT THE *village* LEVEL

INCLUDING WEALTH VARIABLE

	Paved Road		**Bus**		**Waste disposal**		**Telephone**	
$wealth$	0.213	0.121	0.410*	0.337	-0.297	-0.621**	0.606***	0.477*
	(0.303)	(0.571)	(0.069)	(0.166)	(0.228)	(0.044)	(0.009)	(0.055)
$fractionalization$		1.965		2.118		7.423***		3.847**
		(0.119)		(0.432)		(0.000)		(0.014)
avg. households' income	-0.000	-0.000	0.000	0.000	-0.000***	-0.000**	-0.000	-0.000
	(0.278)	(0.340)	(0.670)	(0.545)	(0.003)	(0.011)	(0.528)	(0.633)
avg. number of households	0.001	0.000	0.004**	0.004**	0.003*	0.002	0.003*	0.002
	(0.718)	(0.975)	(0.039)	(0.046)	(0.073)	(0.384)	(0.087)	(0.213)
avg. size of households	-0.157	-0.165	-0.351	-0.379	0.530*	0.667**	-0.228	-0.246
	(0.515)	(0.491)	(0.253)	(0.260)	(0.077)	(0.036)	(0.398)	(0.371)
Nb of sponsored progams	0.078	0.135	-0.828*	-0.779	-0.622	-0.389	0.288	0.381
	(0.810)	(0.674)	(0.083)	(0.125)	(0.280)	(0.491)	(0.381)	(0.283)
Nb of completed govt programs	0.381*	0.349	0.781**	0.751**	-0.518*	-0.708**	-0.663*	-0.694**
	(0.091)	(0.123)	(0.028)	(0.045)	(0.093)	(0.048)	(0.055)	(0.047)
pct. hhlds. own farm	-2.181**	-2.469**	-4.106**	-4.396**	-0.074	-0.512	-2.356*	-2.961**
	(0.046)	(0.032)	(0.023)	(0.013)	(0.950)	(0.685)	(0.093)	(0.038)
pct. of illiterate hhlds heads	-2.128*	-1.790	-3.525*	-3.167	-1.963	-1.511	-3.780**	-3.535**
	(0.094)	(0.167)	(0.066)	(0.109)	(0.255)	(0.471)	(0.011)	(0.028)
Observations	117	117	117	117	117	117	117	117
Wald Chi2	11.791	14.352	32.656	34.087	30.803	40.769	24.966	27.286
Pseudo R squared	0.077	0.092	0.253	0.263	0.181	0.281	0.167	0.203

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

TABLE 1-D (*part 2*): DEPENDENT VARIABLE: PRESENCE OF PUBLIC GOOD j AT THE *village* LEVEL

INCLUDING WEALTH VARIABLE

	Electricity		**Anganwadi**		**Pub. Prim. School**		**Mid. School**	
$wealth$	0.030	-0.066	0.050	-0.085	0.065	0.090	0.627***	0.594***
	(0.874)	(0.733)	(0.810)	(0.719)	(0.807)	(0.779)	(0.002)	(0.008)
$fractionalization$		1.928		3.582**		-0.450		0.853
		(0.163)		(0.022)		(0.805)		(0.659)
avg. households'	0.000	0.000*	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
income	(0.120)	(0.090)	(0.166)	(0.205)	(0.126)	(0.106)	(0.603)	(0.663)
avg. number of	0.002	0.001	0.002*	0.002	0.011***	0.011***	0.007***	0.007***
households	(0.223)	(0.350)	(0.071)	(0.202)	(0.001)	(0.001)	(0.000)	(0.001)
avg. size of	-0.208	-0.216	0.179	0.159	0.183	0.188	0.279	0.278
households	(0.404)	(0.386)	(0.446)	(0.532)	(0.545)	(0.540)	(0.342)	(0.346)
Nb of sponsored	0.533*	0.606**	0.313	0.417	0.203	0.182	0.450	0.470
progams	(0.050)	(0.025)	(0.376)	(0.220)	(0.709)	(0.745)	(0.108)	(0.101)
Nb of completed	0.145	0.094	0.728**	0.714**	0.075	0.093	-0.015	-0.026
govt programs	(0.584)	(0.717)	(0.035)	(0.038)	(0.822)	(0.789)	(0.956)	(0.923)
pct. hhlds.	-1.014	-1.211	-1.050	-1.353	-0.093	-0.054	-0.416	-0.546
own farm	(0.392)	(0.323)	(0.375)	(0.262)	(0.950)	(0.971)	(0.776)	(0.721)
pct. of illiterate	-3.721**	-3.433**	-2.061	-1.841	-0.442	-0.518	-3.954**	-3.829**
hhlds heads	(0.012)	(0.020)	(0.128)	(0.203)	(0.808)	(0.782)	(0.026)	(0.035)
Observations	117	117	112	112	117	117	117	117
Wald Chi2	15.829	17.374	11.664	16.117	15.830	16.029	21.641	23.339
Pseudo R squared	0.108	0.122	0.118	0.149	0.172	0.173	0.227	0.229

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

TABLE 2-A : DEPENDENT VARIABLE: PRESENCE OF PUBLIC GOOD j AT THE *tola* LEVEL

	Bus	**Telephone**	**Electricity**	**Anganwadi**	**Pub. Prim. School**	**Mid. School**
$fractionalization$	2.208*	2.113**	1.167**	0.650	0.414	1.802*
	(0.058)	(0.024)	(0.020)	(0.409)	(0.484)	(0.076)
avg. households'	-0.000	0.000*	0.000	-0.000	-0.000	0.000
income	(0.737)	(0.075)	(0.118)	(0.675)	(0.204)	(0.816)
avg. number of	-0.002	0.096***	-0.004	0.077***	0.178***	0.036
households	(0.950)	(0.004)	(0.850)	(0.003)	(0.000)	(0.246)
avg. size of	0.028	-0.294*	0.062	0.131	0.051	0.011
households	(0.850)	(0.099)	(0.377)	(0.306)	(0.593)	(0.940)
Nb of sponsored	-0.015	0.247	-0.036	0.254	-0.058	0.315
progams	(0.968)	(0.380)	(0.798)	(0.255)	(0.780)	(0.150)
Nb of completed	0.303	-0.200	0.136	0.181	-0.011	0.098
govt programs	(0.260)	(0.443)	(0.249)	(0.277)	(0.944)	(0.578)
pct. of illiterate	-1.307	-3.237***	-0.838**	-1.965***	-2.000***	-1.993***
hhlds heads	(0.103)	(0.003)	(0.039)	(0.009)	(0.000)	(0.003)
pct. hhlds. whose	-1.815**	0.554	-0.743*	-0.355	-0.163	-1.036
main source of living	(0.018)	(0.446)	(0.052)	(0.632)	(0.743)	(0.141)
is own farm						
Observations	320	321	320	324	306	317
Wald Chi2	19.704	29.801	22.767	21.023	42.448	15.462
Pseudo R squared	0.085	0.185	0.049	0.093	0.195	0.088

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

TABLE 2-B : DEPENDENT VARIABLE: PRESENCE OF PUBLIC GOOD j AT THE *tola* LEVEL

INCLUDING THE PROPORTION OF SCHEDULED CASTES

	Bus	**Telephone**	**Electricity**	**Anganwadi**	**Pub. Prim. School**	**Mid. School**
$fractionalization$	2.145*	2.159**	1.137**	0.833	0.391	1.855*
	(0.067)	(0.026)	(0.024)	(0.307)	(0.509)	(0.073)
avg. households'	-0.000	0.000*	0.000	-0.000	-0.000	0.000
income	(0.679)	(0.079)	(0.135)	(0.732)	(0.197)	(0.775)
avg. number of	0.001	0.098***	-0.003	0.075***	0.178***	0.035
households	(0.985)	(0.004)	(0.887)	(0.007)	(0.000)	(0.262)
avg. size of	0.028	-0.298*	0.061	0.138	0.050	0.011
households	(0.847)	(0.096)	(0.387)	(0.279)	(0.601)	(0.936)
Nb of sponsored	0.028	0.269	-0.024	0.214	-0.053	0.296
progams	(0.939)	(0.331)	(0.865)	(0.316)	(0.800)	(0.183)
Nb of completed	0.308	-0.194	0.138	0.169	-0.006	0.094
govt programs	(0.246)	(0.449)	(0.240)	(0.340)	(0.968)	(0.600)
pct. of illiterate	-1.148	-3.108***	-0.801*	-2.203***	-1.949***	-2.069***
hhlds heads	(0.153)	(0.002)	(0.051)	(0.008)	(0.000)	(0.003)
pct. hhlds. whose	-1.954**	0.477	-0.806**	-0.083	-0.211	-0.962
main source of living	(0.013)	(0.504)	(0.046)	(0.916)	(0.680)	(0.188)
is own farm						
pct. of scheduled	-0.886	-0.728	-0.252	1.023	-0.205	0.374
castes hhlds	(0.353)	(0.511)	(0.520)	(0.135)	(0.683)	(0.634)
Observations	320	321	320	324	306	317
Wald Chi2	21.309	31.479	22.629	25.143	42.834	15.521
Pseudo R squared	0.090	0.188	0.050	0.104	0.196	0.089

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

TABLE 2-C (*part 1*) : DEPENDENT VARIABLE: PRESENCE OF PUBLIC GOOD j AT THE *tola* LEVEL

INCLUDING GINI COEFFICIENTS

	Bus			**Telephone**			**Electricity**		
$Gini$	7.291**	-6.444	7.176**	4.063**	0.428	3.766**	0.623	-1.048	0.435
	(0.012)	(0.392)	(0.023)	(0.018)	(0.930)	(0.032)	(0.491)	(0.727)	(0.637)
$Gini^2$		15.156*			3.901			2.189	
		(0.060)			(0.478)			(0.566)	
$fractionalization$			0.223			0.743			0.682
			(0.864)			(0.403)			(0.228)
avg. households'	-0.000	-0.000	-0.000	0.000*	0.000*	0.000*	0.000*	0.000*	0.000*
income	(0.597)	(0.451)	(0.585)	(0.059)	(0.058)	(0.058)	(0.074)	(0.097)	(0.064)
avg. number	-0.088*	-0.121**	-0.090*	0.091**	0.090**	0.083**	-0.006	-0.007	-0.015
of households	(0.062)	(0.037)	(0.063)	(0.013)	(0.015)	(0.027)	(0.815)	(0.784)	(0.547)
avg. size	0.009	0.051	0.007	-0.326*	-0.302*	-0.328*	-0.030	-0.025	-0.029
of households	(0.963)	(0.792)	(0.972)	(0.080)	(0.090)	(0.084)	(0.722)	(0.765)	(0.732)
Nb of sponsored	-0.131	-0.087	-0.117	0.327	0.327	0.344	0.044	0.046	0.074
progams	(0.691)	(0.768)	(0.719)	(0.286)	(0.297)	(0.252)	(0.784)	(0.774)	(0.645)
Nb of completed	0.177	0.196	0.176	-0.399	-0.385	-0.410	0.022	0.019	0.026
govt programs	(0.587)	(0.574)	(0.595)	(0.308)	(0.327)	(0.298)	(0.861)	(0.879)	(0.834)
pct. of illiterate	-1.929*	-1.787	-1.925*	-4.236***	-4.182***	-4.351***	-1.712***	-1.740***	-1.710***
hhlds heads	(0.091)	(0.115)	(0.094)	(0.001)	(0.001)	(0.001)	(0.003)	(0.003)	(0.003)
pct. hhlds.	-2.317**	-2.103**	-2.311**	0.833	0.870	0.958	-0.733	-0.706	-0.712
own farm	(0.010)	(0.020)	(0.012)	(0.332)	(0.316)	(0.253)	(0.149)	(0.165)	(0.161)
Observations	251	251	251	252	252	252	253	253	253
Wald Chi2	18.057	30.263	21.919	23.919	26.881	26.056	16.218	16.473	17.449
Pseudo R squared	0.184	0.217	0.185	0.212	0.214	0.215	0.047	0.047	0.051

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

TABLE 2-C (*part 2*) : DEPENDENT VARIABLE: PRESENCE OF PUBLIC GOOD j AT THE *tola* LEVEL

INCLUDING GINI COEFFICIENTS

	Anganwadi			**Pub. Prim. School**			**Mid. School**		
$Gini$	2.419**	20.183**	2.336*	2.487**	1.972	2.576**	3.625*	-1.089	3.172
	(0.046)	(0.024)	(0.054)	(0.033)	(0.576)	(0.028)	(0.074)	(0.869)	(0.107)
$Gini^2$		-18.933**			0.610			5.213	
		(0.033)			(0.883)			(0.458)	
$fractionalization$			0.208			-0.239			1.120
			(0.799)			(0.711)			(0.294)
avg. households'	-0.000	0.000	0.000	-0.000	-0.000	-0.000	0.000	0.000	0.000
income	(1.000)	(0.904)	(1.000)	(0.235)	(0.230)	(0.237)	(0.593)	(0.751)	(0.575)
avg. number	0.056**	0.057**	0.054*	0.142***	0.142***	0.146***	0.024	0.022	0.012
of households	(0.040)	(0.033)	(0.063)	(0.000)	(0.000)	(0.000)	(0.479)	(0.517)	(0.746)
avg. size	0.015	-0.011	0.016	0.036	0.037	0.034	0.066	0.085	0.075
of households	(0.920)	(0.950)	(0.914)	(0.739)	(0.732)	(0.757)	(0.664)	(0.573)	(0.635)
Nb of sponsored	0.289	0.276	0.297	-0.093	-0.092	-0.104	0.391*	0.404*	0.432*
progams	(0.195)	(0.203)	(0.189)	(0.661)	(0.664)	(0.629)	(0.082)	(0.071)	(0.058)
Nb of completed	0.055	0.056	0.055	-0.025	-0.025	-0.024	-0.134	-0.134	-0.132
govt programs	(0.775)	(0.773)	(0.776)	(0.879)	(0.879)	(0.885)	(0.595)	(0.596)	(0.609)
pct. of illiterate	-2.244***	-2.380***	-2.249***	-2.241***	-2.242***	-2.242***	-2.130**	-2.119**	-2.123**
hhlds heads	(0.007)	(0.006)	(0.007)	(0.001)	(0.001)	(0.001)	(0.035)	(0.035)	(0.042)
pct. hhlds.	-0.328	-0.519	-0.317	0.031	0.039	0.016	-0.928	-0.861	-0.915
own farm	(0.704)	(0.568)	(0.714)	(0.961)	(0.951)	(0.980)	(0.333)	(0.353)	(0.350)
Observations	253	253	253	240	240	240	247	247	247
Wald Chi2	22.610	14.941	22.610	47.721	48.575	49.267	11.811	13.738	12.520
Pseudo R squared	0.093	0.119	0.093	0.182	0.182	0.183	0.103	0.107	0.110

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

TABLE 2-D (*part 1*) : DEPENDENT VARIABLE: PRESENCE OF PUBLIC GOOD j AT THE *tola* LEVEL

INCLUDING WEALTH VARIABLE

	Bus		**Telephone**		**Electricity**	
$wealth$	1.045***	1.006***	0.645***	0.568**	0.268	0.200
	(0.000)	(0.001)	(0.010)	(0.032)	(0.110)	(0.245)
$fractionalization$		0.520		1.407		1.081**
		(0.684)		(0.189)		(0.044)
avg. households'	-0.000	-0.000	0.000*	0.000*	0.000	0.000*
income	(0.540)	(0.528)	(0.060)	(0.057)	(0.121)	(0.094)
avg. Number	-0.080*	-0.087*	0.091**	0.077**	-0.003	-0.019
of households	(0.072)	(0.075)	(0.019)	(0.048)	(0.896)	(0.484)
avg. size of	0.041	0.037	-0.339*	-0.352*	0.059	0.058
households	(0.799)	(0.831)	(0.070)	(0.076)	(0.416)	(0.434)
Nb of sponsored	-0.254	-0.209	0.185	0.238	-0.085	-0.029
progams	(0.418)	(0.510)	(0.553)	(0.424)	(0.557)	(0.843)
Nb of completed	0.213	0.211	-0.298	-0.320	0.081	0.085
govt programs	(0.496)	(0.506)	(0.382)	(0.354)	(0.509)	(0.479)
pct. of illiterate	-1.600	-1.602	-3.736***	-4.038***	-1.034**	-1.037**
hhlds heads	(0.122)	(0.127)	(0.001)	(0.001)	(0.020)	(0.021)
pct. hhlds.	-2.117**	-2.122**	0.620	0.839	-0.780*	-0.751*
own farm	(0.013)	(0.014)	(0.387)	(0.237)	(0.058)	(0.070)
Observations	296	296	297	297	297	297
Wald Chi2	22.806	27.262	23.723	28.387	22.488	25.031
Pseudo R squared	0.180	0.181	0.214	0.223	0.050	0.060

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

TABLE 2-D (*part 2*) : DEPENDENT VARIABLE: PRESENCE OF PUBLIC GOOD j AT THE *tola* LEVEL

INCLUDING WEALTH VARIABLE

	Anganwadi		**Pub. Prim School**		**Mid. School**	
$wealth$	0.186	0.166	0.474**	0.473**	0.410*	0.318
	(0.307)	(0.366)	(0.011)	(0.012)	(0.076)	(0.174)
$fractionalization$		0.338		0.025		1.657
		(0.668)		(0.969)		(0.122)
avg. households'	-0.000	-0.000	-0.000	-0.000	0.000	0.000
income	(0.624)	(0.633)	(0.296)	(0.296)	(0.869)	(0.807)
avg. number	0.068**	0.063**	0.140***	0.139***	0.029	0.008
of households	(0.019)	(0.033)	(0.000)	(0.001)	(0.398)	(0.822)
avg. size	0.133	0.134	0.028	0.028	0.006	0.002
of households	(0.303)	(0.305)	(0.782)	(0.781)	(0.966)	(0.991)
Nb of sponsored	0.196	0.214	-0.119	-0.117	0.190	0.282
progams	(0.377)	(0.353)	(0.569)	(0.577)	(0.351)	(0.180)
Nb of completed	0.151	0.150	-0.056	-0.056	0.049	0.050
govt programs	(0.369)	(0.371)	(0.729)	(0.729)	(0.799)	(0.800)
pct. of illiterate	-1.913**	-1.927**	-1.984***	-1.985***	-1.840**	-1.879**
hhlds heads	(0.016)	(0.017)	(0.000)	(0.000)	(0.012)	(0.019)
pct. hhlds.	-0.596	-0.578	-0.064	-0.063	-1.107	-1.106
own farm	(0.439)	(0.454)	(0.905)	(0.908)	(0.110)	(0.140)
Observations	299	299	283	283	292	292
Wald Chi2	16.375	16.106	58.513	58.631	15.251	15.625
Pseudo R squared	0.083	0.084	0.205	0.205	0.078	0.095

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

TABLE 5 : DEPENDENT VARIABLE: PUBLIC GOOD j ACCESSED BY HOUSEHOLD i

Odds ratios

	Electricity	**Toilets**	**School**	**Primary school**	**Middle school**
head illiterate	0.326***	0.295***	0.276***	0.802	0.423***
	(0.000)	(0.003)	(0.000)	(0.545)	(0.007)
income	1.000	1.000**	1.000	1.000	1.000
	(0.149)	(0.016)	(0.809)	(0.924)	(0.252)
ownfarm	0.955		1.384**	0.895	1.116
	(0.816)		(0.036)	(0.770)	(0.723)
hhld size	1.052*	1.036	1.201***	1.083	1.125**
	(0.078)	(0.517)	(0.000)	(0.110)	(0.039)
hhld head age	1.023***	1.035**	1.008	0.968***	1.044***
	(0.001)	(0.013)	(0.150)	(0.010)	(0.001)
hhld sch. caste	0.405***	0.277**	0.817	1.329	0.464**
	(0.001)	(0.022)	(0.171)	(0.513)	(0.022)
Observations	961	429	1181	690	227
Log Likeiood	-374.503	-124.164	-633.744	-137.834	-136.679
Wald Chi2	78.430	32.554	119.319	10.283	28.284
Pseudo R squared	0.104	0.174	0.118	0.025	0.131

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

TABLE 6-A: CORRELATIONS MATRIX FOR *village* LEVEL VARIABLES

	Fractio	Avg Inc.	Nb hhlds	avg hhld size	Nb pgms	Nb govt pgm	Pct own farm	Pct illit.	Pct scst	Gini	Gini squ.	Wealth
Fractionalisation	1.0000											
avg income	-0.0418	1.0000										
	0.6527											
Nb of households	0.1736	-0.0877	1.0000									
	0.0600	0.3451										
Avg size	0.0042	0.5956	-0.1767	1.0000								
of household	0.9643	0.0000	0.0556									
Nb sponsored	-0.0179	-0.0951	0.0992	-0.0565	1.0000							
programs	0.8471	0.3014	0.2851	0.5398								
Nb of completed	0.1104	0.2724	-0.0534	0.1223	0.2051	1.0000						
govt programs	0.2339	0.0026	0.5658	0.1832	0.0246							
pct of hhlds	0.0587	0.0082	-0.1578	0.0536	0.1208	0.1631	1.0000					
living is own farm	0.5275	0.9292	0.0879	0.5613	0.1888	0.0751						
Pct of illiterate	-0.1452	-0.2364	0.0222	-0.3682	0.1799	0.0094	0.0797	1.0000				
households heads	0.1166	0.0093	0.8116	0.0000	0.0493	0.9193	0.3869					
Pct of scheduled	0.1841	-0.0419	-0.1705	-0.0950	0.1677	0.1586	0.0184	0.1215	1.0000			
castes households	0.0459	0.6525	0.0649	0.3060	0.0696	0.0862	0.8433	0.1901				
Gini	0.2869	0.0506	-0.0270	0.0520	0.1269	0.1539	-0.0414	-0.0023	0.0633	1.0000		
	0.0016	0.5829	0.7717	0.5725	0.1674	0.0934	0.6532	0.9797	0.4959			
Gini square	0.2627	0.0601	-0.0270	0.0271	0.1091	0.1418	-0.0780	-0.0069	0.0990	0.9829	1.0000	
	0.0041	0.5143	0.7712	0.7686	0.2354	0.1224	0.3971	0.9401	0.2860	0.0000		
wealth	0.2580	0.0133	-0.0266	-0.0241	0.2079	0.1671	0.0131	0.0401	0.1668	0.8766	0.8904	1.0000
	0.0048	0.8852	0.7751	0.7942	0.0227	0.0681	0.8871	0.6634	0.0710	0.0000	0.0000	

coefficients on the first lines, p-values on the second lines

TABLE 6-B: CORRELATIONS MATRIX FOR *tola* LEVEL VARIABLES

	Fractio	Avg Inc.	Nb hhlds	avg hhld size	Nb pgms	Nb govt pgm	Pct illit.	Pct own farm	Pct scst	Gini	Gini squ.	Wealth
Fractionalisation	1.0000											
avg income	-0.0280	1.0000										
	0.6147											
Nb of households	0.5291	-0.0206	1.0000									
	0.0000	0.7107										
Avg size	0.0362	0.4550	0.0290	1.0000								
of household	0.5052	0.0000	0.5934									
Nb sponsored	-0.1118	-0.0608	0.0273	-0.0516	1.0000							
programs	0.0389	0.2735	0.6150	0.3415								
Nb of completed	-0.0257	0.1742	-0.0549	0.0685	0.1501	1.0000						
govt programs	0.6355	0.0016	0.3110	0.2064	0.0054							
Pct of illiterate	-0.0680	-0.0498	-0.0137	-0.1689	0.1546	0.0549	1.0000					
households heads	0.2100	0.3705	0.8006	0.0017	0.0041	0.3113						
pct of hhlds	-0.0670	-0.0511	-0.0168	0.1210	0.0881	0.0382	-0.0710	1.0000				
living is own farm	0.2164	0.3575	0.7572	0.0253	0.1039	0.4813	0.1900					
Pct of scheduled	-0.0562	-0.0972	0.0400	-0.1365	0.1254	0.0345	0.1905	-0.2506	1.0000			
castes households	0.3002	0.0796	0.4612	0.0115	0.0203	0.5248	0.0004	0.0000				
Gini	0.3530	-0.0832	0.4800	-0.0171	0.0383	0.0357	-0.0705	-0.0535	0.0806	1.0000		
	0.0000	0.1854	0.0000	0.7859	0.5420	0.5698	0.2608	0.3940	0.1987			
Gini square	0.3687	-0.0450	0.4777	-0.0326	0.0344	0.0478	-0.0489	-0.0750	0.0829	0.9611	1.0000	
	0.0000	0.4744	0.0000	0.6040	0.5835	0.4461	0.4363	0.2320	0.1859	0.0000		
wealth	0.4755	-0.0015	0.6361	0.0719	0.0851	0.0748	-0.0324	-0.0701	0.0566	0.8779	0.9097	1.0000
	0.0000	0.9793	0.0000	0.2025	0.1312	0.1845	0.5658	0.2141	0.3159	0.0000	0.0000	

coefficients on the first lines, p-values on the second lines

References

Alesina, A., R. Baqir, and W. Easterly (1999, November). Public goods and ethnic divisions. *The Quarterly Journal of Economics 114*(4), 1243–1284.

Alesina, A. and E. L. Ferrara (2000, August). Participation in heterogenous communities. *Quarterly Journal of Economics 115*, 847–904.

Alesina, A. and E. L. Ferrara (2005, September). Ethnic diversity and economic performance. *Journal of Economic Literature 43*(3), 762–800.

Anderson, S. (2007). Caste as an impediment to trade; working paper.

Bandiera, O., I. Barankay, and I. Rasul (2005). Cooperation in collective action. Natural field experiments, The Field Experiments Website.

Banerjee, A., L. Iyer, and R. Somanathan (2005, April). History, social divisions, and public goods in rural india. *Journal of the European Economic Association 3*(2-3), 639–647.

Banerjee, A., L. Iyer, and R. Somanathan (2007, February). Public action for public goods. Working Paper 12911, National Bureau of Economic Research.

Banerjee, A. and R. Somanathan (2001). Caste, community and collective action: The political economy of public good provision in india. *mimeo, Massachusetts Institute of Technology*.

Banerjee, A. and R. Somanathan (2007, March). The political economy of public goods: Some evidence from india. *Journal of Development Economics 82*(2), 287–314.

Bardhan, P. (2000, July). Irrigation and cooperation: An empirical analysis of 48 irrigation communities in south india. *Economic Development and Cultural Change 48*(4), 847–65.

Bardhan, P., M. Ghatak, and A. Karaivanov (2007, September). Wealth inequality and collective action. *Journal of Public Economics 91*(9), 1843–1874.

Blinder, A. S. (1973). Wage discrimination: Reduced form and structural estimates. *Journal of Human Resources 8*, 436–55.

Chandra, K. (2004). *Why ethnic parties succeed. Patronage and Ethnic Head Counts in India*. Cambridge University Press.

Dayton-Johnson, J. (2000). Determinants of collective action on the local commons: a model with evidence from mexico. *Journal of Development Economics 62*, 181–208.

Deshpande, A. (2000, May). Does caste still define disparity? a look at inequality in kerala, india. *American Economic Review 90*(2), 322–325.

Fairlie, R. W. (2006). An extension of the blinder-oaxaca decomposition technique to logit and probit models. Working papers, Economic Growth Center, Yale University.

Foster, A. D. and M. R. Rosenzweig (1995, December). Learning by doing and learning from others: Human capital and technical change in agriculture. *Journal of Political Economy 103*(6), 1176–1209.

Foster, A. D. and M. R. Rosenzweig (2004, June). Technological change and the distribution of schooling: evidence from green revolution india. *Journal of Development Economics*.

Khwaja, A. I. (2009, August). Can good projects succeed in bad communities? *Journal of Public Economics 93*(7), 899–916.

Miguel, E. (2001, February). Ethnic diversity and school funding in kenya. Technical report, EconWPA.

Miguel, E. and M. K. Gugerty (2005, December). Ethnic diversity, social sanctions, and public goods in kenya. *Journal of Public Economics 89*(11-12), 2325–2368.

Nielsen, H. S. (1998, October). Discrimination and detailed decomposition in a logit model. *Economics Letter 61*(1), 115–120.

Oaxaca, R. L. (1973). Male-female wage differentials in urban labor markets. *International Economic Review 14*, 693–709.

Olson, M. (1965). *The Logic of Collective Action*. Harvard University Press, Cambridge, Mass.,.

Platteau, J.-P. (1995, October). An indian model of aristocratic patronage. *Oxford Economic Papers 47*(4), 636–62.

Rosenzweig, M. R. and O. Stark (1987). Consumption smoothing, migration and marriage: Evidence from rural india. Bulletins, University of Minnesota, Economic Development Center.

Somanathan, E., R. Prabhakar, and B. Mehta (2006). Collective action for forest conservation: Does heterogeneity matter? *In Inequality, Cooperation and Environmental Sustainability*. ed. J.M. Baland, P. Bardhan, and S. Bowles (Princeton Univesrity Press).

Srinivas, M. N. (1955, June). The social system of a mysore village in village india. studies in the little community. *The American Anthropologist 57*(3). In Marriott, McKim (Ed). Village India. Studies In the Little Community.

Tiebout, C. M. (1956). A pure theory of local expenditures. *The Journal of Political Economy 64*(5), 416–424.