Political Reservation and Substantive Representation: Evidence from Indian Village Councils

Lori Beaman, Esther Duflo, Rohini Pande and Petia Topalova*

Introduction

Female presence in India's state and national legislatures hovers at ten percent. Concerns that this limits the political voice available to women has led to the introduction and subsequent passage of a Reservation Bill in the Upper house of the Indian Parliament (Times of India, March 9 2010). The bill seeks to reserve 33% of India's state and national legislature positions for women. If implemented 181 out of the 543 National legislators and 1,370 out of the 4,109 State legislators will be women.

Several studies demonstrate that men and women differ in their political and policy preferences (Edlund and Pande, 2002; Miller, 2008). Furthermore, as voters are typically unable to enforce full policy commitment by their legislator, implemented policies often reflect policy-makers' preferences (Besley and Coate, 1997; Pande, 2003). Political under-representation of women, thus, potentially biases policy-making away from female policy interests. These arguments provide important motivations for gender-based affirmative action policies. Consistent with this view, a number of

*The authors are from Northwestern University, MIT, Harvard and IMF respectively. We thank Catherine Lee for painstaking work on coding the transcripts and research assistance and Logan Clark for editorial assistance. We thank IPF participants and especially Devesh Kapur, Hari Nagarajan and Suman Bery for comments. The views expressed in this paper are those of the authors and do not implicate the International Monetary Fund, its management, or Executive Board.

studies find that increased female representation in politics is associated with significant changes in policy-making (see, for instance, Chattopadhyay and Duflo (2004); Munshi and Rosenzweig (2008); Figueras (2009); Rehavi (2008); Powley (2007)).

However, there are several concerns with using affirmative action to redress gender imbalances in politics. A first concern is the effectiveness of affirmative action in empowering women. If female under-representation in politics reflects a woman's low status within the household then reservation may not effect genuine change. Husbands of elected female leaders may maintain power by controlling the actions of their wives, thereby leading by proxy. A second concern is equity. Reservation for women reduces political opportunities available for men, who are usually more politically experienced. It may also crowd out representation for other historically disadvantaged groups (presumably because women from these groups are less likely to stand for election) such that gains for one disadvantaged group come at the expense of another. Together, these arguments suggest that reservations may even reduce effective democracy by replacing men elected from a wide variety of backgrounds by powerful men governing by proxy through their wives.

Evidence on the functioning of existing systems of political reservation can help us gauge the relevance of these concerns and shed some light on the potential impact of introducing political reservation in Indian legislatures. In this paper we therefore evaluate the Indian experience with political reservation in village councils. By focusing on data from India, albeit at a different level of governance, we are able to hold cultural and institutional contexts constant. Further, the electoral mechanism (plurality rule and single-member jurisdictions) at the local level parallels that used at the state and national level. Voter participation in local elections is high, and political parties invest significant resources in these elections. To evaluate the generalizability of our results we use several datasets, two of which encompass several Indian states. A final benefit of focussing on village elections is that the randomized introduction of political reservation across village councils allows us to cleanly identify the effects of female leadership, separate from other variables such as social attitudes towards women, local demand for public goods and so forth. Below, we briefly describe the Indian context and our empirical strategy.

A 1993 constitutional amendment made it mandatory for Indian states to decentralize a significant amount of policy influence to a three- tier system of local governance. Our analysis focuses on the lowest tier, the village council or Gram Panchayat (now on GP). Villagers in a GP elect members of a village council and its leader, known as a Pradhan.

The Pradhan enjoys significant policy-making powers. S/he has the final say in the allocation of public funds across different investment categories and in beneficiary selection. However, these decisions are supposed to be made in consultation with, and ratified by, villagers. To this end, the Pradhan is required to convene and conduct several village-level meetings during the year. These meetings (known as Gram Sabha (GS) meetings) are open to all villagers and are intended both as a forum for deliberation and as an opportunity for villagers to vote on decisions made by the village council.

The 1993 constitutional amendment required that one-third of Pradhan positions be reserved for women, and that reservation be rotated between elections. While different states chose different ways of implementing reservation, in most cases the process was effectively random. This implies that the difference in average outcomes between reserved and unreserved GPs reflects the causal impact of female leadership.

The random assignment of female Pradhans, combined with our use of large datasets which cover several Indian states, lends our results significant generalizability. We provide evidence on three different aspects of the debate on gender quotas in politics – politician selection, citizen participation in politics and policy-making.

On selection, we find no evidence that political reservation caused the crowd-out of another politically under-represented social group - Muslims. We do, however, find evidence of differential selection and of different networks being used by female and male politicians. Relative to their male counterparts, female politicians are significantly more likely to state that their spouses encouraged them to stand for election and help them do their job.

However, help from a spouse does not necessarily preclude agency on the part of female leaders. If women have different opinions from their husbands, formal authority may still give them

the power to take different policy decisions. In addition, female leadership may facilitate other women expressing their policy preferences. The latter suggests a channel through which female leadership can influence policy outcomes, even if their husbands took all decisions – changing how the political process aggregates villager preferences.

Our second set of results, therefore, relate to citizen participation in politics. During 2003 and 2004 we recorded 197 villager meetings across five Indian States.[1] The meeting transcripts provide a rare opportunity to examine whether female leadership changes the nature of policy discourse in villages. Villager attendance at meetings (for either gender) is unaffected by reservation. However, female villagers are significantly more likely to speak at meetings when the village council leader is a woman (Ban and Rao (2008a) report similar findings).

To examine leader responsiveness to female participation in village meetings, we identify the female- friendliness of an issue by the fraction of words on the issue that were spoken by a woman. We observe no significant differences in how women's issues are treated in reserved or unreserved villages. In addition, relative to men, women are more likely to get a constructive response to a question they ask. This suggests that, given the low level of female participation in unreserved villages (women do not speak at all at half the meetings in unreserved village councils), the very fact that female leadership increases female participation can be important for policy outcomes.

The link between political reservation and policy outcomes has been widely studied. In this paper we extend this evidence in two important ways: across space and over time. We use two new data sources: an All India survey (known as the Millennial survey), which covers the large Indian states; and data from West Bengal villages (Birbhum survey), which vary in whether they have been reserved once, twice or never. In both cases, we find results consistent with earlier findings (Chattopadhyay and Duflo, 2004). Women leaders are more likely to invest in drinking water facilities across rural India and across electoral cycles, since access to drinking water is an important public good that is emphasized more by female leaders, relative to male leaders.

[1] Ban and Rao (2008a) use a similar methodology to examine how individual and village characteristics influence the discourse in meetings in South India - our sample of transcripts partially overlaps with theirs.

Some recent papers report public good investments by female leaders either on non-water related goods (Munshi and Rosenzweig, 2008) or being sensitive to institutional features (Ban and Rao, 2008b). Neither paper, however, finds evidence of women doing a worse job in providing public goods. Bardhan et al. (2010) exploit within-village (over time) variation in reservation in West Bengal and find no impact of female reservation. One possibility to reconcile these findings is offered by our long run Birbhum results. We find evidence of women maturing as leaders over time and expanding the scope of their investments (while continuing to emphasize drinking water). In addition, there is some evidence that the influence of reservation on public good provision persists even after reservation ends – this may explain why comparing outcomes within a village during and after reservation (as Bardhan et al. (2010) do) may understate the reservation impact.

Taken together, this body of evidence provides several insights that can help structure some of the ongoing debates on political reservation in India and other countries. First, it is inappropriate to extrapolate from political selection to actual policy outcomes. Women who are elected leaders differ from men in significant ways and have access to different social networks and support structures. However, this does not imply that they have no political agency. Second, there is significant evidence that women leaders make different policy decisions and increase female participation in the political process. That said, to the extent that female villagers and female leaders share the same preferences, we cannot completely disentangle the policy impact of greater female villager participation from the direct role of female leadership (in future work we hope to disentangle the two). This suggests that women's reservation at the state and national legislatures has the potential to empower women and improve the gender balance in policy-making.

The remainder of the paper is structured as follows. We first discuss our datasets and empirical strategy. Then we evaluate, in turn, the impact of reservation on selection, citizen participation and public good outcomes.

Data and Empirical Strategy

Data

Our analysis makes use of several datasets which we describe below.

Meeting Sample We measure villager participation in the political process using data on 197 GS meetings collected during 2003-04. To ensure representativeness, we selected GPs from eight districts located in two North Indian and three South Indian states.[2] These five states differ substantially along economic and social dimensions, allowing us to capture significant heterogeneity in both the level of village infrastructure and female empowerment.

We collected meeting data via an observer in attendance, and a tape recording of the proceedings. Each recording was subsequently transcribed and then translated into English.[3] Transcripts were coded by hand to capture various kinds of information about the GS meetings. The average meeting lasted 112 minutes and the number of words spoken per meeting was 3,749 (but the variation was wide; standard deviation was 2,737 words, and the maximum was 18,387 words).

Millennial Survey We obtain nationally representative data on public good provision from the "Millennial Survey". This survey was conducted by the Public Affairs Centre, and covered 36,542 households in 2,304 randomly selected villages in 24 states in the year 2000.[4] We restrict attention to the eleven major states that had an election between 1995 and 2000.[5]

The survey aimed to provide an independent assessment of key public services, using citizen feedback as well as direct evaluation of facilities. It focused on five basic public services: drinking water and

[2] In Rajasthan and West Bengal our samples are drawn from a single district. In Andhra Pradesh, Kerala and Karnataka we worked in 2 districts per state. Within each district our sample is stratified by block. Within a block we randomly sampled GPs.

[3] The transcripts were typed up to follow a consistent format that identifies the speaker's title, his/her gender, and the actual dialogue.

[4] The Public Affairs Centre is a non-government organization in Bangalore which is credited for starting the "report card movement" in India. The analysis using the Millennial survey was conducted while one of the authors was an intern with the organization in Bangalore in spring 2003.

[5] The term for a GP was set at 5 years after the 73rd Amendment, but in some states elections were not held on time. The 11 states included are Andhra Pradesh, Himachal Pradesh, Karnataka, Kerala, Maharashtra, Orissa, Punjab, Rajasthan, Tamil Nadu, Uttar Pradesh and West Bengal.

sanitation, health, education and child care, road transport and the public distribution system. It contains both subjective measures of the quality and objective measures of the quantity and quality of public goods provided in each village.

The household survey measured final users' subjective evaluation of public services: respondents answered questions about access, quality, reliability and their overall satisfaction with public goods.[6] Several questions were asked about whether households found it necessary to pay bribes to obtain access to certain public services. As the provision of some of these services is the GP's responsibility, these questions present a measure of the incidence of corruption.

The household survey was complemented by independent site visits, which included assessments of select public facilities such as water sources, primary schools, clinics etc.[7] For each facility, a detailed survey was completed. We use the survey to construct a composite index of quality (ranging between 0 and 1). To measure quantity we use either the number of available facilities (such as handpumps, public taps, buses) or in the case of schools, public health centers and fair price shops, an indicator of whether these public goods were available in the village.[8]

Birbhum Sample We supplement the Millennial data on public goods with data from a village survey conducted by the authors in 2005 in 495 villages in Birbhum district in West Bengal. This dataset covers all 165 GPs in the district. A key feature of this dataset is that it includes GPs which were randomly assigned to either never be reserved, be reserved once or reserved twice. This allows us to trace the medium-term impact of political reservation. The public goods data was collected through a Participatory Resource Appraisal (PRA) survey while the data on bribes comes from a household survey which was designed to be identical to the Millennial survey (the data is described

[6] Number of respondents varies by question, because citizens were only asked about services available in their village.

[7] Again, number of responses for these questions varies from question to question because a type of public good could not be assessed in a particular village if the good was not available.

[8] At the time we had access to the Millennial survey, data on quantity of public drinking water facilities had not yet been reliably entered for the states of Himachal Pradesh, Kerala and Punjab. As Punjab and Kerala happen to be the two states where villagers overwhelming rely on private sources of drinking water, we do not believe the omission of these states affects our findings. While more than 90 percent of respondents in other states indicated that they rely primarily on public sources for drinking water, in Kerala and Punjab the share of people relying on public sources was only 46 and 21 percent respectively.

in more detail in Beaman et al. (2009)).

Reservations data In all cases we use administrative data on the reservation status of GPs, typically obtained from the district administration. For the Millennial survey villages, we collected information on reservations from visits to the State Election Commissions and Rural Development Departments for 11 states in February 2003. Since less than a year had lapsed between the 2000 election and the Millennial survey, we used the 1995-2000 reservation status in all states. However, for flow measures of quality of public services such as cleanliness, maintenance etc., we use the reservation status of the current Pradhan, i.e. during the 2000-2005 mandate.[9] For over two-thirds of our sample villages, we could both match the village to the GP and identify Pradhan reservation status.[10]

Empirical Strategy and Randomization Balance Check

Our basic empirical strategy exploits the fact that the choice of GPs for reservation was randomized at the time of election, and rotated across election cycles. Therefore, when we use cross-sectional data we estimate the difference in outcomes across GPs reserved for women and those not so reserved. The canonical regression of interest for outcome y in GP g in state s is

$$y_{gs} = \alpha_s + \beta R_{gs} + \epsilon_{gs} \tag{1}$$

where α_s denotes strata fixed effect and R_{gs} is an indicator variable for whether the GP is reserved for a female leader. The coefficient of interest β is interpretable as the impact of reservation for

[9] Information on Pradhan reservation as of the end of 2000 was available for eight states, Andhra Pradesh, Karnataka, Kerala, Maharashtra, Orissa, Punjab, Tamil Nadu, West Bengal. Our sample thus consists of approximately 810 villages when analyzing household satisfaction and availability of public services, and 680 villages when analyzing the quality of public services.

[10] Sample attrition is unlikely to bias our estimate of the impact of reservation, since the unit of reporting was not the GP, but rather the district, and the proportion of GPs with women in each district was identical (by design) to the proportion in a state, or in the sample. The main consequence of non-random sample attrition would be to over-represent wealthier districts, as well as those with more competent administrators. For Uttar Pradesh, we were able to match mostly large villages to GPs. The regressions control for state fixed effects and village class dummies (a dummy of whether the village is small, medium or large).

women on the outcome of interest. Since very few women are elected from non-reserved seats this provides a reduced form estimate of the impact of female leadership.

Before turning to the results we first examine whether the randomization of GP reservation status appears balanced across covariates. To do this, we analyze village characteristics from 1991 Indian census village data, since this census predates the introduction of reservation.

Appendix Table 1 presents the randomization check for GPs that enter our meeting sample and Appendix Table 2 presents this check for GPs in the Millennial survey (the randomization check for the Birbhum sample is available in Beaman et al. (2009)). In columns (1) and (2) we present the mean of each variable for GPs that are reserved and those that are not. Column (3) shows the difference in the means, while in Column (5) we report the difference as estimated in a regression, which includes the relevant strata fixed effects. Both tables show balance on covariates, demonstrating that reservation was effectively randomized across GPs.

Political Reservation and Selection

We start by examining the impact of reservation for women on politician selection. We ask whether reservation worsened the electoral prospects of Muslims (a minority group in India that does not benefit from reservation) and/or led to the selection of politicians who were more likely to rely on their spouses. Table 1 reports the regression results.

Many have expressed the concern that Muslim women may be particularly unlikely to stand for election and, therefore, reservation will reduce net Muslim representation. In columns (1) and (2) we report regressions where the outcome of interest is whether the Pradhan is Muslim, and we use the meetings and Birbhum datasets respectively. For neither sample do we find evidence of crowd-out: there is no significant difference in the likelihood that a Muslim would stand for election from a reserved versus unreserved GP.

In Beaman et al. (2009) we found that those elected from reserved GPs are younger, less educated and have less political experience. However, they are no more likely to be the spouse of a

previously elected Panchayat councillor. Here, we examine whether spouses play an important role in prompting women to run for election and in helping them discharge their duties. Our analysis draws on detailed household surveys administered to Pradhans in the Birbhum sample. In Column (3) the outcome of interest is whether the Pradhan's spouse suggested that s/he run. Female Pradhans elected from reserved GPs are 12% more likely to state this was the case, relative to their unreserved counterparts. Again, relative to these counterparts, female Pradhans from reserved GPs are 18% and 15% more likely to state that prior to the election they did not know their job responsibilities and were not aware of how the Panchayat functioned (columns (4) and (5)). This is consistent with the evidence in Beaman et al. (2009) that these leaders are less likely to have held prior political positions. Perhaps, as a consequence of political inexperience, these female Pradhans are also more likely to state (relative to unreserved Pradhans) that their spouse helps them with job responsibilities, column (6). Yet, two years into their job Pradhans from reserved GPs feel as competent as Pradhans from unreserved GPs when it comes to discharging their duties.

Political Reservation and Citizen Participation

Next, we use the meetings dataset to examine whether female leadership directly affects villager participation in the political process.

We start by using regressions of the form given in equation (1) to examine whether political reservation influences villager participation in GS meetings. The results are in Table 2. Columns (1) and (2) show that men are twice as likely to attend GS meetings as women. The average GS meeting in an unreserved GP has 86 men and 40 women attending. Attendance is unaffected by political reservation. In column (3) we examine whether reservation influences participation by female villagers in the GS meetings. We measure villager participation by whether s/he spoke during the meeting. Overall, female participation in GS meetings is low, with female villagers speaking in roughly half the GS meetings. However, the likelihood that a woman speaks increases by roughly

25% when the GP leader position is reserved for a woman.[11] In column (4) we examine whether increased female voice in a GS meeting translates into increased participation across multiple issues. Here, the results parallel our findings for whether a woman speaks at all: in the average unreserved GS meeting women participate in discussions on roughly a quarter of the issues raised during each meeting. This number increases by 25% when there is reservation, with the effect significant at the 10% level. In column (5) we re-estimate this regression for the sub-sample of GPs in West Bengal and find that the point estimate of the effect of reservation is smaller than in the full sample and not precisely estimated. It should be noted though that the fraction of issues with female villager participation in unreserved GPs is lower in West Bengal than in the full sample, and there are only 44 meetings in West Bengal.

Columns (6)-(8) examine the actual participation by female leaders (relative to male leaders) in the meeting. Here the news is more disappointing. In GPs reserved for women, Panchayat representatives speak less often, the Pradhan is less likely to chair the meeting and is also less likely to have spoken at least once during the meeting. Interestingly, our data also show that the significant reduction in the Pradhan chairing is *not* reflected in her spouse chairing the meeting - rather it is some mix of the vice Pradhan and other GP officials who replace her as chair. That said, it remains the case that reservation makes it 50% more likely that the chair of the GS meeting is a female.

One potential reason why women speak more in GS meetings headed by women leaders is that they believe women leaders are more likely to respond positively to their concerns. This could occur either because policy preferences vary across genders or because leaders discriminate against the opposite gender. To examine this we turn to an issue-level analysis of the GP data.

In the average meeting, six issues were discussed. For each issue we coded the public good or concern that the issue was related to, the gender of the person who initiated discussion on the issue, and the number of words on the issue spoken (separately) by male and female villagers and

[11] Note there are only 172 observations since the 22 transcripts which were not readable are not included, though we have information collected from the observer on participation.

the Panchayat leader. We also coded the kind of response the Panchayat gave to villagers who raised an issue. Our first coding was very detailed, and we then collapsed these categories into whether or not the leader said s/he will take unconditional action on the issue in hand. Appendix Table 3 shows our coding of leaders' responses. For instance we code the response as unconditional (assigning it a value of 1) if the leader says s/he will do what villagers ask or provides the requested information. It equals zero if the leader claims it is not the Panchayat's problem. The following is an excerpt from a transcript, which falls in the negative response category: *Villager: "Let us pass a resolution stating that the persons cooking mid-day-meals are not being paid reasonably so instead of Rs. 5/- they may be paid Rs. 10/-." Pradhan: "Let me tell you that this is not a local issue. It has to be dealt with at the central government level."*

Next, we create a measure of female friendliness of an issue. To do so, we average the fraction of words spoken by a woman on the issue across all transcripts. Appendix Table 4 describes the female-friendliness of issues, as measured by the fraction of words on the issue spoken by a woman (across all GPs in our sample). Women speak the most on financial transfers followed by public works and water.

Let y_{igs} equal one for issue i if the leader states that s/he will take unconditional action on the issue. (Most GP meetings are attended by government officials and GP representatives. We, therefore, consider two outcome variables - one where we only focus on the GP representatives' responses and one where we include responses by GP and government officials.) We estimate regressions using the following two specifications:

$$y_{igs} = \alpha_g + S_{igs} + S_{igs} \times R_{gs} + \upsilon_{igs}$$

$$y_{igs} = \alpha_g + W_{igs} + W_{igs} \times R_{gs} + \omega_{igs}$$

where we include a GP level fixed effect α_g. S_{igs} is a measure of the female-friendliness of the issue, and W_{igs} is a dummy which indicates whether the issue was brought up by a man or a woman.

With the first estimating equation, whose results are presented in Table 3 columns (1) and (3), we simply examine whether leadership response across reserved and non-reserved GPs differs depending on the female-friendliness of the issue. In columns (2) and (4) we estimate the second equation, and examine whether or not the response given to women is, in general, more positive in woman-headed Panchayats. The results are very similar for the two outcome samples. In both cases we observe no significant differences in how either women are treated, or how women's issues are treated in reserved or unreserved villages. Interestingly, women are more likely to get a constructive answer to a question they asked, both in reserved and unreserved GPs. This suggests that encouraging women to participate may be the most important obstacle to getting women's policy concerns addressed (at least in these meetings). Our results suggest reservation can play a key role here. Below, we examine the link between reservation and policy outcomes and also provide some evidence on whether female participation in meetings appears to increase their policy influence.

Female Leaders and Public Good Outcomes

The facts that, relative to their male counterparts, female Pradhans are less politically experienced and rely more on family networks (especially their spouses) to conduct their work has led to the suggestion that they are, in effect, proxies for powerful men in the village. If correct, this view implies that reservation should not alter policies in the direction of what women want, and may lead to a worsening of democracy through elite capture (see Chattopadhyay and Duflo (2004) for a model). On the other hand, women leaders do have different preferences, and as we saw, women are more likely to speak up in GPs headed by women. Thus, if women leaders enjoy political agency then these two channels could lead to the contrary outcome - namely, that female leadership leads to the implementation of policies that are (relatively) favored by women.

Existing evidence largely supports the view that reservation for women alters which public goods are provided. However, the evidence concerns specific places and relatively short term horizons. We revisit this issue using two datasets. The first dataset allows us to examine the average

effect of reservation across villages located in eleven large Indian states. This helps address concerns that gender differences in public good provision found in earlier work may be locale specific and non-generalizable. Second, we use data from a district in West Bengal, Birbhum, where we are able to examine whether this policy influence varies across electoral cycles. This helps address the concern that women elected in the first cycle of reservation may be 'special' in many ways and their policy activism may be very different from that undertaken by women elected in subsequent electoral cycles. We also investigate whether men elected after women reverse women's policy decisions.

Millennial Survey: Nationwide evidence

We start by using data from the Millennial survey which, by virtue of its national coverage, provides significant generalizability of results (at least in the Indian context). Table 4 examines how women policymakers affect the quality and quantity of several public services. Columns (1) and (2) present the means of the quantity and the quality for five categories of public goods, and the coefficient on a woman Pradhan dummy in the following regression, run separately for each good k.

$$Y_{jk} = \alpha_k + \beta_k R_j + X_j^{'}\gamma_k + \epsilon_{jk}$$

where Y_{jk} is the quantity (quality) of goods of type k in village j, R_j is a dummy variable indicating whether or not the village was part of a GP where the position of the Pradhan was reserved for a woman as of the beginning of 2000 and X_j is a vector of control variables (state fixed effects and a dummy for the size of the village).[12] We also analyze the average effect of female politicians across all public goods. We estimate:

$$\beta = (\frac{1}{N}) \sum_{k-1} N_k$$

[12]For easy comparison across types of public goods, all the variables are expressed as standard deviations from the mean of the distribution in the unreserved villages.

where N_k is the number of observations used in the good k regression, and N is the sum of all the observations in the five regressions.[13]

Consistent with the results in Chattopadhyay and Duflo (2004) reservation for women increases investment in drinking water infrastructure. There are significantly more public drinking water taps and hand-pumps when the GP is reserved for a woman, and there is also some evidence that the drinking water facilities are in better condition (though this coefficient is not significant at the 5% level).[14] Overall, there are four positive coefficients and only one negative coefficient in the quantity regression. In the quality regression, all coefficients are positive. The average effect of reservation on the availability of public goods in a village is positive and significant (the coefficient is 0.078 standard deviations, with a standard error of 0.041). The average effect of the reservation on the quality of public goods is positive as well, but not significant (the coefficient is 0.016 standard deviations, with a standard error of 0.011). To summarize, women leaders do a better job at delivering drinking water infrastructure, and at least as good a job at delivering the other public goods.

Female Pradhans, however, receive systematically less favorable evaluation from villagers (including female villagers) than male Pradhans. The household module of the Millennial survey measured the final users' subjective evaluation of public services: respondents answered questions about access, quality, reliability and their overall satisfaction with public goods. Using the estimation strategy as presented in equation (2), column (6) displays the impact of women policymakers on villagers' satisfaction with each of the 5 public services, as well as the average effect across all services. In contrast to the positive effect of female leaders on quantity and quality of public services, respondents are less likely to declare that they are satisfied with the public goods they are receiving in villages with female Pradhans. On average, they are 2 percentage points less likely to be satisfied. This number is significant at the 95% level, and it also corresponds to a large (25%)

[13] The standard error for these averages is derived from the variance covariance matrix for the 5 coefficients obtained from jointly estimating the equations for the 5 public goods (see Kling et al. (2007)).

[14] Chattopadhyay and Duflo (2004) find that the effect of reservation on other public goods, including education and transportation, is either insignificant or opposite in sign in the two states they consider . Consistent with these results as well, there are no significant coefficients for the other public goods in the all-India Millennial survey.

relative increase in the rate of dissatisfaction, since the satisfaction ratings are overall very high.[15] This is true for every good individually (though not significant when each good is looked at in isolation), and for female as well as male respondents. Particularly striking is the fact that individuals are less satisfied with water service, even though both the quality and quantity of drinking water facilities is higher in reserved villages. The coefficient on dissatisfaction is 2.4 percentage points, with a standard error of 1.8. Moreover, women are as likely to be dissatisfied as men. Interestingly, respondents are also significantly less satisfied with the quality of the public health services when the Pradhan is a woman. This is despite the fact that health services were centrally administered and not under the jurisdiction of GPs in the 11 states in the study in this period. There was thus no reason the quality of health services should be different in reserved GPs (indeed, our objective measures of quality and quantity are uncorrelated with the reservation variable).[16]

A first possibility is that the higher quantity and quality of public goods provided by women Pradhan come at a higher price. To evaluate this hypothesis we examine the incidence of bribes in reserved and unreserved villages. We estimate the coefficient β_k in the regression:

[15] The fraction of respondents saying that they are satisfied is 82%, averaged across all goods.

[16] One possibility is that women invest in the wrong kinds of repairs. For example, they may spend more public money repairing the water facilities and building new ones, but their repairs may not correspond to what villagers really need. To assess to what extent the quality and quantity variables we include correspond to respondents' concerns, and to get some sense of how controlling for these variables affects the evaluation of women, we have estimated the following regressions:

$$Y_{ijk} = \alpha_k + \lambda_k Q_{jk} + \mu_k Q_{ljk} + v_k Q_{jk} \times R_j + \psi_k Q_{ljk} \times R_j + X_j \gamma_k + u_{jk} + \epsilon_{ijk}$$

where Q_{jk} is the quantity of public good k in village j, and Q_{ljk} is the quality of public good k in village j. Across all goods, we find that villagers' satisfaction is positively and significantly associated with quality, but not with quantity. The coefficient on the reservation dummy is still negative. The interactions between the quality and the women reservation dummy and quantity and the women reservation dummy are both negative, suggesting that women are given less credit for both quality and quantity. However, they are given some credit: the sum of the quality variable and its interaction with the women reservation variable is still positive and significant. It is interesting to note that in the regression across all public goods, the coefficient on the women reservation dummy is similar in magnitude but opposite in sign to the coefficient on the quality variable. This implies that the effect of having a female Pradhan on satisfaction is as large as the impact of transforming the average quality of the public goods available in the village from entirely "good" to entirely "bad" (for example a water source with no drain, no coverage, some leaks, etc...) in this scale.

$$Y_{ijk} = \alpha_k + \beta_k R_j + X_j \gamma_k + u_{jk} + \epsilon_{ijk}$$

where Y_{ijk} is a dummy variable indicating whether respondent i in village j had to pay a bribe to get good k. The regression is run at the individual level, and we correct for clustering of the standard errors at the GP level. Table 5 reports the mean value for whether the respondent had to pay a bribe and the coefficient of the reservation dummy. For all types of bribes, respondents (both men and women in columns (3) and (4)) are less likely to report that they needed to pay a bribe to obtain a service when the GP is reserved for a woman than when it is not reserved. Overall, both men and women are significantly less likely to have to pay a bribe to obtain a service if they live in a GP where the position of Pradhan is reserved for a woman. Women leaders are less corrupt than men, suggesting that the higher quantity infrastructure does not come at a higher price.

Given this, we hypothesize that two factors appear to contribute to the lower reported satisfaction with drinking water in reserved GPs. First, relative to their male counterparts, women receive less credit for investments. Second, the base level of satisfaction with women leaders (irrespective of quality or quantity) is lower to start with. This is consistent with Beaman et al. (2009) where we present evidence which suggests that this dissatisfaction reflects incorrect priors regarding the effectiveness of women as leaders. In West Bengal, prior reservation leads to an amelioration in this bias, however, which is another reason why quota may affect policy making in the long run (on this, also see Bhavnani (2008)).

Long-term Data: Birbhum in West Bengal

Our second source of data comes from a village survey conducted by the authors in 2005 in 495 villages in Birbhum district in West Bengal.

Panel A of Table 6 estimates the effect of reservation where we compare public good investments in reserved and unreserved GPs in 2005 (in the middle of the second reservation cycle). In column (6), we compare the investments across GPs that are currently reserved and GPs that are

currently unreserved. The main results in Chattopadhyay and Duflo (2004) are replicated here: GPs reserved for women exhibit more investments in water infrastructure, sanitation, and roads (all these results are significant). Moreover, there are three other results that are significant at least at the 10% level, all positive: we see more investment in school repair, health center repair, and irrigation facilities. This is different from what was found after just one cycle of reservation, where there was no effect on any of these variables (and in fact a negative effect on the probability that the GP starts an informal school).

The interaction of reservations for Scheduled Caste and Scheduled Tribe and the reservations for women implies that some GPs are reserved twice in a row. To shed more light on the dynamics of the reservation effects, in Table 6 columns (2) to (4) we present the investment results separately for newly reserved GPs, GPs reserved twice in a row, and GPs that are currently unreserved but were reserved before. In these columns, each cell reports the coefficient from a separate regression where the outcome variable is investment in the public good referenced in that row. The reported coefficient can be interpreted as the difference in investment outcomes in GPs with a certain reservation status relative to GPs that have never been reserved. As five years before, we find, that newly elected women invest more in building and repairs of tubewells, roads, and sanitation and drainage. The difference from the earlier finding is that we now find that there is *more* investment in irrigation and schools, issues that are more "male issues". Women elected in the second cycle appear to do more across the board. The overall results were driven by these newly reserved GPs: for GPs reserved for the second time, the only significant difference is that women invest more in building tubewells. The coefficients on repairs are all positive but insignificant, perhaps because many of the repairs already took place.

Though public goods are mainly financed by State Government funds, villagers may have to pay for these goods through means such as voluntary contributions and bribes. Panel B of Table 6 shows that on average, individuals in currently reserved GPs are less likely to have paid a bribe for obtaining a BPL card or drinking water connection. This is true for both GPs reserved for the first and second time. This echoes the results from the Millennial survey.

Overall, these tables show that the results that women leaders invest more than their male counterparts in water-related infrastructure is extremely robust across time and space. Both in newly reserved GPs and in GPs reserved for the second time, women are 50% more likely to build a new tubewell. A concern might be that as soon as men take over, they undo these investments. Column (3) shows that this is not the case: Pradhans elected in previously reserved GPs are not investing less in building new tubewells. Moreover, they also invest *more* in tubewell repairs than Pradhans do in GPs that have never been reserved, and as much as new leaders. Thus, the increase in water infrastructure availability seems to be a permanent step up, not a temporary phenomenon.

Women's Preference: from General to Specific concerns

Column (1) in Table 7 replicates the specification in Chattopadhyay and Duflo (2004), using the meetings data: we regress investment in each type of good on whether women care particularly on the issue, which is measured by the fraction of words regarding this issue that are spoken by women in the entire sample of unreserved GPs.[17] As before, we find that women invest more in goods preferred by women.

We have emphasized two channels through which having female leaders may lead to greater investments in goods women care about: through the fact that a woman leader has the opportunity to do what she feels is important, and also because women are more likely to express their opinion in GPs that are led by women. Though it is beyond the scope of this paper to try to distinguish between the two channels, we provide some relevant evidence in column (2) of Table 7. In that table, in addition to the variable indicating whether a particular issue is pertinent for women *in general* we introduce the equivalent measure, but for women of this particular Gram Sabha: the number of words spoken by women of this GPs on this particular issue, divided by the number

[17]This is the number of words spoken by female villagers divided by the total words spoken on that issue by all villagers, averaged over the unreserved sample. The issues included are: drinking water, public works (sanitation, roads, transportation), education, health and irrigation. We exclude the issues financial help, rents and taxes, misc, and government which do not obviously correspond to specific public goods measurable in the PRA we implemented in West Bengal.

of words spoken by both men and women. This allows us to examine whether women leaders are sensitive to the expressed needs of women in their GPs. The number of observations is severely reduced, because the variable is not defined when villagers have not said anything (which happens often). Despite this, there is clear evidence that, controlling for women's taste in general, women leaders are particularly responsive to the needs of women *in their GP*. Of course, the possibility remains that what women want in a GP also happens to be what the women leader wants (since she lives there as well). Nevertheless, this suggests that the needs of local women are better taken into account by women leaders.

Conclusion

Taken together, the results in this paper paint a consistent picture of female activism prompted by access to elected positions in village councils. First, we find no evidence of crowd-out of other disadvantaged groups (here, Muslims). Second, female leaders play two important roles: they increase female participation and responsiveness to female concerns in village meetings. Thus, they change the nature of policy activism across Indian villages. Whether the latter improves villagers overall well-being is, of course, an open question though the results on bribes are encouraging here. Also, the long term data from Birbhum suggests that as women mature within the system their sphere of policy activism broadens. More broadly, our findings are also related to a growing literature on deliberative democracy (see Ban and Rao (2008a) and references within). This literature has emphasized the importance of increasing citizen participation in deliberative processes; here, we find evidence that political reservation increases female villagers participation in such deliberative processes.

We would argue that these results both provide learnings for the ongoing debate on gender quotas in India and beyond, and also point to important areas for future research. First, our results on selection suggest that women and men differ in the political and social networks they have access to and the extent to which they rely on family support. However, this *per se* does not determine

the nature of their policy activism. Interestingly, evidence from other countries (France and Spain) suggest that a main concern with the selection associated with gender quotas relates to how parties manipulate them *not* the quality of available female leaders. Parties often choose to place women in relatively uncompetitive jurisdictions (Frechette et al., 2008) or in worse positions on the party list (Volart and Bagues, 2010). In that sense, use of the Indian village council method of random reservation of political positions may be a good way of limiting bias. Second, the results that female leaders increase female participation is intriguing and suggests that political reservation may have implications for female (and possibly male) turnout. Finally, the precise nature of female activism at the state and national level is harder to predict. Evidence from the United States (Miller, 2008; Rehavi, 2008) and India (Bhalotra and Clots-Figueras, 2010; Figueras, 2009) suggests that health and education may be important additional areas where women legislators make an impact. Whether, at the same time, the distributive concerns associated with female representation are accentuated is less clear but worthy of further investigation.

References

Ban, R. and B. Rao (2008a). Is deliberation equitable? evidence from transcripts of village meetings in south india. *mimeo, World Bank*.

Ban, R. and B. Rao (2008b). Tokenism or Agency? The Impact of Women's Reservation on Panchayats in South India. *Economic Development and Cultural Change forthcoming*.

Bardhan, P., D. Mookherjee, and M. P. Torrado (2010). Impact of political reservations in west bengal local governments on anti-poverty targeting. *Journal of Globalization and Development 1*(1).

Beaman, L., R. Chattopadhyay, E. Duflo, R. Pande, and P. Topalova (2009). Powerful Women: Can Exposure Reduce Bias? *Quarterly Journal of Economics*.

Besley, T. and S. Coate (1997). An economic model of representative democracy. *Quarterly Journal of Economics 112(1)*, 85–114.

Bhalotra, S. and I. Clots-Figueras (2010). Health and the Political Agency of women. mimeo, Bristol University.

Bhavnani, R. (2008). Can Governments Remedy Political Inequality? Evidence from Randomized Quotas in India. *American Political Science Review*.

Chattopadhyay, R. and E. Duflo (2004). Women as Policy Makers: Evidence from a Randomized Policy Experiment in India. *Econometrica 72*(5), 1409–1443.

Edlund, L. and R. Pande (2002). Why have women become left-wing? The political gender gap and the decline in marriage. *The Quarterly Journal of Economics 117*(4), 917–961.

Figueras, I. C. (2009). Are female leaders good for education? evidence from india. *mimeo, Carlos III Madrid*.

Frechette, G., F. Maniquet, and M. Morelli (2008). Incumbent Interests and Gender Quotas. *American Journal of Political Science*.

Kling, J., J. Liebman, and L. Katz (2007). Experimental Analysis of Neighborhood Effects. *Econometrica*.

Miller, G. (2008). Womens suffrage, political responsiveness, and child survival in american history. *Quarterly Journal of Economics 123*(3), 1287–1327.

Munshi, K. and M. Rosenzweig (2008). The Efficacy of Parochial Politics: Caste, Commitment, and Competence in Indian Local Governments. *Mimeo*.

Pande, R. (2003). Can mandated political representation provide disadvantaged minorities policy influence? theory and evidence from india. *American Economic Review 93*(4), 1132–1151.

Powley, E. (2007). Rwanda: The Impact of Women Legislators on Policy Outcomes Affecting Children and Families. *Background Paper, State of the World's Children*.

Rehavi, M. (2008). Sex and politics: Do female legislators affect state spending? *mimeo, Berkeley*.

Volart, B. E. and M. Bagues (2010, July). Are Women Pawns in the Political Game?evidence from elections to the spanish senate. mimeo, York University.

Table 1. Pradhan Selection and Behavior

Sample	Pradhan is Muslim		Before elections Pradhan: Spouse suggested running	knew responsibilities	was aware of how Panchayat worked	Spouse helps with Panchayat work	Now feel competent to discharge duties
	Meeting	Birbhum	Birbhum				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
GP currently reserved for woman	0.015	-0.035	0.116	-0.181	-0.150	0.172	-0.098
	(0.054)	(0.064)	(0.048)	(0.080)	(0.077)	(0.083)	(0.075)
Number of observations	196	157	161	161	161	161	160
Unreserved sample:							
Mean	0.132	0.234	0.018	0.727	0.383	0.053	0.699
Standard deviation	(0.340)	(0.149)	(0.013)	(0.172)	(0.171)	-(0.120)	(0.171)

Notes:

1 Columns (2)-(7) use data from the Birbhum sample, while column (1) uses the data from village meetings.

2 Column (1) includes block fixed effects, and columns (2)-(7) include district fixed effects. Standard errors adjusted for heteroskedasticity are reported below the coefficients.

3 All columns reflect linear probability model estimates.

Table 2. Panchayat and Villager Participation at Meeting

	Number of men attending	Number of women attending	Do women speak	Fraction of issues with female villager participation		Fraction of Words Spoken by Panchayat	Pradhan Chaired GS	Pradhan Speaks at least once during GS
				All	West Bengal			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
GP currently reserved for woman	-3.919	-6.727	0.129	0.075	0.030	-0.071	-0.358	-0.228
	(21.219)	(7.709)	(0.064)	(0.044)	(0.076)	(0.037)	(0.063)	(0.081)
Mean of unreserved	85.901	40.157	0.519	0.268	0.083	0.575	0.838	0.830
	(146.965)	(57.127)	(0.502)	(0.332)	(0.240)	(0.334)	(0.370)	(0.378)
Number of observations	197	197	172	172	44	172	190	134

Notes:

1 This table uses data from the village meeting sample.

2 All regressions include district fixed effects. Standard errors adjusted for heteroskedasticity are reported below the coefficients.

3 Columns (1)-(4) and (6)-(7) include the full set of meeting data. Column (5) restricts the meeting data to only those meetings which occurred in West Bengal (all in Birbhum district). Column (8) excludes Karnataka due to missing data.

Table 3. Panchayat and Government Response: Individual Issues in Meeting

	Panchayat will take unconditional action in response to issue		Panchayat or Government will take unconditional action in response to issue	
	(1)	(2)	(3)	(4)
Ranking: Average fraction of words spoken by women on issue	0.490		0.521	
	(0.454)		(0.453)	
Reserved * Ranking (fraction of words)	-0.869		-0.900	
	(0.816)		(0.816)	
Reserved * Woman spoke on issue		-0.019		-0.019
		(0.097)		(0.097)
Woman spoke on issue		0.103		0.103
		(0.057)		(0.057)
Number of observations	782	782	782	782
Unreserved sample:				
Mean	0.308		0.310	
Standard deviation	(0.462)		(0.463)	

Notes:

[1] This table uses data from the village meeting sample.

[2] All regressions include village meeting fixed effects. Standard errors adjusted for heteroskedasticity are below the coefficients.

[3] The outcome variable in columns (1)-(2) is an indicator variable reflecting whether a member of the Panchayat government responded that they would take action on the issue, and the dependent variable in columns (3)-(4) indicates unconditional action if either a member of the Panchayat or any other Government official, including MLAs or bureaucrats, made such a promise in the meeting. See Appendix Table 3 for a detailed description of how the action variables are coded.

[4] "Ranking: Average fraction of words spoken by women on issue" and "Ranking (fraction of words)" are both the average fraction of words spoken on each issue over all transcripts in which that issue was raised, and is our measure of the female-friendliness of the issue.

[5] Reserved is an indicator for the GP currently being reserved for a female GP, as used in Table 1. "Woman spoke on issue" is an indicator variable which is 1 if any female villager spoke on that issue and 0 otherwise.

Table 4: Effect of Female Leadership on Public Goods Quality, Quantity, and Satisfaction

	Quantity		Quality		Satisfaction			
		Norm.				Reservation		
Dependent Variable	Mean	Reservation	Mean	Reservation	Mean	All	Men	Women
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
A. OVERALL								
Weighted Average	4.352	0.078	0.569	0.016	0.818	-0.020	-0.020	-0.017
		(0.041)		(0.011)		(0.010)	(0.010)	(0.013)
B. BY PUBLIC GOOD TYPE								
Water	20.106	0.191	0.392	0.020	0.835	-0.024	-0.021	-0.027
	(33.462)	(0.098)	(0.189)	(0.014)	(0.297)	(0.018)	(0.022)	(0.021)
	633		611		6802			
Education	0.938	0.130	0.892	0.015	0.855	-0.013	-0.010	-0.024
	(0.241)	(0.064)	(0.242)	(0.021)	(0.198)	(0.011)	(0.011)	(0.023)
	810		543		3661			
Transportation	2.260	-0.020	0.306	0.006	0.747	-0.022	-0.026	-0.015
	(1.017)	(0.082)	(0.292)	(0.025)	(0.309)	(0.015)	(0.017)	(0.022)
	635		596		7212			
Fair Price Shops	0.774	0.028	0.688	0.023	0.891	-0.007	-0.007	0.008
	(0.419)	(0.069)	(0.289)	(0.027)	(0.189)	(0.016)	(0.016)	(0.029)
	805		498		3868			
Public Health Facilities	0.645	0.066	0.654	0.017	0.803	-0.063	-0.086	-0.027
	(0.479)	(0.072)	(0.352)	(0.036)	(0.366)	(0.033)	(0.039)	(0.053)
	809		355		741			

Notes:

[1] This table uses data from the Millennial survey.

[2] Standard deviation and number of observations below the mean, and standard errors (corrected for clustering at the GP level) below the coefficients

[3] All coefficients expressed in number of standard deviations of the independent variables

[4] The standard errors of the weighted averages of the coefficients are obtained by jointly estimating the coefficient in a SUR framework

[5] Regressions control for state fixed effects and village class dummies

[6] The water quantity variables is the number of public drinking water taps and handpumps in the village

[7] The water quality variable is a 0-1 index aggregating the responses to the following questions (by observations)
drain around source, no leakage, washing platform, caretaker, public latrine, drainage

[8] The education quantity variable is an indicator of whether there is any education facility (school or non-formal education center) available in the village
The education quality variable is an index aggregating the answer to the questions:
quality of school's playground, blackboard, toilet and availability of drinking water

[9] The transportation quantity variables is the number of public transportation facilities the village (public and private buses, vans, taxis etc.)
The transportation quality variable is a 0-1 index aggregating the responses to the following questions:
shelter at bus stand, information about bus, whether bus is new, whether the road repaired in the past 6 months

[10] The Fair Price shop quantity variable is an indicator of whether there is a fair price shop available in the village
The Fair Price shop quality variable is a 0-1 index aggregating the responses to the following questions (responses obtained by observation)
prices displayed, prevalence of arguments and complaints, behavior of shopkeeper

[11] The Public health quantity variable is an indicator of whether there is a public health center available in the village
The Public health quality variable is a 0-1 index aggregating the responses to the following questions (responses obtained by observation)
cleanliness of linens, floors, bathrooms and toilets and availability of safe drinking water for patients

Table 5: Effect of Female Leadership on Corruption

Dependent Variable	Mean	Effect of reservation					
		No controls			Individual Controls		
		All	Male	Female	All	Male	Female
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
A. OVERALL							
Weighted Average Bribes	0.102	-0.015	-0.026	-0.025	-0.016	-0.027	-0.032
		(0.010)	(0.016)	(0.016)	(0.010)	(0.016)	(0.015)
B. BY PUBLIC GOOD TYPE							
1 if Paid Bribe for Getting Public Tap Fixed	0.105	-0.017	-0.041	-0.003	-0.019	-0.043	-0.004
	(0.306)	(0.016)	(0.030)	(0.015)	(0.016)	(0.030)	(0.015)
	4713						
1 if Paid Bribe for Ration Card	0.058	-0.015	-0.013	-0.020	-0.015	-0.012	-0.027
	(0.233)	(0.012)	(0.012)	(0.027)	(0.012)	(0.012)	(0.027)
	3761						
1 if Paid Bribe to Police	0.340	-0.011	0.010	-0.359	-0.019	0.005	-0.510
	(0.474)	(0.048)	(0.051)	(0.133)	(0.049)	(0.053)	(0.105)
	423						
1 if Paid Bribe for Medical Services	0.178	-0.009	-0.019	0.005	-0.009	-0.017	0.030
	(0.382)	(0.032)	(0.037)	(0.060)	(0.033)	(0.038)	(0.062)
	749						

Notes:

[1] This table uses data from the Millennial survey.

[2] Standard deviation and number of observations below the mean, and standard errors (corrected for clustering at the GP level) below the coefficients.

[3] The standard errors of the weighted averages of the coefficients are obtained by jointly estimating the coefficient in a SUR framework.

[4] Regressions in columns (1)-(4) control for state fixed effects and village class dummies.

[5] Regressions in columns (5)-(7) control for state fixed effects, village class dummies, household size, property, religion, caste, education, occupation, and respondent gender.

Table 6: Effect of Female Leadership on Public Goods Quantity (Birbhum)

		Coefficients on:				
	N	Only reserved 2003	Only reserved 1998	Reserved in 2003 and 1998	Mean of never reserved	Diff: Reserved 2003 vs. Not Reserved 2003
Panel A						
At least one new tubewell was built	495	0.152	0.073	0.160	0.365	0.131
		(0.066)	(0.063)	(0.088)	(0.482)	(0.052)
At least one new tubewell was repaired	482	0.208	0.130	0.080	0.628	0.120
		(0.067)	(0.064)	(0.089)	(0.484)	(0.052)
At least one drainage/sanitation facility was built	495	0.053	-0.113	0.052	0.428	0.089
		(0.067)	(0.059)	(0.091)	(0.496)	(0.054)
At least one drainage/sanitation facility was repaired	396	0.150	-0.017	0.032	0.178	0.110
		(0.067)	(0.062)	(0.071)	(0.384)	(0.048)
At least one irrigation pump was built	495	0.137	0.005	-0.013	0.180	0.081
		(0.053)	(0.051)	(0.050)	(0.385)	(0.040)
At least one irrigation pump was repaired	319	0.110	-0.078	-0.005	0.417	0.103
		(0.092)	(0.086)	(0.123)	(0.495)	(0.072)
Number of metal roads built or repaired since 2003	495	0.274	0.046	0.079	0.118	0.189
		(0.117)	(0.070)	(0.065)	(0.448)	(0.084)
Number of transportation related infrastructure (bus stop, bus service, taxi)	495	0.074	0.250	0.303	1.302	0.075
		(0.175)	(0.160)	(0.225)	(1.201)	(0.138)
At least one educational facility was built	495	0.053	-0.030	0.026	0.117	0.053
		(0.042)	(0.036)	(0.055)	(0.322)	(0.032)
At least one educational facility was repaired	465	0.165	0.039	0.001	0.296	0.094
		(0.072)	(0.069)	(0.097)	(0.458)	(0.057)
At least one community education center	495	-0.007	0.030	-0.001	0.009	-0.015
		(0.010)	(0.023)	(0.009)	(0.095)	(0.008)
There is a NGO child center/creche	495	-0.045	-0.039	-0.027	0.045	-0.026
		(0.016)	(0.021)	(0.023)	(0.208)	(0.012)
Number of health facilities (PHC, Health sub center)	495	-0.025	0.027	-0.005	0.257	-0.027
		(0.049)	(0.052)	(0.084)	(0.468)	(0.044)
At least one health facility was built	495	0.011	-0.004	-0.018	0.014	0.002
		(0.015)	(0.014)	(0.009)	(0.116)	(0.009)
At least one health facility was repaired (0 if no fac)	495	0.061	0.016	0.047	0.009	0.051
		(0.023)	(0.016)	(0.024)	(0.095)	(0.018)
Number of trained Dais, untrained Dais and private doctors	495	-0.069	-0.158	0.384	1.014	0.146
		(0.232)	(0.226)	(0.423)	(2.012)	(0.215)
Panel B						
Average bribes	7404	-0.094	-0.045	-0.072		-0.072
		(0.031)	(0.038)	(0.029)		(0.027)

Notes:

1 This table uses data from the Birbhum sample. Panel A uses the village surveys of 495 villages. Panel B uses the household surveys.

2 All regressions include block fixed effects. Standard errors corrected for clustering at the GP level are below the coefficients.

3 "First Reserved 2003," "Reserved 1998 and 2003," "Only Reserved 1998," and "Never Reserved" are indicator variables for GPs reserved for a female Pradhan for the first time in 2003, in both 1998 and 2003, only in 1998, and not reserved in either election, respectively.

4 Average bribes is the average number of households who paid a bribe for obtaining a BPL card or drinking water connection according to the household survey in Birbhum, normalized by the never reserved sample.

4 Panel B also includes: (i) Individual controls: age, age squared, household size, religion, caste dummies (for scheduled caste, scheduled tribe and other backward caste), years of education, a wealth index (based on a principal component analaysis using household assets) and dummy for land ownership (ii) Village controls: all variables in Table 1 of Beaman et al (2009) and (iii) Survey year and surveyor gender indicator.

Table 7: Investments in Birbhum

	Average Quantity of Public Good Provision	
	(1)	(2)
Ever Reserved GP	-0.124	-0.243
	(0.132)	(0.388)
Ever Reserved * Avg Frac of Words Women Spoke on Issue at GS	2.098	3.950
	(1.335)	(3.140)
Ever Reserved * Frac of Words Women Spoke on Issue at this GS		0.560
		(0.195)
Number of Observations	2475	390

Notes:

[1] This table uses data from the Birbhum sample. Standard errors below the coefficients are corrected for clustering at the GP level.

[2] "Ever Reserved" is 1 if the GP was reserved for a female Pradhan in either 1998 or in 2003, and 0 otherwise.

[3] The outcome variable is the average quantity across infrastructure built or repaired since 2003 in the following areas: drinking water, public works (sanitation, roads, transportation), education, health and irrigation. The table tests whether there is more investment in reserved GPs in goods mentioned more frequently by women, as measured by the fraction of words spoken by women on a given issue in the Gram Sabha meetings. See also Chattopadhyay and Duflo (2004).

Appendix Table 1: Comparison of Reserved and Unreserved Villages in Meeting Sample

Dependent Variable	Mean Unreserved	Mean Reserved	Difference	N	Reservation Effect with District Fixed Effects
	(1)	(2)	(3)	(4)	(5)
Total Population	4,038	3,364	-674	192	65
			(719)		(509)
Literacy	0.409	0.406	-0.002	190	-0.010
			(0.025)		(0.015)
Percentage of Irrigated Land	0.353	0.327	-0.026	186	-0.068
			(0.046)		(0.032)
1 if Village has a Bus or Train Stop	0.788	0.725	-0.062	188	0.005
			(0.059)		(0.051)
Has a Pucca Road	0.677	0.563	-0.115	188	-0.060
			(0.069)		(0.063)
Number of Health Facilities	0.539	0.498	-0.042	195	0.012
			(0.125)		(0.116)
1 if Village has Tube Well	0.394	0.486	0.092	188	0.026
			(0.074)		(0.050)
1 if Village has Hand Pump	0.672	0.653	-0.020	188	0.031
			(0.071)		(0.042)
1 if Village has Well	0.811	0.662	-0.149	188	-0.062
			(0.064)		(0.056)
1 if Village has Community Tap	0.346	0.220	-0.126	188	-0.056
			(0.066)		(0.061)
Total Number of Schools	3.528	3.318	-0.210	188	0.191
			(0.600)		(0.553)
Number of villages per GP	1.884	2.351	0.467	195	-0.073
			(0.304)		(0.072)
SUR over all variables			-0.085		-0.030
			(0.069)		(0.057)

Notes:

1 Standard errors below the coefficients in columns (3) and (5).

2 Regressions in column (5) control for district fixed effects.

Source:

Census of India, 1991

Appendix Table 2: Comparison of Reserved and Unreserved Villages in 1991 (Milennial Survey)

Dependent Variable	Mean Unreserved	Mean Reserved	Difference	N	Reservation Effect with State Fixed Effects
	(1)	(2)	(3)	(4)	(5)
Total Population	2,817	2,805	-12	938	66
			(229)		(120)
Literacy	0.396	0.378	-0.018	938	-0.012
			(0.012)		(0.010)
Female Literacy	0.282	0.263	-0.019	940	-0.009
			(0.013)		(0.010)
Male Literacy	0.502	0.486	-0.016	940	-0.012
			(0.012)		(0.010)
Percentage of Irrigated Land	0.282	0.342	0.059	642	0.034
			(0.032)		(0.023)
1 if Village has a Bus or Train Stop	0.627	0.554	-0.073	940	0.021
			(0.034)		(0.025)
Number of Health Facilities	0.604	0.685	0.081	809	0.126
			(0.121)		(0.122)
1 if Village has Tube Well	0.335	0.308	-0.027	789	-0.031
			(0.040)		(0.031)
1 if Village has Hand Pump	0.699	0.751	0.052	786	-0.009
			(0.034)		(0.026)
1 if Village has Well	0.724	0.703	-0.020	898	-0.032
			(0.032)		(0.028)
1 if Village has Community Tap	0.393	0.373	-0.020	825	0.026
			(0.036)		(0.030)
Number of Primary Schools	1.857	1.780	-0.077	919	-0.004
			(0.135)		(0.106)
Number of Middle Schools	0.714	0.689	-0.025	839	-0.021
			(0.065)		(0.050)
Number of High Schools	0.371	0.364	-0.007	808	0.026
			(0.046)		(0.036)
Total Number of Schools	2.832	2.726	-0.105	920	-0.012
			(0.201)		(0.142)

Notes:

[1] Standard errors below the coefficients in columns (3) and (5).

[2] Regressions in column (5) control for state fixed effects and village class dummies.

Source:

Census of India, 1991

Appendix Table 3: Action Coding

Action Description from Transcript	Code	Unconditional panchayat action promised	Unconditional gov't or panch action promised
Will do what villagers ask for	1	1	1
No commitment on action but claim they will follow up	2		
Action conditional on higher up (money or sanction)	3		
Action conditional on villagers action	4		
No response	5		
Make unrealistic promises to appease villagers and end meeting	6	1	1
Other	7		
Insufficient funds	8		
Villagers instructed to attend meeting with NGO / Gov't officials	9		
Instructed villagers to pay taxes	10		
Threaten villagers with cutting services	11		
Claim not panchayat's problem	12		
Villagers asked to repay loans	13		
Provided information requested by villagers	14	1	1
Not under panchayat's jurisdiction	15		
Claim problem has already been solved	16		
Request villagers take action / solve problem on own	17		
Insufficient population for project to be approved	18		
Instructed villagers to contact other gov't agency	19		
villagers request not allowed under scheme	20		
service only to be provided by private sector	21		
instructed to submit application	22		
Form women's association	23		
action by official conditional on panchayat's action	24		
gov't official claims panchayat must sanction work	25		
work proceeding as quickly as possible	26		
gov't official refuses to help but panchayat claims will find solution	27	1	1
claim they are evaluating applications according to policies	28		
postponed gram sabha	29		
instructed villagers to attend gram sabha	30		
Need land allocated for project first	31		
implement rainwater harvesting	32		
will provide alternative solution to what vill requested	33	1	1
can not solve problem (technically)	34		
suggested women's association take out loan for project	35		
project/scheme has been cancelled	36		
Villagers decide to take action themselves	37		
must wait until next year	38		
need attendance of engineer	39		
panchayat already funded project once; will not fund again	40		
insist policy is appropriate as is	41		
new scheme available to solve problem	42		
scheme not available to all eligibles due to lack of funding	43		
MLA claims can get gov't to solve problem	44		1
Asked villagers to obtain bank loan	45		
action conditional on completion of other public works project	46		
panchayat claims following all rules and regulations	47		
panchayat agrees with problem but offers no solution	48		
MLA commits to solving problem while panchayat hesistant	49		1
MLA encourages students passing exam in order to improve school fa	50		
Action requested by villagers still pending	51		
Action to be decided on in next meeting	52		

Appendix Table 4: Female-friendliness of Issues

Issue	Fraction of Words Spoken by Women
Water	0.163
Public Works	0.163
Financial Help	0.225
Rents and Taxes	0.139
School	0.122
Health	0.151
Agriculture	0.067
Miscellaneous	0.000
Government	0.082