

# Efficiency and rent seeking in local government: Evidence from randomized policy experiments in India

Esther Duflo, Greg Fischer and Raghavendra Chattopadhyay\*

February 28, 2005

## 1 Introduction

One of the traditional trade-offs about whether local public good provision should be decentralized is between efficiency and rent seeking: decentralized governments may be better at eliciting people's preferences than a centralized government, but they may have a higher chance to be captured by local elites and politically powerful groups. It may also be more difficult in a decentralized government than in a centralized government to ensure that minorities and disadvantaged groups get any share of public goods: a minority may be able to form a pressure group at the national level to ensure that protective legislations are passed, but if decisions are taken at the local level, minorities may be too weak locally to be able to claim any share of the public goods. This raises the related question of whether it is possible to correct for this potential imbalance by increasing the bargaining power of minorities or disadvantaged groups in local government, for example by mandating their representations in elected councils.

This paper seeks to shed light to this debate by answering several related questions, in the context of the decentralization in India. First, are mandated representation effective at increasing the share of public goods that reach minorities in a decentralized government?<sup>1</sup> Second,

---

\*We thank Abhijit Banerjee for helping us think about the issues in this paper. We thank Shawn Cole and Petia Topalova for excellent research assistance.

<sup>1</sup>At the state level, ? finds that a larger share of scheduled castes in legislative assembly does lead to an increase of transfers targeted to Scheduled Castes.

does the allocation of public goods appear to be efficient in a local government? In other words, even if minorities are disadvantaged, are they getting the mix of goods that they want? Third, is there evidence that powerful groups are getting more public goods than weak groups? And is there evidence that the elected officials take advantage of their position to provide more goods to their own constituencies ?

To answer these questions, the paper takes advantage of a nation-wide randomized policy experiment in India. In 1993, an amendment to the constitution of India ordered the States both to devolve more power over expenditure to local village councils (Gram Panchayat, henceforth GP) and to reserved a fraction of all positions of chief (Pradhan) to scheduled castes (SC) and scheduled tribes (ST) in proportion to their representation in the population. The seats to be reserved were randomly chosen. We conducted a detailed survey of all investments in local public goods in a sample of villages in Birbhum, in West Bengal, including information on the location of the public goods (the village within the GP, and the hamlet within the village). Scheduled Castes, Scheduled Tribes, religious minorities, and other groups, live in segregated hamlets, and many public goods (such as wells, are useful locally). We are thus able to estimate whether scheduled castes Pradhans tend to put more goods in scheduled castes hamlets, whether they change the mix of public goods provided in the villages, and whether they change the mix of goods available in scheduled castes hamlets. Because reserved constituencies were randomly assigned, we can confidently attribute any difference between the location or the types of public goods to the reservations policy.

We find that SC Pradhans tend to put more goods in scheduled castes hamlets: the share of investment in scheduled castes hamlets is 10% higher when the GP is reserved for a SC. However, the mix of public goods provided is not affected by the reservation. Moreover, we cannot reject that the increase in public good is proportional across types of good. We conclude that, while political agency determines the share of the public goods that everybody is getting, local government seem able to determine the preference of people over these public goods, and to respond to it. The second part of the paper investigates whether Pradhans put more goods in their own village. We find that, after correctly instrumenting for whether a village is the pradhan's village, this is not the case. This suggest that local governments are effective at eliciting villager's preferences, and that they are not characterized by widespread abuse of power

by the Pradhan, despite the present of group based targetting.

## 2 Institutional Background and Data Collection

### 2.1 The Panchayat System

The Panchayat is a system of village level (Gram Panchayat), block level (Panchayat Samiti), and district level (Zilla Parishad) councils, members of which are elected by the people, and are responsible for the administration of local public goods. Each Gram Panchayat (GP) encompasses 10,000 people in several villages (between 5 and 15). The GP do not have jurisdiction over urban areas, which are administered by separate municipalities. Voters elect a council, which then elects among its members a Pradhan (chief) and an Upa-Pradhan (vice-chief).<sup>2</sup> Candidates are generally nominated by political parties, but have to be residents of the villages they represent. The council makes decisions by majority voting (the Pradhan does not have veto power). The Pradhan, however, is the only member of the council with a full-time appointment.

The Panchayat system has existed formally in most of the major states of India since the early 1950s. However, in most states, the system was not an effective body of governance until the early 1990s. Elections were not held, and the Panchayats did not assume any active role. In 1992, the 73rd amendment to the Constitution of India established the framework of a three-tiered Panchayat system with regular elections throughout India. It gave the GP primary responsibility in implementing development programs, as well as in identifying the needs of the villages under its jurisdiction. Between 1993 and 2003, all major States but two (Bihar and Punjab) have had at least two elections. The major responsibilities of the GP are to administer local infrastructure (public buildings, water, roads) and identify targeted welfare recipients. The main source of financing is still the state, but most of the money which was previously earmarked for specific uses is now allocated through four broad schemes: The Jawhar Rozgar Yojana (JRY) for infrastructure (irrigation, drinking water, roads, repairs of community buildings, etc.), a small additional drinking water scheme, funds for welfare programs (widow's, old age, and maternity pensions, etc.), and a grant for GP functioning.<sup>3</sup> The GP has, in principle, complete flexibility

---

<sup>2</sup>In Rajasthan, the chief is called a Sarpanch. In this paper, we will use the terminology Pradhan for both States.

<sup>3</sup>According to the balance sheets we could collect in 40 GPs in West Bengal, the JRY accounts for 30% of

to allocate these funds. At this point, the GP has no direct control over the appointments of government paid teachers or health workers, but in some states (Tamil Nadu and West Bengal, for example), there are Panchayat run informal schools.

The Panchayat is required to organize two meetings per year, called “Gram Samsad”. These are meetings of villagers and village heads in which all voters may participate. The GP council submits the proposed budget to the Gram Samsad, and reports on their activities in the previous six months. The GP leader also must set up regular office hours where villagers can lodge complaints or requests.

In West Bengal, the Left Front (communist) Government gained power in 1977 on a platform of agrarian and political reform. The major political reform was to give life to a three-tiered Panchayat electoral system. The first election took place in 1978 and elections have taken place at five-year intervals ever since. Thus, the system put into place by the 73rd amendment all over India was already well established in West Bengal. Following the amendment, the GP was given additional responsibilities in West Bengal. In particular, they were entrusted to establish and administer informal education centers (called SSK), an alternative form of education for children who do not attend school (a instructor who is not required to have any formal qualification teaches children three hours a day in a temporary building or outdoors).

## **2.2 Reservation for Women and Disadvantaged groups**

In 1992, the 73rd amendment provided that one third of the seats in all Panchayat councils, as well as one third of the Pradhan positions, must be reserved for women. Seats and Pradhan’s positions were also reserved for the two disadvantaged minorities in India, “scheduled castes” (SC) and “scheduled tribes” (ST), in the form of mandated representation proportional to each minority’s population share in each district. Reservations have been implemented in all major States except Bihar and Uttar Pradesh (which has only reserved 25% of the seats to women).

In West Bengal, the Panchayat Constitution Rule was modified in 1993, so as to reserve one third of the councilor position in each GP to women and SC/ST; in a third of the villages in each total GP income, the drinking water scheme, 5%, the welfare programs, 15%, the grant for GP functioning, 33%, and the GP’s own revenue for 8%. GPs can also apply for some special schemes –a housing scheme for SC/ST, for example.

GP, only women could be candidates for the position of councilor for the area. The proportion of women elected to Panchayat councils increased to 36% after the 1993 election. The experience was considered a disappointment, however, because very few women (only 196 out of 3,324 GPs) advanced to the position of Pradhan, which is the only one that yields effective power (?). To conform to the 73rd amendment, the Panchayat Constitution Rule of West Bengal was again modified in April 1998 ? to introduce reservation of Pradhan positions for women and SC/ST.

In both states, a specific set of rules ensures the random selection of GPs where the office of Pradhan was to be reserved for a woman. All GPs in a district are ranked in consecutive order according to their serial legislative number (an administrative number pre-dating this reform). GPs where there are less than 5% of SC (ST) are excluded from the reservation pool for SC (ST). Within the remaining GP, a table of random number is used to choose the right number of GP to be reserved. They are then ranked in three separate lists, according to whether or not the seats had been reserved for a SC, for a ST, or is unreserved. Using these lists, every third GP starting with the first on the list is reserved for a woman pradhan for the first election.<sup>4</sup>

From discussions with the government officials at the Panchayat Directorate who devised the system and district officials who implemented it in individual districts, it appears that these instructions were successfully implemented. More importantly, in the district we study in West Bengal, we could verify that the policy was strictly implemented. After sorting the GPs into those reserved for SC/ST and those not reserved, we could reconstruct the entire list of reserved GPs by sorting all GPs by their serial number (allocated several years before the law was passed), and selecting every third GP starting from the first in each list. This verifies that the allocation of GPs to the reserved list was indeed random, as intended.<sup>5</sup>

In Birbhum district, where our data is collected, all the GP have at least 5% SC, so that the constraints of which GP can be reserved for SC not binding. 35% of the population of the district is SC, so 34% of the GPs were reserved. However, a significant fraction of the GP have very few ST, so that the sample of GPs in the study for SC reservation would be very low. We therefore focus on the impact of SC reservation. The reservation had an important impact

---

<sup>4</sup>For the next election, every third GP starting with the second on the list was reserved for a woman, etc. The Panchayat Constitution Rule has actual tables indicating the ranks of the GPs to be reserved in each election.

<sup>5</sup>We could not obtain the necessary information to perform the same exercise in Rajasthan. However, there too, the system appears to have been correctly implemented.

on the caste of the pradhan. Table 1 shows that 100% of the GP reserved for SC have a SC Pradhan. Only 8 (or 7.5%) of the GP that were not reserved for SC have a SC Pradhan.<sup>6</sup>

### 2.3 Data Collection

In the summer of 2000, we conducted a survey of all GPs in the district of Birbhum, West Bengal. Birbhum is located in the western part of West Bengal, about 125 miles from the state capital, Calcutta. At the time of the 1991 census, it had a population of 2.56 million. Agriculture is the main economic activity, and rice is the main crop cultivated. The male and female literacy rates were 50% and 37%, respectively. The district is known to have a relatively well-functioning Panchayat system.

There are 166 GPs in Birbhum, of which five were reserved for pre-testing, leaving 161 GPs in our study. We collected the data in two stages. First, we conducted an interview with the GP Pradhan. We asked each one a set of questions about his or her family background, education, previous political experience, and political ambitions, as well as a set of questions about the activities of the GP since his or her election in May 1998 (with support from written records). We then completed a survey of three villages in the GP: Two villages randomly selected in each GP, as well as the village in which the GP Pradhan resides. During the village interview, we drew a resource map of the village with a group of 10 to 20 villagers. The map featured all the available infrastructure in the village, and we asked whether each of the available equipment items had been built or repaired since May 1998. Importantly, we collected the location of the investment. Previous experience of one of the authors, as well as experimentation during the pre-testing period, suggested that this method yields extremely accurate information about the village.

Table 2 displays information about the location of public goods in these villages before 1998, when the policy was first introduced. For each good, we construct the share of public goods that are located in SC area, normalized by the share of the population that lives in the area. We also display information on private goods that are substitute for public goods. Therefore, an index smaller than 1 suggest that the SC have fewer goods than their share in the population would suggest. In column 1, we display the normalized share in GP that were not reserved for

---

<sup>6</sup>Very similar statistics were obtained in the case of women's reservation.

SC between 1998 and 2003. In Column 2, we display the normalized share in GP that were reserved for SC between 1998 and 2003 (standard errors are displayed in parentheses below the mean or the difference in the means). Because the reservation were randomly assigned, we do not expect any significant difference in the investment shares between GP that are reserved for SC and GP that are not reserved for SC. Three important facts emerge from this table. SC get a somewhat smaller share of public goods than non SC on average (the index for the average is 0.80), but the index is not significantly different from one, and the extent of under-investment in SC hamlets depends on the types of goods. It seems that there tends to be more public goods in SC hamlets for goods for which there are private substitute (drinking water wells, sanitation equipment) and less private goods for goods for which there are fewer private substitute (schools, adult education). Second, there are much less privately provided equivalent of the public goods in SC hamlet (we have information for water and irrigation equipment). Third, the indices are very similar in reserved and unreserved GP, which is reassuring.

The following summer, we conducted a second survey on public goods, this time covering all the villages in the 55 panchayats where the position of Pradhan is reserved neither for women, nor for SC or ST. The survey was very similar, but we collected some additional data on recipients of transfers programs, and inequality in the village. The focus of this second round of data collection was to focus on allocation of goods across villages within GPs.

### **3 SC reservation and Efficiency**

#### **3.1 Empirical Strategy**

Thanks to the randomization built into the policy, the basic empirical strategy to determine whether SC Pradhan build different goods or tends to place these goods in the SC hamlets is straightforward. The reduced form effect of the reservation status can be obtained by comparing the means of the outcomes of interest in reserved and unreserved GPs. Note that this reduced form difference is not an estimate of the comparison between a system with reservation and a system without reservation. The policy decisions in unreserved GPs can be different than what they would have been if there was no reservation whatsoever. They will be different, for example, in the presence of dynamic incentives. What we are trying to estimate is the effect of

being reserved for a woman, rather than not reserved, *in a system where there is reservation*. In particular, it is possible that Pradhan were not favoring their communities before the reservation, but they do so after the reservation because they are worried the other community will do it.

- Types of goods provided

Denoting  $Y_{ij}$  as the value of the outcome of interest for good  $i$  (say, investment in drinking water between 1998 and 2000) and  $R_j$  a dummy equal to 1 if the GP is reserved for a SC, this is simply:

$$E[Y_{ij}|R_j = 1] - E[Y_{ij}|R_j = 0]. \tag{1}$$

The standard errors are adjusted for possible correlation within GP using the Moulton correction (?).<sup>7</sup> We run village-level regressions using only the data for the two villages we selected randomly since the Pradhan’s villages are not random and may be selected differently in reserved and unreserved GPs.

Since all the reserved GPs have a SC Pradhan, and only very few of the unreserved GPs do, this reduced form coefficient is very close to the coefficient that one would obtain by using the reservation policy as an instrument for the Pradhan’s castes. We will therefore focus on the reduced form estimates, which are directly interpretable as the effect of the reservation policy.

- Location of goods provided

Since we know from the maps where in the village the goods were located, we can then estimate whether the goods were more likely to be placed in the SC hamlets. Note that we exclude the village of the Pradhan from this regression, so we are testing whether he or she tends to favor people from his/her ethnic group, not whether he is placing more goods in his own village.

The following expression give the impact of the caste of the Pradhan on the share of public goods that are located in the SC hamlet. Using the subscript  $s$  to denote investment in the SC hamlet, we have:

---

<sup>7</sup>The outcomes we consider are jointly determined, since they are linked by a budget constraint. However, because the regressor ( $R$ ) is the same in all outcome equations, a joint estimation of the system of equations would produce coefficients and standard errors numerically identical to OLS estimation equation by equation.

$$E[Y_{isj}/Y_{ij}|R_j = 1] - E[Y_{isj}/Y_{ij}|R_j = 0] \quad (2)$$

The magnitude of the difference is easier to interpret if we normalized the share of goods invested in the SC hamlet by the share of the village population that is SC. In this way, the difference tells us whether the extent to which a SC pradhan favors the SC hamlets, relative to a non-SC pradhan. This gives us the following formula, normalized by population share.

$$E[Y_{isj}/Y_{ij} * (P_{sj}/P_j)^{-1}|R_j = 1] - E[Y_{isj}/Y_{ij} * (P_{sj}/P_j)^{-1}|R_j = 0] \quad (3)$$

To calculate whether, on average across all goods, SC pradhans invest more in the SC hamlet, we estimate equations 2 and 3 for all goods, and we compute the average coefficients across all goods (the unit are the same since all the variables are expressed in percentage). To obtain standard errors that are robust to the fact that the decisions on all the goods are jointly determined, we compute the p value of the average using randomization inference: For each permutation, we randomly assign the SC dummy to 35% of the sample, and we then compute the average difference between the share of investments in SC and non SC hamlets. The p. value is the number of replications for which the calculated average is higher than the initial estimate.

- Efficiency of allocation

We have shown in previous work (Chattopadhyay and Duflo, 2003) that when an area is reserved for a female Pradhan, the allocation of public goods changes. This suggests that the allocation of public goods in the village is not efficient in a Coasian sense, since the villagers should choose public good to maximize their overall usefulness, and then redistribute resources among themselves according to everyone's bargaining power. However, it is plausible that villagers are credit constrained, and that the weaker groups find it difficult to compensate the stronger groups with monetary transfers in order to get the goods they want. In the case of women, the public good mix therefore HAS to change when women's bargaining power increases, since there is no other way to compensate them if they don't get better goods.

However, for SC, there are two policy instruments: the type of public goods and the distance that someone has to travel to enjoy them. In particular, if goods that are used locally, an efficient Panchayat which is restricted in its ability to extract monetary transfers the deliver the efficient local bundle, but the size of the overall bundle will depend on the groups' bargaining power.

With the (restrictive) assumption that the preferences for public goods are homothetic, at least in the range that will be affected by the policy, we can derive a test of the hypothesis that the village administration efficiently allocates public goods, subject to the constraint that it can not extract monetary transfers from the SC population. The idea of the test is that, if the (non-SC) administration knows what the SC want, it should give them the right mix. When the village becomes reserved for a SC, the bargaining power of the SC increases (if the SC Pradhan is indeed successful at channelling resources to the SC), and therefore they should get more goods. But they should get more of the goods they like, and no more of the goods they do not like, so the investments should be proportionally higher for all the goods.

To be concrete, assume that villagers have preferences over two goods (schools and wells). Assume that all goods are specific to the neighborhood.<sup>8</sup> An efficient Panchayat maximizes  $u^g(E^g, W^g) + \lambda u^{sc}(E^{sc}, W^{sc})$ , subject to the budget constraints for the panchayat:  $p_E(E^g + E^{sc}) + p_W(W^g + W^{sc}) \leq B$

Reservation leads to an increase in bargaining power of the SC to  $\lambda' > \lambda$ . With homothetic preferences, this should lead to a proportional increase in  $E^{sc}$  and  $W^{sc}$ .

This gives us the following test of efficiency:

For any public goods  $i$  and  $k$ , it should be true that:

$$\frac{E[Y_{isj}/Y_{ij} * (P_{js}/P_j)^{-1} | R_j = 1]}{E[Y_{isj}/Y_{ij} * (P_{js}/P_j)^{-1} | R_j = 0]} = \frac{E[Y_{ksj}/Y_{kj} * (P_{js}/P_j)^{-1} | R_j = 1]}{E[Y_{ksj}/Y_{kj} * (P_{js}/P_j)^{-1} | R_j = 0]} \quad (4)$$

### 3.2 Results

Table 3 presents the results of estimating equation 1, at the village and the GP level. For contrast, we also display the result of estimating the same equation for reservation for women, taken from our previous work. It appears that, unlike women, reservation to SC pradhans do not affect the types of public goods that are provided. The only two coefficients that are positive are the coefficients on repair of public school buildings, which is positive and significant in the village level regression, and the coefficient of literacy campaign, which is also positive and significant. For all other goods, the differences are either positive or negative, and insignificant. Interestingly, the two public goods for which there is an impact are the goods that are the least

---

<sup>8</sup>We are working on a generalized test accounting for spillovers

local of the public goods.

Table 4 presents the results of estimate equation 2 and 3. The first line present the average impact of the SC reservation on the share of investments across all publics goods, with the p.value calculated using randomization inference. On average, the share of public goods built in SC area is 10% higher (14% using the normalized share) in areas reserved for SC and in other areas. These difference are significant at the 3% level or more. SC pradhans do invest more in SC areas. When we look at different types of goods, all the differences are positive except for the coefficient of informal education. The coefficients are significant at the 10% level or better for drinking water, sanitation, and formal education.

Interestingly, there seems to be crowding out between publicly and privately provided goods: while the number of public hand pumps built in SC hamlets is larger in GP that are not reserved for SC, the number of privately provided handpumps is smaller: it seems that the non-SC compensated for the lower investments by investing more in private substitutes.

Table 5 presents the test that the effects are proportional across public goods. Column 1 displays the the normalized share in GP that are not reserved for SC. Investments are different across goods, with some goods where SC hamlet are clearly disadvantaged (irrigation and education), some goods where the distribution is more or less equal (drinking water and informal education) and sanitation where the allocation is bigger in SC areas (probably because of a special program of latrine for SC areas). These investment shares are similar to the shares we obtained for the goods that were available before the reservation policy (table 2), which suggests that there may not have been a polarization of the investment decisions during the reservation (i.e. it is not the case that non-SC Pradhan started to invest much less in SC areas, in anticipation of loosing power in the next election)<sup>9</sup> Column 2 displays the normalized share in GP that are reserved for ST column 3 displays the difference (already shown in table 5) and column 4 displays the ratios. It appears that, with the exception of the informal education centers (fewer of which are built in SC areas in GPs that are reserved for SC), the ratios are relatively similar, ranging between 1.35 and 1.9. The non-linear F statistics for the equality of the ratios is very low (0.10), and it is impossible to reject the hypothesis that the ratios are the same (the p.value

---

<sup>9</sup>I need to check whether pradhan that are going to be reserved in the next election invest less in SC areas than those who do not.

is 0.99). It therefore appears that public goods investments increase proportionally by class of goods when the Pradhan is a SC: the allocation seems to be efficient in the restricted sense in which we defined it.

## 4 Rent Seeking

In this section, we ask the second question of the paper: do elected officials tend to allocate more goods to their own villages?

### 4.1 Empirical Strategy

There is prima facie evidence that Pradhans put more goods in their own village. Note  $S_{ij}$  the share of public goods expenditure on good  $i$  for village  $k$  in panchayat  $j$ , so that  $S_{ijk} = Y_{ijk}/Y_{ij}$ , where  $Y_{ij}$  is the sum of investment in good  $i$  for all the villages of the Panchayat,  $P_j$  is the panchayat's population, and  $P_{jk}$  is village  $k$ 's population. Column 1 in table 7 present the coefficient  $\beta$  in the regression:<sup>10</sup>

$$S_{ijk} = \alpha + \beta T_j + \gamma \frac{P_{ij}}{P_{jk}} + \epsilon_{ijk},$$

where  $T_j$  is a dummy for whether the village is the pradhan's village. The first column present the result for a monetary valuation of all the investments conducted in the village (for each investment, we asked the value of the materials used, the number of man days, and the salary of employees), and the following columns present the result for the broad aggregate we discussed previously. It clearly appears that the Pradhan's village get somewhat more of all public goods than other villages (even after accounting for their different sizes), although the effect is smaller than the effect of the allocation to SC hamlet in SC reserved villages. On average the pradhan's village gets 7% more public goods expenditures. The effects comes from biogas, sanitation, and irrigation.

These results are not easily interpretable, however, since the Pradhan's village is not randomly selected: the Pradhan is chosen among all council members, and it is conceivable

---

<sup>10</sup>This regression is run in the data collected in the summer 2001, where we have all the investments conducted in all the villages of 55 GPs where the position of Pradhan is not reserved for SC, ST or women.

that the Pradhan's village is just more powerful, and better able to impose their preferences on others, so that this coefficient does not reflect the ability of the Pradhan to extract goods for his own village.

To circumvent this problem, we use the reservation system to construct a randomly assigned instrument for the pradhan's village. The idea of the instrument is based on the reservation of council seats at the village (or ward) level. All the positions of pradhans in the GPs in this data are unreserved. In almost all of them, the pradhan is a non SC, non ST male. This implies that the pradhan is very unlikely to originate from a ward that is currently reserved for a woman, a SC or a ST. Suppose that the village is the village of the previous Pradhan. Because many Pradhans continue on being Pradhan if they can, if the particular seat of the Pradhan is currently unreserved, it is likely that the village is still the Pradhan's village. But if this particular seat is now reserved, the previous Pradhan cannot run as council member, unless happens to be from the category the seat is reserved for (everybody has to run from the ward where they live, even if there is more than one ward within a particular village), and therefore he cannot be Pradhan again. If the village has more than one wards (most villages in our data have only one, but some have more than one), it may be possible for this village to be the new Pradhan's village, if the new Pradhan is the council member elected from another ward in the same village. But on average, previous pradhan's villages where the previous pradhan's seat is now reserved for a woman, a SC or a ST should still be less likely to be the pradhan's village than previous pradhan's villages where the previous pradhan's seat is unreserved.

Reservation is randomly assigned at the council level. However, there may be a direct effect of the reservation of the village council member seat to a woman, a SC or a ST on the allocation of public goods to this village: for example female, SC or ST council members may be less able to bargain for public goods with the others, so that there may be a direct negative effect of the reservation, irrespective of its effects on reducing a village's chances to be the pradhan's village. To control for this, we directly control for a dummy for reservation of the village's ward(s): in effect, the strategy is a differences in differences strategy, where we allow for a direct impact of reservation of the seat in public good allocation, but ask whether there is a larger negative impact in villages which used to be the pradhan's village.

To summarize, we therefore run the following regressions. The first stage regression is:

$$T_{jk} = \pi_1 + \pi_2 L_{jk} + \pi_3 Z_{kj} L_{kj} + \sum_{l=1}^5 N_{jkl} \gamma_l + \sum_{l=1}^5 N_{jkl} * Z_{jkl} \lambda_l, \quad (5)$$

where  $T_{jk}$  is a dummy for whether or not village  $k$  in GP  $j$  is the pradhan's village,  $L_{jk}$  is a dummy for whether or not village  $k$  in GP  $j$  is the previous pradhan's village,  $Z_{kj}$  is a variable indicating whether or not the previous pradhan's seat (if it exist) is now reserved,<sup>11</sup>  $N_{jkl}$  is a dummy indicating whether ward  $l$  exists in village  $k$  in GP  $j$ ,<sup>12</sup> and  $Z_{jkl}$  is a dummy indicating whether ward  $l$ , if it exists, is now reserved. The coefficient of interest in the first stage equation is  $\pi_3$ , which tells us whether or not a previous pradhan's village where the pradhan's seat is reserved is less likely to the pradhan's village than one where it is not reserved.

The reduced form equation for good  $i$  is simply:

$$S_{ijk} = \pi_{i1} + \pi_{i2} L_{jk} + \pi_{i3} Z_{kj} L_{kj} + \sum_{l=1}^5 N_{jkl} \gamma_{il} + \sum_{l=1}^5 N_{jkl} * Z_{jkl} \lambda_{il}. \quad (6)$$

Again, the coefficient of interest is  $\pi_{i3}$  which tells us whether, controlling for the direct effect of being reserved, village  $k$  which used to be the pradhan's village get a smaller share of public good than a village that used to be pradhan village and remained unreserved.

The structural equation of interest is:

$$S_{ijk} = \delta_{i1} + \delta_{i2} L_{jk} + \delta_{i3} T_{jk} + \sum_{l=1}^5 N_{jkl} \gamma_{il} + \sum_{l=1}^5 N_{jkl} * Z_{jkl} \lambda_{il}. \quad (7)$$

This equation will be estimated with OLS, and by instrumental variables, where the excluded instrument is the interaction  $Z_{kj} L_{kj}$ . The coefficient of interest is  $\delta_{i3}$ , which tells us whether a village which was not randomly rotated out of being a pradhan's village gets more good than one that was. It is important that the effect is estimated for the subset of villages that used to be pradhan's village: it is possible that the effect of the being the pradhan's village is different for strong and weak villages.

---

<sup>11</sup>The interaction  $Z_{kj} L_{kj}$  is always defined, since it is equal to zero if the village is not the previous pradhan's village

<sup>12</sup>Most villages have only one ward, but some have up to five wards.

## 4.2 Results

Column 2 in table 7 shows the results of estimating equation 7 using OLS. The difference with panel A is that we include the previous pradhan dummy and the controls for the number of constituencies and whether or not each of them is reserved. The coefficient of the current pradhan's village remains positive and significant.

Column 1 in table 8 shows the coefficients  $\pi_2$  and  $\pi_3$  in the first stage equation, equation 5. The first row shows that, if it is unreserved, the previous pradhan's village is 40% more likely to be the pradhan's village than any other village in the area. However, as the second row shows, the effect disappears almost entirely for reserved village (which, compared to other previous pradhan's village, are 30% less likely to be the pradhan's village). The coefficient of the interaction is strongly significant, which suggests that it may form a sufficiently powerful instrument.

Column 3 in table 7 shows the reduced form coefficients  $\pi_{i3}$  for a series of outcome variables. Contrary to the OLS and the first stage, all interactions are insignificant. On average, they are close to 0 and completely insignificant. This suggests that the previous pradhan effect reflected village selection, rather than the causal effect of being the Pradhan's village. The previous's pradhan's village is no less likely to get good if currently reserved (and therefore not the pradhan's village any more than if it is not).

Column 4 in table 7 shows the instrumental variable estimates of the effect of being the pradhan's village on the share of public goods received by the village. After instrumenting, the coefficients lose significance. Overall, these estimates do not suggest that the pradhan's village receive any more goods than other villages.

This suggests that strong villages have the power to affect public good allocations, irrespective of whether they actually have the pradhan's post or not.

## 5 Conclusion

This paper establishes that mandated representation of SC increases the share of public goods they receive. This suggests that it is possible to ensure minimum redistribution to disadvantaged groups by ensuring they have a say in decision making.

Moreover, the paper shows that local governments, even when they are not dominated by minority groups, are able to elicit preferences and to respond to them: when the bargaining power of SC increases, their share of public goods increase, but it does so proportionally across goods. This suggests that there were no gross mis-allocation of resources within the share that they were allowed to receive.

This study (like our previous work on women) shows that the Pradhan has decision making power. This is confirmed by the results on rent seeking, which shows that the pradhan invest more in his own village, even after controlling for the fact that powerful villages are more likely to have women as pradhans. Policy that seek to influence the identity of the Pradhan will therefore have a direct impact on the distribution of goods within the village.

However, the decision making power does not appear to lead to gross capture of public goods by the pradhan. While village

Table 1: Fraction of SC among Pradhans in Reserved and Unreserved GP

	Reserved GP (1)	Non reserved GP (2)	Difference (3)
Total number	55	106	
% SC	100	7.5	92.5 (3.38)

Table 2: Comparison of initial public good allocations in reserved and unreserved GP

	Share of goods available before 1998 in SC hamlets (normalized by SC share)		
	SC unreserved	SC reserved	Difference
Private Drinking Water	0.399 (.076)	0.460	0.061 (.12)
Public Drinking Water	1.219 (.145)	1.327	0.109 (.233)
Private Irrigation	0.478 (.111)	0.213	-0.265 (.17)
Public Irrigation	0.959 (.296)	0.589	-0.370 (.474)
Sanitation	2.072 (.715)	2.284	0.213 (1.185)
Informal Education	1.067 (.824)	0.470	-0.597 (1.166)
Adult Education	0.804 (.227)	1.588	0.784 (.397)
Formal Education	0.755 (.154)	0.733	-0.022 (.25)
Average all goods	0.809	0.820	0.011 (.46)
Average all private goods	0.413	0.372	-0.040 (.62)
Average all public goods	0.927	0.953	0.026 (.46)

Table 3: Effect of SC pradhan on the types of public goods provided

Dependent variable (1)	Difference Reserved-Unreserved	
	Women (2)	SC (3)
<b>A. VILLAGE LEVEL</b>		
Number of drinking water facilities newly built or repaired	9.09 (4.02)	4.83 (4.66)
Number of irrigation facilities newly built or repaired	-0.36 (1.27)	0.85 (1.38)
Condition of roads (1 if in good condition)	0.18 (.06)	-0.09 (.06)
Number of latrines and drainage pits newly built or repaired	-0.28 (.19)	0.15 (.14)
Number of informal education centers	-0.06 (.04)	-0.02 (.05)
Number of adult education centers newly built or repaired	0.09 (.03)	-0.03 (.03)
Number of formal school buildings newly built or repaired	0.07 (.1)	0.23 (.11)
<b>B. GP level</b>		
1 if a new tubewell was built	0.06 (.03)	0.03 (.04)
1 if at least one irrigation pump was built	0.08 (.05)	-0.09 (.06)
1 if a metal road was built or repaired	0.18 (.08)	-0.11 (.08)
1 if new toilets or new drainage pits were constructed	-0.06 (.08)	-0.01 (.09)
1 if there is an informal education center in the GP	-0.15 (.07)	-0.10 (.07)
1 if there is a CEC or if there was a literacy campaign	0.03 (.05)	0.13 (.06)

Table 4: Effect of SC Pradhan on the location of public goods

	Difference SC/ST	
	Absolute	Normalized
Average: all public goods built or repaired	0.1	0.140
P. value	(0.001)	(.03)
<b>Public goods built and repaired</b>		
Public Drinking Water	0.080 (.031)	0.491 (.205)
Public Irrigation	0.145 (.116)	0.210 (.308)
Sanitation	0.244 (.159)	2.319 (1.717)
Informal Education	-0.052 (.197)	-0.243 (.745)
Adult Education	0.077 (.395)	0.350 (.826)
Formal Education	0.213 (.076)	0.256 (.44)
<b>Drinking water built</b>		
public	0.080 (.031)	
Private	-0.139 (.054)	

Table 5: Test of efficiency of public good investments

	Normalized share			
	Not reserved for SC (1)	Reserved for SC (2)	Difference (3)	Ratio (4)
<b>Public goods built and repaired</b>				
Public Drinking Water	1.049 (.123)	1.540	0.491 (.205)	1.468
Public Irrigation	0.521 (.173)	0.731	0.210 (.308)	1.403
Sanitation	2.561 (1.074)	4.880	2.319 (1.717)	1.905
Informal Education	1.061 (.419)	0.818	-0.243 (.745)	0.771
Adult Education	0.697 (.431)	1.048	0.350 (.826)	1.502
Formal Education	0.727 (.284)	0.983	0.256 (.44)	1.352
	Test of equality			
	F stat	0.100		
	P-value	0.990		

Table 6: Allocation to pradhan's village

	OLS	OLS	Reduced form	2SLS
	Pradhan's village	Pradhan's village	(previous pradhan* seat is reserved)	Pradhan's village
	(1)	(2)	(3)	(4)
informal education	0.015 (0.032)	0.014 (0.033)	0.069 (0.049)	-0.557 (0.604)
formal education	0.018 (0.040)	0.017 (0.040)	0.068 (0.051)	-0.355 (0.346)
adult education	0.097 (0.130)	0.071 (0.135)	-0.046 (0.139)	0.332 (1.306)
health	0.056 (0.084)	0.008 (0.137)	-0.116 (0.295)	0.385 (0.828)
drinking water	0.009 (0.018)	0.007 (0.018)	0.072 (0.024)	-0.471 (0.325)
irrigation	<b>0.133</b> <b>(0.065)</b>	<b>0.114</b> <b>(0.061)</b>	-0.111 (0.106)	-0.133 (0.434)
Sanitation	<b>0.094</b> <b>(0.053)</b>	<b>0.101</b> <b>(0.053)</b>	-0.063 (0.065)	0.342 (0.412)
Biogas	<b>0.207</b> <b>(0.107)</b>	<b>0.229</b> <b>(0.115)</b>	0.154 (0.075)	-0.222 (0.114)
Roads	0.015 (0.023)	0.006 (0.022)	-0.018 (0.036)	0.125 (0.277)
Average	<b>0.072</b> <b>(0.027)</b>	<b>0.063</b> <b>(0.032)</b>	0.001 (0.037)	
Control variables				
Number of seats in village	Yes	Yes	Yes	
Number of reserved seats in village	Yes	Yes	Yes	
Village population (as share of GP population)				
Village of the previous Pradhan	No	Yes	Yes	

Note: Each line is the coefficient of the variable of in the column title in a regression where the dependent variable (row title) is regressed on the column title and the control variables.

Table 7: First stage

variable	Pradhan's villages	
		(1)
previous pradhan villages		0.40 (.058)
previous pradhan now reserved		-0.32 (.074)
observations		584