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Does Female Reservation Affect Long-Term Political Outcomes?

Evidence from Rural India

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Abstract

Although many studies have explored the impacts of political quotas for females, often with ambiguous results, the underlying mechanisms and long-term effects have received little attention. This paper uses nation-wide data from India spanning a 15-year period to explore how reservations affect leader qualifications, service delivery, political participation, local accountability, and individuals' willingness to contribute to public goods. Although leader quality declines and impacts on service quality are often negative, gender quotas are shown to increase the level and quality of women's political participation, the ability to hold leaders to account, and the willingness to contribute to public goods. Key effects persist beyond the reserved period and impacts on females often materialize only with a lag.

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1. Introduction

Many developing countries suffer from long-standing and quantitatively large bias against women in terms of asset ownership and access to public goods and services. Redressing such bias is important not only for ethical reasons but also because social exclusion can reduce overall welfare and threaten social stability. Lack of voice that prevents women from ensuring that their needs are taken into account in public service delivery and policy design is believed to be an important factor reinforcing such bias. Quotas that aim to increase women's political power by reserving a share of the seats contested in any election for females have therefore attained great popularity. In fact some 100 countries worldwide are reported to practice gender quotas in some form to overcome gender bias and long-standing inequalities.

Despite their political attractiveness and widespread adoption, electoral quotas are not uncontroversial. Supporters argue that empowering members of groups who had historically been disadvantaged can result in more inclusive processes of policy-making drawing in those previously excluded. This can change the median voter's preferences and thus the outcomes from political decision-making. To the extent that it improves access to public goods (e.g. education or roads) by those who had earlier been excluded or marginalized, this can be Pareto optimal and ensure better development and use of a society's human potential. Critics note that such measures run a danger of bringing to office individuals who lack necessary qualifications and may then be easily manipulated by traditional elites. In addition to adverse effects when they are in force, reservations may also adversely affect behavior by competitively elected leaders who, because they are prevented from standing for re-election, will have their time horizon truncated and thus be tempted to adopt myopic patterns of behavior that do not maximize long-term social welfare.

Which side of this debate is correct is an empirical question. However, while a large and increasing number of studies explore the topic, virtually all of them aggregate effects at the household level rather than allowing for heterogeneity within the household and focus on contemporaneous effects during the immediate reservation period. For a variety of reasons, these may be very different from longer-term changes in behavior, the change of which is the ultimate goal of reservations. To assess the extent to which such policies achieve their objective, it will be important to complement them with evidence on the extent to which reservation-induced effects persist over time. Exploring longer-term effects could also help in the understanding of the channels through which such effects materialize an issue of great policy interest.

India is of particular interest in this respect because, in an effort to overcome long-standing discrimination by gender and caste, far-reaching political decentralization in the early 1990s was combined with regulations mandating that a share of elected leadership positions be 'reserved' for women and other disadvantaged groups. As villages subject to reservation are chosen randomly in any given period, differences between reserved and non-reserved locations can be interpreted causally. We draw on a large national sample to assess impacts of female reservations on the perceived quality with which public goods are delivered, individuals' level of political participation and willingness to make a matching contribution to provide local public goods, and their self-reported ability to hold leaders to account. As our data were collected some 15 years after this policy had taken effect, yet still with about one-third of villages never having been reserved, we can examine whether – and, if yes, how – reservations have affected long-term outcomes. Beyond academic interest in such results, recent debates in India about extending female reservations to the state and national levels imply that such evidence can also inform the country's ongoing policy debate.

From a methodological perspective, reservation-induced effects may be gender-differentiated and persist beyond the 'reserved' period. The latter may be due to learning about political processes by previously excluded voters or reversal of policies after reservations expire. Keeping this in mind, we expect female reservations to have two potentially countervailing effects: On the one hand, reserved (female) leaders are likely to be less experienced and less qualified than other candidates, something that could reduce the quality of public service provision in the short term. On the other hand, by increasing inclusiveness of political processes and enabling (female) voters to voice concerns and hold leaders to account, the effects of this policy in the medium term could be very different from immediate impacts.

We indeed find that reservation prompted a decline in perceived leader attributes and the quality with which public goods are provided. While it is unclear to what extent this can be ascribed to prejudice or

biased perceptions on the part of respondents, the policy also led to an increase in the extent and nature of political participation, perceived ability to hold leaders to account and -possibly as a result- individuals' willingness to contribute to public goods. These effects persist over time and, especially for females, tend to materialize with a lag that could point towards learning. This suggests that, although it may impose a short-term cost, female reservation can yield overall social benefits with political participation being a key channel through which these benefits materialize.

The paper is structured as follows: Section two provides context by discussing the overall rationale for gender quotas, the Indian context, and the hypotheses guiding our investigation. Section three describes the data and compares key outcome variables in terms of leader quality and accountability, quality of public services, political participation, and willingness to contribute to public goods, between reserved and unreserved panchayats. Section four builds on this by econometrically exploring potential heterogeneous effects of reservations as well as their persistence over time. Section five concludes with a set of policy implications and suggestions for future research.

2. Gender quotas: Rationale, evidence, and approach

Concern about a failure of pre-existing and often deep-rooted gender gaps to narrow over time led many countries to adopt policies that reserve a certain share of political positions for females. Evidence on the impact of such policies is mixed and inconclusive. In India, high levels of gender discrimination provided the justification for legislation that reserved, in any election after 1995, leadership for females in one third of villages, randomly selected. While some note that leaders coming to power in this way may be less qualified and more prone to being influenced by others than those elected on unreserved seats, others find that these policies had significant impact on quality of public goods. We discuss the relevant channels for such impacts to materialize, draw out implications for longer-term effects beyond the immediate period during which reservations had been imposed, and describe how these can be tested with the data at hand.

2.1 Female political participation in perspective

Women's preferences have been shown to differ from those of males (Edlund and Pande 2002) with potentially far-reaching effects on intra-household decision making and democratic voting outcomes (Funk and Gathman 2008). Although standard political economy models with full pre-commitment imply that policy-makers' attributes -including their gender- will not mater for outcomes (Downs 1957), these have often been found to be inconsistent with empirical evidence. Citizen-voter models formalize the idea that legislators' identity can matter for outcomes (Besley and Coate 1997, Osborne and Slivinski 1996).

Many societies are characterized by under-representation of females in bodies for policy making at the national or local level (Dahlerup 2006).[1] If such lack of representation is due to institutional barriers, cultural norms, or political discrimination and if policy-makers' attributes matter, actions to increase participation share could affect the nature of political equilibria and, by implication, long-term outcomes. This line of argument provided a justification for affirmative action, including quotas to reserve a share of political positions for females, to bring about greater equality in opportunity and outcomes. As a consequence, gendered quotas to increase women's share of elected positions have become very popular; in fact they are, in different forms, now practiced in more than 100 countries (Krook 2009). In some cases, such measures have led to perceptible shifts in the composition of legislatures. For example in Rwanda establishment of a gender quota (of 30%) in 2003 is widely credited with having contributed to the fact that female parliamentarians now make up the majority of the legislative assembly (Powley 2007). Quotas have also been introduced in many European countries although in some cases their impact may be diminished by them being applicable to candidates rather than seats.[2]

Across countries, studies suggest that female participation in legislative processes helped to overcome gender bias in access to specific services and that female legislators tended to allocate more funds to causes important to women (Paxton and Hughes 2007, Reingold 1992, Saint-Germain 1989). Effective provision of greater volumes of public goods could then help previously disadvantaged groups to more quickly eliminate such biases while greater political participation increases the pool of talent which the system can draw upon or allow greater deliberation and innovation to eliminate mistakes in the process (Page 2007). Studies suggest that higher levels of female representation in parliament are associated with lower levels of corruption (Dollar *et al.* 2001) as well as more spending per student, higher shares of female teachers, and greater secondary enrollment by girls. Greater female representation is also found to improve women's access to health via higher public spending that in turn is noted to increase the number of doctors and women's ability to receive pre-natal care (Knack and Sanyal 2000).

Studies exploiting differences in the timing of the introduction of female voting across US states suggest that expansion of the suffrage to women led to increased public spending and more liberal voting patterns, a phenomenon that persisted over time as females gradually took advantage of the franchise (Lott and Kenny 1999). Laws extending voting to females were followed by shifts in legislative behavior and large increases in local health spending (Miller 2008). At the same time, the impact of gender reservations is context specific. Evidence of higher female participation increasing health spending (Rehavi 2008)

[1] Globally, less than 20% of members in national parliaments are female, although this varies from close to parity in Nordic and some African countries such as Rwanda to some 10 percent in Arab states (International Institute for Democracy and Electoral Assistance (IDEA) 2008).
[2] For example in France, although 50% of candidates are required to be women, only 18% make it to the national assembly (Frechette *et al.* 2008).

contrasts to findings from mayoral elections during the 2000s where policy-makers' gender did not appear to have any on effect on the size of government, the composition of municipal spending and employment, or actual outcomes such as crime rates (Ferreira and Gyourko 2010). One possible explanation is that city governments come closer to the Downsian model.[3] In Californian school boards where females already hold 45% of elected seats, an anti-incumbent bias was observed whereby adding an additional female (male) increased the likelihood of a male (female) winning the next election (Schwarz 2010).

2.2 Gender reservations in the Indian context

India is characterized by large gender gaps in key human development indicators such as child mortality and malnutrition as well as levels of antenatal coverage, contraceptive use, adolescent fertility, and maternal mortality that are much worse than what is found in countries with similar or even lower levels of per capita income.[4] Discrimination against females originates in marriage practices and caste structures that show little sign of disappearing and may even be reinforced over time (Anderson 2003). Despite high overall growth since the mid-1990s, some studies suggest that gender gaps widened in southern states that enjoyed higher levels of income growth and higher initial levels of female empowerment (e.g. AP, KA, TN), suggesting that economic growth alone may not bring about gender equality (Raabe *et al.* 2009). Persistently high levels of gender inequality are often believed to be reinforced by deficient provision of public goods, e.g. maternal health and peri-natal care for girl children (Bhalotra and Rawlings 2011). To the extent that they can bring about better and more equitable provision of such services, quotas to bring women into positions of power could help to address and eventually overcome such bias.

In 1992, India's 73rd Constitutional Amendment mandated far-reaching decentralization by establishing a three-tier system of district, block and village-level councils. The *gram panchayat* (GP) is the lowest tier of local government at village level. It comprises a president (*pradhan* or *sarpanch*) and council members who are elected from the panchayat's wards. Its responsibilities include (i) provision of major public services such as health, education, drinking water, and roads; (ii) setting rates and administering local taxes; (iii) administration, formulation and implementation of local development plans; and (iv) selection of beneficiaries and implementation of social and economic programs established and paid for by the central government. Regular assemblies (*gram sabhas*) by all voters in the GP are meant to monitor performance and increase democratic accountability. To prevent decentralization from reinforcing rather than reducing the power wielded by traditional elites and to counter what was perceived as a legacy of

[3] Females are found to have higher levels of unobserved political skill, possibly because they had to overcome gender bias to move up in politics.
[4] UNDP's gender inequality index, based on 2008 data, ranks India 122 out of 138 countries, below Rwanda (83), Lao PDR (88), Egypt (108), Moldova (38), and China (40).

disenfanchisement and under-representation by females and other disadvantaged groups, this was combined with reservation of a share of seats for women as well as scheduled castes and tribes.[5]

A number of influential studies have found that India's efforts to increase female participation in political processes and decision-making had significant impacts. An India-wide study notes that reservations create opportunities which many women are able to utilize (Ministry of Panchayati Raj 2008). In West Bengal and Rajasthan, female policy makers who have come to power through quotas provide more public goods that benefit and are valued by female voters such as water and roads (Chattopadhyay and Duflo 2004). Mandated changes in female leadership prompted by quotas were also found to increase the quality of political processes and prompt greater female participation in *gram sabha* meetings in South India (Besley *et al.* 2005). In terms of outcomes, reservations were associated with higher levels of child survival, an effect that could arise because female leaders, who are more attuned to the needs of child health, helped to improve access to and use of services such as antenatal care and public birth facilities. This in turn translates into significantly higher levels of breastfeeding and immunization (Bhalotra and Clots-Figueras 2010). The impacts of reservations can be felt in other spheres as well; phased introduction of reservations at state level is used to argue that female reservations gave women greater voice, resulting in increased reporting of crimes against women and greater resistance to violence (Iyer *et al.* 2010). Reserved seats occupied by low-caste or tribal (but not high-caste) females are also argued to have resulted in higher levels of investment in health and early education and greater efforts to implement redistributive land reforms and inheritance legislation favorable to women (Clots-Figueras 2009).

Studies that find significant and positive impacts of reservation are in contrast to others arguing that reservation-induced effects may be more ambiguous or even negative. One possibility may be that, once other factors are controlled for or results are placed in a broader context, presumed advantages enjoyed by female pradhans' vanish or even turn negative so that their performance would be below that of pradhans elected without restrictions (Ban and Rao 2008, Besley *et al.* 2004, Rajaraman and Gupta 2008). In some cases, aggregation may be an issue as effects may be limited to some sub-groups but fail to materialize in the aggregate (Dongre 2010). A study focusing on selection of beneficiaries from central government schemes in West Bengal suggests that, in this respect, reservation had few, if any, positive effects on women. It worsened within-village targeting of such transfers to lower caste groups and failed to improve other targeting dimensions. This implies that, for disadvantaged women, the net effect of reservations

[5] At village level, most states now reserve one third of council members and pradhan positions for women. By comparison, the share of positions reserved to ST/SCs equals the population share of the ST/SC population (Bardhan *et al.* 2010). Although many studies explored impacts of caste reservations (Krishnan 2007, Pande 2003), our focus is on those for females. At district level, it appears that reservation of positions in the legislature for scheduled castes but not tribes improves access to education facilities, mainly primary schools, for relevant constituencies.

could, for a number of possible reasons, actually end up being negative (Bardhan *et al.* 2010).[6] An approach based on individual data and clear hypotheses on how reservations may affect results can thus help better understand the underlying processes.

Specific studies have also noted that reservations -especially for caste- could, in principle, result in selection of leaders with inferior characteristics and, consequently, lower levels or quality of public goods (Munshi and Rosenzweig 2008). While such effects should be less pronounced for gender reservations, in Tamil Nadu women pradhans on reserved seats are reported to have fared very badly -much worse than SCs and STs- in a test designed to measure their understanding of relevant *gram panchayat* procedures (Gajwani and Zhang 2008). Attributing outcomes solely to the leader's gender is also equivalent to assuming full pradhan dominance of the *gram panchayat*. This may be at variance with ground realities where women occupying reserved seats are often poorly educated and may be guided by traditional elites (often husbands or family members) who may pull the strings from behind the scenes (Rajaraman and Gupta 2008). There is indeed evidence suggesting that female leaders depend on access to social and political networks through traditional leaders and that this reduce their ability to control events. [7]

Finally, as reservations will be in place for a limited time, their impact can be fully appreciated only by a looking beyond the immediately reserved period. If members from disadvantaged groups who entered office through reservations are not accountable and direct public goods or programs towards cronies or a narrow constituency, effects observed during the reserved period may be reversed -or over-compensated- once reservations have expired. This hypothesis receives support from the ambiguous longer-term effects of reservations on access to and quality of public goods found in longer-term studies that consider outcomes for more than just one period (Bardhan *et al.* 2010, Raabe *et al.* 2009). On the other hand, long-term effects of reservation can be more positive than what appears on the short term if this measure helps to change either the way in which public goods are provided or the pattern of political participation and the associated political equilibrium. If the experience of female leaders prompts voters to revise long-standing prejudices that affect future voting behavior (Beaman *et al.* 2009), long-term effects of quotas could be more positive than what emerges in the short term. The same would hold if reservations allow those who were excluded or lacked voice to more effectively participate in political decision-making and, through such a shift in political participation, alter the nature of the median voter. In fact, the desire to prevent local capture in this way was one of the factors motivating adoption of this policy (Singh 2007).

[6] The explanation favored by the study under concern is that female reservation is inconsistent with traditional models of electoral competition. It concludes that a more complex approach of capture-cum-clientelism os more appropriate but may itself be is susceptible to being weakened by election of inexperienced women to reserved positions (Bardhan *et al.* 2010).

[7] In the Tamil Nadu study quoted earlier, some 80% indicated that their official decisions were to be influenced by their husbands, potentially pointing towards limited autonomy in decision-making (Gajwani and Zhang 2008).

Beyond the immediately reserved period, the literature identified three channels through which reservations could affect long-term outcomes. First, they might prompt those who previously had not participated in political process to change their behavior permanently. Evidence for persistent effects via greater participation along these lines is available from rural West Bengal (Beaman *et al.* 2010) and South India (Besley *et al.* 2005) as well as urban Mumbai (Bhavnani 2009). This is plausible as previously ignorant voters may require time to learn about how to access and use information to most effectively hold leaders accountable. Second, they may trigger a process of learning and revision of prejudices as in cases where exposure to female leaders led to and revision of stereotypes regarding females' leadership qualities (Beaman *et al.* 2009). A third option less documented in the literature is that, if it increases voice or shifts the composition of public goods in a direction that benefits certain groups, reservation may lead to increased contributions to public goods. These will be relevant because, even if key infrastructure such as roads or schools has been established (e.g. through central funds), its lifespan and effectiveness will be significantly enhanced by efforts towards local maintenance or monitoring to prevent service providers (e.g. school teachers) from shirking. The underlying mechanisms have been studied in a range of contexts (Bagnoli and Lipman 1989, Messer and Zarghamee 2007),though few studies explore the willingness to contribute to better service quality in India (Chandrashekhar 2008).

By providing evidence on some of the trade-offs involved, the focus on long-term effects of reservation at the individual level that we are able to take can help clarify some of the issues in the literature. It allows us, in particular, to test whether a possible short-term reduction in quality of public good provision induced by reservation may be offset by the fact that this intervention exposes individuals, especially females, to new ideas and enhances their participation in local political decisions with beneficial effects in the long term.

2.3 Econometric approach

To explore the issues discussed above, we use data from a nationally-representative panel survey of 233 villages in rural India conducted in 2008 by the National Council of Applied Economics (NCAER). In addition to its national coverage, this dataset, which is based on a long-running panel, has a number of desirable features. First, with information on the last three village-level elections, it provides information data on the reservation status of all panchayats elected after the provisions of the 73rd amendment were adopted in a state. [8] This allows us to test for long-term impact of reservations in a setting of decentralized decision-making. Table 1, which provides a breakdown of reservation by region, illustrates that out of the

[8] While this includes three elections for most of the states, Bihar, Orissa, Punjab, Tamil Nadu and West Bengal held the earliest elections in 1992, before the amendment was adopted.

233 villages in the sample (176 with 3 elections), 36% had never been reserved while 52%, 11%, and 1% had been reserved once, twice, or thrice, respectively. Second, data on a range of performance measures of the current panchayat is obtained individually for all household members 16 and older.[9] Key variables of interest here relate to perceived effectiveness and accountability of pradhans, the frequency and nature of political participation (e.g. whether issues were raised in *gram sabha* meetings) and willingness to contribute to public goods. We are thus able to not only explore gender-specific effects but also to assess whether some impacts of reservation materialize only in a delayed fashion, either because of limitations (e.g. limited leadership qualities) in the reserved period or the need for learning over time, thus allowing appreciation of potential trade-offs that might be of relevance for the policy debate.

Methodologically, as reservations are assigned randomly, OLS regressions of outcome variables on a reservation dummy and controls will yield unbiased and consistent estimates of policy impact. Letting outcome variables be superscripted by *j*. *i,v,* and *t* denote individuals, villages, and time, the estimating equation is

$$Y_{ivt}^{j} = \beta_{v}^{j} + \beta_{1}^{j} R_{vt} + \beta_{2}^{j} R_{vt-1} + \beta_{3}^{j} R_{vt-2} + \beta_{4}^{j} X_{ivt} + \beta_{5}^{j} D_{t} + \varepsilon_{ivt}^{j} \qquad (1)$$

where Y^{j}_{ivt} is the outcome variable of interest, β_v is a state fixed effect,[10] R_{vt}, R_{vt-1} and R_{vt-2} are indicator variables for reservation in the current, the previous, or the previous to previous period that equal one if the pradhan position in village *v* at *t*, *t-1* or *t-2* was reserved for females and zero otherwise, X_{ivt} is a vector of household and individual controls such as wealth and land ownership status, age, sex, caste, and broad occupation, and the βs are parameters to be estimated. The coefficients β_1 β_2 and β_3 can be interpreted as the effect of reservation in the current, previous and previous to previous period on Y^j respectively which allow us to test for persistence of any reservation-induced effects.[11] Interacting R_{vt} with a female dummy allows us to explore gender-differentiated effects by gender.

3. Data and descriptive statistics

We use member-level information on perceived quality of service delivery and ability to hold officials accountable, extent and nature of participation in village assemblies (*gram sabhas*), and willingness to contribute to public goods. Descriptive data support the notion of reservations having been imposed randomly and point to a number of interesting facts. 'Reserved' leaders have lower levels of observable

[9] Although some of these questions were asked retrospectively for all the three panchayat periods, we use only information on the current period to avoid that results be driven by recall bias.
[10] To avoid that results be driven by recall bias, all of the regressions are based on outcome variables for the current panchayat period only even in cases where similar information (based on recall) was provided for earlier periods. In all cases, regressions are clustered at household level.
[11] As explained earlier, the second lag of reservation is not defined in Bihar, Orissa, Punjab, Tamil Nadu and West Bengal. We thus estimate all equations consistently for two lags with the reduced sample and for only one lag with the entire sample.

qualifications and experience. Subjective assessments point towards a decrease in the quality of service delivery. While evidence on accountability, political participation, and willingness to contribute to public goods is more mixed, more detailed analysis will be required to identify gendered impacts.

3.1 Data sources and variable construction

In most states the panchayat operating at the time of data collection in 2008 had come to power in 2004, implying that sufficient time had passed for it to have an impact that could be assessed by respondents. Data on the quality of public good delivery are constructed from the response to the question of whether the situation pertaining to certain issues was 'better' or 'much better' than in the previous panchayat. We group responses for 14 types of goods in the questionnaire into 3 broad categories, one pertaining to water, schools, health, and sanitation, one for roads, electricity, street lights, and irrigation, and one pertaining to government schemes, credit, communication, and natural resource management. A normalized indicator that varies between 0 (no improvement at all) and 1 (improvement in all reported categories) that serves as our main outcome variable is constructed for each group. This is then used to test if female reservations lead to a change in perceived quality of public goods provided by local government, overall or for females.

The survey contains information on whether matters improved with respect to government employees' absence from their duties, whether it is easy to get problems with local service delivery (local roads, street lights) fixed, how simple it is to hold local officials to account for functions they are expected to perform, and the transparency of beneficiary selection for various government schemes. For each of these, we construct indicator variables that equal one if either the situation has improved or if it is 'not a problem at all' or 'very easy' to achieve accountability or transparency.[12]

To avoid reliance on hypothetical and rather abstract information, we complement the above indicators with information on actual meeting participation during the last four *gram sabhas* held in each village. For each meeting, information on attendance and active participation (by discussing issues rather than just observing) is complemented with the number of issues discussed at the meeting that respondents considered to be of relevance for themselves.

Finally, we use individuals' stated willingness to contribute a modest amount (100 Rs.) to different categories of public goods if doing so would allow securing a matching government contribution of much

[12] The wording for the three questions on holding local leaders to account was as follows: 'How easy is it for you to get problems associated with local service provision (such as repairing the road in front of your house, ensuring that the street lights function, etc.) fixed?', 'How easy is it for you to hold local officials accountable for the functions they are supposed to be performing?' and 'How transparent is the process of beneficiary selection regarding various government schemes in your village?' For the first two, possible answers were coded as 1 not a problem at all; 2 very easy; 3 relatively easy; 4 quite difficult and 5 impossible. For the third question, answers were coded as 1 completely transparent; 2 very transparent; 3 relatively transparent; 4 quite non-transparent; and 5 completely non-transparent.

larger size.[13] The measure used is based on adding up all contributions to obtain the total overall or sum for relevant categories. This allows us to test whether, by increasing voice and participation, reservation of leadership positions for females prompts individuals to contribute more towards public goods.

Before discussing descriptive evidence, it is worth noting that a precondition for our empirical strategy to be valid, i.e. for OLS estimates to be interpreted as a causal effect, is that allocation of reserved seats across villages is indeed random. The fact that the last round of the panel survey was conducted in 1999 allows us to test this for the 2000 election. Descriptive statistics for village and household characteristics in 1999 in panel 1 and 2 of table 2 reveals little if any bias in this regard. Some 30% (71 out of 233) of the sample villages were reserved in this period. Reserved and unreserved villages are similarly sized and have similar levels of access to infrastructure and public goods (drinking water, anganwadi, food for work programs), with a significant difference only in the number of health workers. Household characteristics such as education, age, assets, income, and its composition, are not significantly different between reserved and unreserved villages either.

3.2 Leader qualifications and process characteristics

Having established that villages are otherwise comparable, we note that characteristics of pradhans differ between reserved and unreserved panchayats. The top panel of table 3 highlights that those on reserved seats have much lower educational qualifications; 25% as compared to less than 6% on unreserved seats are illiterate, and only 29% and 6% of them (vs. 62% and 22% respectively) completed at least secondary or high school. This also implies that very few 'unreserved' pradhans had been involved in politics before; the share of those who held GP positions or ran for pradhan or ward member before is significantly higher in unreserved compared to reserved villages (24% versus 12% and 21% versus 7% for previous positions or candidacies, respectively). At the same time, female reservation does not seem to reduce the likelihood of other marginalized groups, especially scheduled castes and tribes or religious minorities, to be elected, allaying fears about potential negative equity consequences of this policy. Moreover, the fact that in unreserved panchayats only 7% of pradhans are female is consistent with the hypothesis that without reservation, female participation would have been much lower. In line with earlier observations, reservations bring less experienced or 'new' officials to power; compared to a quarter who had held office before in unreserved panchayats, only some 12% held office earlier in reserved ones and only 7%, as compared to some 21% in unreserved seats had been running for office without being elected before.

[13] To obtain an indication of individuals' willingness to contribute at the margin (for the current panchayat period), the question was phrased as follows. "Imagine the Government decides to contribute an additional Rs. 1 lakh (100,000) to solve a local problem but only if the majority of village households contribute Rs. 100 each. Imagine that almost enough people are willing to contribute and your decision to contribute or not will decide the outcome. Would you be willing to contribute Rs. 100 if the issue was ….?".

Contrary to concerns that reservations may reduce the competitiveness of elections, our data suggest that reserved seats are no less competitive than unreserved ones (table 3 panel 2). In fact, with participation levels of 76% for reserved compared to 72% for unreserved seats, 'reserved' pradhan elections (in states where pradhans are elected directly) appear to have attracted slightly higher levels of voter turnout.[14] The bottom panel highlights that there is no significant difference in size and structure of budgets between reserved and unreserved panchayats, not unsurprising in a setting where own revenues remain modest and some 90% of local budgets are from central transfers.

Table 4 reports descriptive statistics for individuals' assessment of the pradhan's leadership attributes, the quality of service delivery in key areas, and the ability to hold officials to account. Figures are reported for the full sample and male as well as female respondents separately for reserved and unreserved panchayats. That reservations impose an additional constraint emerges clearly from the fact that for all of the many areas considered, and irrespectively of respondents' gender, reserved pradhans' qualifications are always rated below or at most equal to those of unreserved ones. Males and females unanimously view those elected on reserved female tickets as having lower technical qualifications and lower ability to provide local public goods or select beneficiaries transparently. They also coincide in considering those on reserved seats as less honest and fair than those on non-reserved seats, possibly pointing to the fact that in some cases reservation results in females being put up as a front for husbands or relatives who continue to draw the strings behind the scene. Males think that reserved female pradhans are less knowledgeable of national affairs and worse at communicating village problems to higher government. The only area where reserved pradhans are put on par with non-reserved ones relates to the ability to solve local disputes.

Consistently for males and females, descriptive data suggest that reservation affects perceived quality of service delivery either negatively (for water, schools, health, and sanitation although, with some 53%, a majority of respondents saw things improve) or not at all, i.e. it does not lead to improvement (for roads where about 37% perceived an improvement and credit where 29% judged their situation better than in the previous period). Problems related to officials' absence from their duties are a notable exception; with some 25% in total who perceived things to have improved, the share of those who viewed improvements was significantly higher in reserved than in unreserved villages.

Gender differences are also striking regarding respondents' perceived ability to hold officials to account: While some 50% of men find it easy to hold officials to account, have them take care of local problems,

[14] To simplify presentation, we use only currently reserved villages for the first set of data and villages that have been ever (or never) reserved for the rest. More disaggregated data are not substantively different and available on request. To facilitate interpretation, state level effects are controlled for throughout.

or select beneficiaries transparently, only about 25% of women perceive them to be able to do so. While such differences are likely to have given rise to the imposition of gender quotas on the first place, we fail to find a clear difference between reserved and non-reserved seats at the descriptive level.

3.3 Meeting attendance and willingness to contribute to public good provision

Evidence on meeting attendance reinforces the notion of marked gender gaps and also suggests that the impact of reservations may be gender-differentiated. Levels of attendance differed sharply between males (25%) and females (7%) and were affected differently by reservation in the sense that females attendance was much higher in reserved compared to non-reserved villages (8% vs. 6%). The opposite was true for males 29% and 24% of which attended meetings in non-reserved and reserved villages, respectively. While the share of those who considered that the issues discussed in such meetings were of relevance for them decreased with reservation (significantly for males but not for females), the fact that 58% vs. 56% in reserved as compared to unreserved villages participated actively (again significant for males but not females) suggests that the quality of participation increased as well. This is consistent with findings that female leadership enhances political participation (Beaman *et al.* 2009, Bhavnani 2009) and the extent to which political processes adhere to norms.

The data also suggest that the willingness to contribute to various forms of public goods is significantly higher in reserved compared to unreserved panchayats. The sum of contributions individuals indicate to be willing to make is Rs. 284 in unreserved vs. Rs. 325 in reserved villages, a difference significant for females (312 vs. 274) and males (337 vs. 293). Distinguishing the underlying categories points towards a consistent pattern of willingness to contribute highest for water, schools, health, and sanitation (Rs. 157) followed by roads, lights, electricity, and irrigation (Rs. 102) and finally credit, communication, government schemes and natural resource management (Rs. 57). With one or two exceptions, differences between reserved and non-reserved villages -which refer to the entire village population, not only those who participated in meetings- are highly significant. This points towards multiple channels through which such effects may materialize and the usefulness of exploring these in more detail econometrically.

4. Econometric results

Regression results suggest that, although favorable impacts on perceived quality of public services in the immediate reservation period are limited, reservations increase the level and quality of participation in political processes and the extent to which the procedural details of local democracy are adhered to. We also find evidence of reservations leading to improvements in self-reported ability to hold local officials to account and individuals' willingness to contribute to different types of public goods that persist over

time. For many of these, short-term effects on females are smaller than those for males or those estimated to materialize in the longer-term, pointing towards the possibility of learning over time.

4.1 Perceived quality of public good delivery

Econometric analysis is needed to complement descriptive data to, among others, control for respondent and location characteristics, explore potential heterogeneity of impacts, and assess the extent to which impacts persist beyond the immediate reservation period. Tables 6-9 report results in two specifications, one with two lags for reservation but a more limited number of observations and one where we include one lag only.[15] In both cases, we interact the reservation dummy with an indicator for female respondents to explore gender-specific effects. Results from the test for a zero impact of reservation on female respondents in each of the three periods are reported in the bottom of each table.

To test whether lower qualifications affect performance, we explore if perceived quality of public good provision, in terms of changes compared to the previous period as explained earlier, is lower for panchayats with reserved rather than unreserved pradhans.[16] Table 6 reports results from regressions where the dependent variable is a zero-one indicator of perceived improvements in the quality of public good provision compared to the previous panchayat, normalized by the number of items in each group. The types of goods as introduced earlier are complemented with information on problems associated with absence of government officials from their duties. Columns 1 to 4 in the top row of panels 1 and 2 show that overall and for individual categories the quality of service provision declined in reserved periods and that females perceived such declines to as equally large or larger than males throughout, with impacts in some cases more significant for them. While filtered perceptions and cultural bias against acknowledging good performance by women may play a role (Beaman *et al.* 2009), this suggests that immediate improvements in the quality of service provision are unlikely to be a main benefit of female reservations.

This interpretation is supported by the 'bounce back' effect upon expiration of reservations indicated by the fact that the coefficient on the indicator for lagged reservation is consistently positive and significant. Water and associated goods are the exception to this and for these goods the coefficient on the second lag of reservation in panel 2 is negative and highly significant, especially for females. This suggests that a long-term beneficial effect of reservations on the perceived quality of public good provision is unlikely. Even if it does not directly improve quality of service delivery, reservation can influence policy outcomes indirectly through other channels. Indeed, column 5 of table 6 points towards as significant reservation-

[15] The reason for reduced number of observations is that including a second lag for reservation forces us to drop the states (Bihar, Orissa, Punjab, and Tamil Nadu) where only one election had been conducted under the regime established by the 73rd Amendment.

[16] Recall that in all regressions, state-level fixed effects, age, education, and dummies for caste, religion, landlessness, and marital status are included throughout. Also, clustering at the household level is adjusted for in all regressions.

induced improvement in the extent to which officials were perceived to be present to perform their duties. Although women did not share this positive assessment -in fact the contemporaneous impact on females is estimated to have been negative and significant- they did perceive positive reservation effects with a lag as evident from both panel 1 and panel 2. The positive and marginally significant coefficient on the second lag of reservation for the entire sample and for women specifically supports this, reinforcing the notion that the reservations can continue to have an impact long after administrative measures directly affect outcomes. One reason for lagged impacts could be that using information on officials' performance to hold them accountable through political processes requires skills which women who had not participated in political processes before might still need to acquire.

Regression results regarding the impact of reservation on the ease with which officials can be held to account support this interpretation. The three dimensions considered are (i) the ability to get concrete local public good problems fixed; (ii) the scope for holding local officials to account in a more abstract sense; and (iii) the transparency with which beneficiaries for programs sponsored by the central government are selected. Results in table 7 suggest that reservation significantly improves the ease with which local problems can get resolved by both males and females. The positive impact of reservation, in particular on females, persists in the post-reservation period; in fact some specifications estimate the impact on females' ability to ensure accountability to be significantly larger than for males. Similarly, while we find no concurrent effects on the ability to hold officials to account or to ensure transparent beneficiary selection, there is evidence of a significant lagged impacts (overall and for females) for both, reinforcing the notion that learning on how to best take advantage from the opportunities by the political system to make ones voice heard in a constructive way may be involved.

4.2 Political participation

While there are many avenues for political participation, relevant legislation designed village assemblies (*gram sabhas*) as key mechanism to ensure democratic deliberation and accountability at local level. The extent to which previously disadvantaged individuals -including women- participated in such meetings thus allows us a more direct test of the impact of reservation on voice and the ability to effectively articulate issues. Moreover, as individuals will continue to attend meetings only if they find that doing so is worth their while, attendance can also be interpreted as an indicator of the relevance ascribed to these meetings. Using member-level data on meeting attendance in the last four meetings in each village and, for those attending, the nature of participation points, suggests that reservation-induced effects vary markedly by respondents' gender (see table 8).

We find that reservation led to a decrease in contemporaneous attendance by males, but that this decline was more than outweighed by greater female participation. In other words, and in line with the gender-differentiated pattern emerging from descriptive data, female reservations helped to increase *gram sabha* participation by women but decreased the likelihood of male attendance. This effect, in particular the gender-differentiated pattern, persisted over time, i.e. the likelihood of female participation remains significantly higher (and that of male attendance lower) even for panchayats that had been reserved one or two periods ago. Relevant coefficients are highly significant and of considerable magnitude throughout.

We would expect that, if reservation increased accountability, it should shift meeting agendas towards topics perceived to be more relevant by participants. This is supported empirically; we find no significant change in the likelihood of relevant issues being discussed during the reserved period (although there seems to be a slight decline in issues relevant to males), a marked increase in the relevance of issues discussed during meetings thereafter implies that reservations shift the agenda in a direction that is of greater interest to females in a way that persists over time. Conditional on attendance, reservation also led to an increase in the likelihood of active participation, through discussion of issues, especially by females (column 2 of table 8). In contrast to what was observed for attendance, however, the positive impact on active (female) participation during the reserved period appears to be partly or fully reversed once reservation lapses. This could be due to the overall shift in the agenda, but further study will be needed to draw firm conclusions on this issue in particular.

4.3 Willingness to contribute to public goods

In addition to participating actively in processes of political decision-making, individuals can influence the supply and quality of public goods and services by expending effort to monitor the officials charged with providing these. In fact, one may expect that, by enhancing voice and improving understanding of the joint responsibility for providing some club goods, reservation can induce individuals to contribute more actively to supply of such services. Table 9 provides results from regressions to explore in detail whether, in line with this argument, reservations increase the willingness to contribute to the supply of public goods if such supply is matched by the state as described earlier. We note that female reservation significantly increases contemporaneous willingness to contribute to public good provision overall by males and females (table 9 column 1) although the overall magnitude of female contributions is slightly smaller, possibly because they control fewer resources than men.

Disaggregating results by types of public good points towards gender differences regarding the goods individuals are willing to support and the persistence of effects. First, contrary to males who are more

willing to contribute to productivity-enhancing goods such as roads, electricity, irrigation, and credit, females are the only ones who even in the reserved period contribute to water, schools, health, and sanitation. This is consistent with gendered differences in the preference for different types of public goods found in the literature and earlier evidence regarding the agenda of public meetings. Second, in all cases, coefficients in the immediate post-reservation period are larger or equal in magnitude and more significant than during the reserved period, supporting the notion that reservation has significant long-term effects. While it is not clear whether the negative impact of the second lag for all groups with the exception of credit is due to the smaller sample, defects in implementation, or other reasons, it suggests scope for further study. Taken together, these findings suggest that positive impacts of reservations on certain public good outcomes as reported in the literature may have materialized not because of higher quality of officials but because this policy empowered women to more actively contribute to public goods and monitor in specific areas of particular interest to them.

5. Conclusion and policy implications

Our analysis contributes to the debate on the extent to which reserving political positions for females can improve political outcomes. India's adoption of far-reaching policies -allocated randomly across villages- to overcome the country's high level of gender bias and social stratification some time ago makes this particularly suitable for our analysis. A nation-wide sample with a rich set of information from individual respondents allows us to contribute to the literature methodologically and substantively.

Methodologically, we note that differentiating between male and female respondents can be relevant if reservation-induced effects on different groups are of comparable magnitudes but opposite sign. We find pronounced, but strongly gender-differentiated, impacts of female reservation on meeting attendance in the short term. Information on all elections after the 73rd Amendment came into force allows testing for persistence and long-term impacts of such policies with results confirming that in many cases the full impact of this policy materializes only with some lag.

Substantively, this allows us to complement a focus on outcomes in the short term with attention to longer-term impacts and the mechanisms that may be at work, in particular individuals' willingness to contribute to public goods, participation in political processes, and ability to access, process, and use information to hold leaders to account. As they put less experienced and qualified individuals into positions of leadership, it should not come as a surprise that the immediate effect of reservations on the quality of public service provision is negative. In our case, and in line with the importance of learning, such negative effects have to be weighed against significant and in most cases persistent impacts (some

with a lag) on outcomes such as meeting participation, and the willingness to contribute to providing public goods. Our analysis thus allows a more judicious portrayal of the trade-offs which imposition of reservations, like most other policy measures, is likely to involve, suggesting that in some cases long-term benefits may more than outweigh the short-term cost for female reservation.

There are three areas where follow-up research would be desirable. First, similar analysis to assess impacts of reservations for certain castes or tribes could help inform the current policy debate. Second, if reservations improve individuals' ability to participate in political processes and hold leaders to account, they will interact with interventions aiming to inform villagers on ways to access information, allow them to make their voices heard, and ensure adherence to rules or redress for misbehavior. Finally, combining the subjective measures for panchayat performance used here with direct information on access to different types of outcomes likely to be affected by reservations -from breastfeeding and child health to intra-household bargaining or running for elected office by females- will help improve understanding of the impacts of this policy, the mechanisms through which they may materialize, and the distribution of any benefits it may provide.

Table 1: Distribution of sample villages across states and reservation status

Region	No. of villages	No. of times reserved				Period when reserved		
		Never	Once	Twice	Trice	Now	Previous	Past prev.
North	55	11	29	14	1	23	14	23
East	37	20	15	2	0	10	8	1
West	75	17	55	3	0	22	19	20
South	66	35	21	8	2	16	20	7
Total	233	83	120	27	3	71	61	51

Source: Own calculation based on REDS/NCAER 2007 Survey.

Note: The North includes the states of Haryana, Himachal Pradesh, Punjab and Uttar Pradesh; the West includes Gujarat, Maharashtra, Madhya Pradesh and Rajasthan; the East includes Bihar, Chhattisgarh, Orissa and West Bengal; and the South includes Andhra Pradesh, Karnataka, Kerala and Tamil Nadu.

Table 2: Initial village and household characteristics by reservation status of the village

Variables	Total Mean	Village reserved? Yes	No	Test for equality
Initial Village Characteristics				
Population in 1999	3870	3381	4088	0.81
Share of population Hindu (%)	86.60	84.49	87.53	0.87
Share of population Muslin (%)	6.62	6.92	6.48	0.19
Net area sown (acres)	1190	1181	1193	0.06
Net Area irrigated under Canal/Stream (acres)	323	221	370	1.24
Access to Bank	0.71	0.72	0.71	0.13
Distance to Mandi(km)	12.69	12.52	12.76	0.12
Distance to retail market (km)	8.67	8.87	8.57	0.22
Distance to nearest Town (km)	14.38	14.64	14.27	0.23
Distance to nearest Pucca Road (km)	2.45	2.22	2.56	0.45
Share of village with st. lights	0.49	0.42	0.53	1.43
Share of villages with PCO	0.33	0.28	0.35	1.04
Share of villages with trained dai	0.56	0.55	0.57	0.26
Share of villages with male health worker	0.47	0.35	0.52	2.31**
Share of villages with female health workers	0.61	0.52	0.65	1.81*
Share of villages with Anganwadi	0.82	0.80	0.83	0.32
Share of scheme building drinking water	0.24	0.23	0.25	0.35
Share of scheme building road	0.18	0.21	0.17	0.81
Share of villages with food for work programs	0.48	0.52	0.46	0.90
Daily male agricultural casual wage (Rs./day)	49.86	49.85	49.87	0.01
Daily female agricultural casual wage (Rs./day)	31.59	32.58	31.35	0.76
No. of observations	233	71	162	
Initial Household Characteristics				
Members < 14	1.93	1.92	1.93	0.24
members 14-60	3.97	4.04	3.95	1.15
Members > 60	0.42	0.40	0.43	1.35
Head's years of education	4.92	5.00	4.89	0.65
Head completed primary	0.51	0.51	0.51	0.17
Head completed middle school	0.31	0.31	0.31	0.16
Head's age	49.50	48.97	49.70	1.53
Female head	0.05	0.06	0.05	1.3
Area of cropland(acres)	2.75	2.78	2.74	0.21
Value of physical assets (Rs.)	43127	41358	43810	0.9
Value of total assets (Rs.)	52564	51829	52848	0.34
Household total income (Rs.)	15549	15380	15615	0.21
Share of crop income	0.52	0.53	0.52	0.44
Share of agriculture	0.67	0.68	0.66	1.22
Share of off-farm income (Rs.)	0.32	0.31	0.33	1.18
Household total expenditure (Rs.)	37769	37807	37755	0.04
Household consumption (Rs.)	9274	9367	9239	0.45
No. of observations	4,275	1,191	3,084	

Note: Distance to railway station, bus stand, post office, telephone office, weekly market, and all the other schemes between the reserved and unreserved groups are not statistically significant. The column 'test for equality' reports the |t|-statistic for the test of equality of means.

Table 3:Pradhan, election characteristics, and public spending for reserved and non-reserved villages

	Reserved		Test for equality
	Yes	No	
Pradhan characteristics			
Illiterate	24.72	5.74	***
At least primary education	75.28	94.26	***
At least secondary education	28.65	62.69	***
At least high school education	6.18	22.08	***
SC/ST	30.02	27.51	
Muslim	0.044	0.050	
Female	98.36	6.65	***
Held political office before	11.67	24.24	***
Was candidate before	6.67	20.92	***
Characteristics of the election			
Number of candidates contested	3.51	3.38	
Share of population voted	76.2	72.1	***
Share of votes received	47.35	49.01	
Revenue & expenditure (Rs. per capita/year)			
Local revenue per capita	174.42	169.07	
of which from govt. sources	156.58	151.79	
of which from own sources	17.84	17.47	
Centrally sponsored schemes	268.73	201.67	
No. of observation	180	459	

Source: Own calculation based on REDS/NCAER 2007 Survey. * significant at 10%; ** significant at 5%; *** significant at 1%
Note: Number of candidates contested is only for the 15 states where the pradhan is directly elected by popular vote i.e., Kerala and Maharashtra are excluded.

Table 4: Comparison of key outcomes between reserved and unreserved villages

	Entire sample				Female respondents				Male respondents			
	Total	Ever reserved?			Total	Ever reserved?			Total	Ever reserved?		
		No	Yes			No	Yes			No	Yes	
Quality of service delivery												
Water, school, health, sanit.	0.526	0.548	0.520	***	0.511	0.529	0.506	***	0.541	0.567	0.534	***
Roads, electricity, lights, irrig.	0.366	0.363	0.367		0.357	0.357	0.357		0.374	0.368	0.376	
Credit, schemes, NRM, comm.	0.288	0.291	0.287		0.273	0.275	0.272		0.303	0.306	0.302	
Absence of govt. officials	0.253	0.215	0.264	***	0.234	0.204	0.243	***	0.271	0.227	0.284	***
Pradhan's leadership qualities[1]												
Honesty & fairness	0.234	0.242	0.218	***	0.214	0.221	0.200	**	0.254	0.264	0.234	***
Technical qualification	0.145	0.153	0.127	***	0.132	0.141	0.113	***	0.157	0.165	0.140	***
National knowledge	0.159	0.165	0.146	***	0.145	0.149	0.137		0.172	0.181	0.155	***
Can provide local public goods	0.238	0.252	0.210	***	0.223	0.236	0.195	***	0.253	0.268	0.224	***
Can solve local disputes	0.228	0.226	0.233		0.212	0.208	0.221		0.243	0.243	0.244	
Can fairly select beneficiaries	0.194	0.209	0.164	***	0.181	0.192	0.157	***	0.207	0.225	0.172	***
Can represent village upwards	0.190	0.195	0.181	**	0.176	0.178	0.173		0.204	0.211	0.188	***
Officials' accountability												
Getting problems fixed easy	0.386	0.383	0.387		0.269	0.272	0.268		0.497	0.491	0.499	
Accountability easy	0.390	0.386	0.391		0.267	0.262	0.268		0.507	0.506	0.507	
Beneficiary selection transp.	0.387	0.380	0.389		0.267	0.266	0.267		0.502	0.492	0.505	

Note: Stars indicate significance of differences between villages that had been reserved at any point in time and those that had not.
[1] Data in this group are for panchayats that are currently reserved or unreserved.

Table 5: Comparison of key outcomes between reserved and unreserved villages

	Entire sample				Female respondents				Male respondents			
	Total	Ever reserved?			Total	Ever reserved?			Total	Ever reserved?		
		No	Yes			No	Yes			No	Yes	
Meeting attendance												
Attended meeting	0.166	0.177	0.163	***	0.072	0.059	0.077	***	0.254	0.290	0.244	***
Relevant issues discussed	0.819	0.862	0.786	***	0.755	0.769	0.743		0.836	0.877	0.807	***
Participated discussing	0.574	0.560	0.584	**	0.431	0.421	0.440		0.613	0.599	0.623	**
Willingness to contribute												
Total (100 Rs)	3.150	2.838	3.247	***	3.028	2.740	3.118	***	3.268	2.932	3.370	***
Water, school, health, sanit.	1.567	1.530	1.578	***	1.582	1.531	1.597	***	1.552	1.531	1.559	
Roads, electricity, lights, irrig.	1.017	0.889	1.057	***	0.939	0.817	0.978	***	1.092	0.955	1.133	***
Credit, schemes, NRM, comm.	0.567	0.419	0.612	***	0.507	0.393	0.543	***	0.623	0.445	0.678	***

Note: Stars indicate significance of differences between villages that had been reserved at any point in time and those that had not.

Table 6: Impact of female reservation on perceived quality of public service delivery

	Total	Water, schools, health, sanitation	Roads, electricity, lights, irrigation	Credit, schemes, NRM, communic.	Absence of govt. officials from duty
Model 1					
Reserved now	-0.130***	-0.0419***	-0.0291***	-0.0215***	0.0185*
	(-5.459)	(-5.702)	(-4.375)	(-3.141)	(1.739)
Reserved now	-0.0330**	-0.00196	-0.00167	-0.0169***	-0.0389***
* female	(-1.969)	(-0.334)	(-0.330)	(-3.281)	(-3.998)
Reserved lag1	0.0938***	0.00355	0.0357***	0.0249***	0.0147
	(3.593)	(0.450)	(4.826)	(3.313)	(1.268)
Reserved lag1	0.000436	0.00558	-0.00395	-0.00104	0.00762
* female	(0.0236)	(0.903)	(-0.713)	(-0.189)	(0.739)
Observations	23,479	23,479	23,479	23,479	23,479
R-squared	0.168	0.131	0.155	0.091	0.064
Tests	52.02***	37.43***	22.94***	35.77***	4.53**
	14.40***	1.45	20.24***	11.77***	4.29**
Model 2					
Reserved now	-0.109***	-0.0423***	-0.0203**	-0.0150*	0.0271**
	(-3.639)	(-4.734)	(-2.563)	(-1.805)	(2.071)
Reserved now	-0.00417	0.00329	0.00290	-0.00745	-0.0365***
* female	(-0.210)	(0.481)	(0.501)	(-1.252)	(-3.185)
Reserved lag1	0.0791**	-0.00649	0.0392***	0.0213**	0.0134
	(2.560)	(-0.707)	(4.613)	(2.436)	(0.986)
Reserved lag1	0.00157	0.00680	-0.00649	0.000691	0.00971
* female	(0.0746)	(0.968)	(-1.048)	(0.113)	(0.828)
Reserved lag2	-0.0399	-0.0218**	-0.00366	-0.00357	0.0264*
	(-1.267)	(-2.282)	(-0.445)	(-0.403)	(1.901)
Reserved lag2	-0.0102	-0.00319	-0.00574	0.00102	-0.00222
* female	(-0.507)	(-0.463)	(-0.967)	(0.166)	(-0.184)
Observations	17,848	17,848	17,848	17,848	17,848
R-squared	0.074	0.040	0.102	0.047	0.049
Tests	15.99***	20.02***	5.27**	8.51***	0.64
	7.57***	0.01	16.48***	6.85***	3.38*
	2.72*	7.23***	1.34	0.09	3.54*

Note: For columns 1-4, dependent variable is the share of local public good issues for which performance of the current panchayat was rated to have been 'better' or 'much better' than in the previous period. Column 5 is a zero-one indicator for whether problems due to absence of government officials from their duties have been reduced. See text for more details. Regressions are clustered at household level and information on education, age, gender, marriage status, household size as well as dummies for cast, religion, land ownership, and overall wealth are included in all regressions but not reported.

Table 7: Impact of female reservation on perceived ability to hold official to account

	Getting local problems fixed easy	Holding local officials to account easy	Ensuring transparent selection of beneficiaries easy
Model 1			
Reserved now	0.0314***	0.0184	0.0156
	(2.681)	(1.581)	(1.350)
Reserved now	-0.0132	-0.0134	-0.0122
* female	(-1.059)	(-1.081)	(-0.983)
Reserved lag1	0.0493***	0.0451***	0.0606***
	(4.128)	(3.728)	(5.059)
Reserved lag1	0.00862	0.0106	-0.00399
* female	(0.650)	(0.820)	(-0.307)
Observations	25,055	25,055	25,055
R-squared	0.108	0.114	0.112
Tests	3.15**	0.24	0.11
	28.46***	26.51***	27.66***
Model 2			
Reserved now	0.00945	0.00211	-0.00385
	(0.692)	(0.156)	(-0.286)
Reserved now	0.0153	0.0105	0.0132
* female	(1.063)	(0.741)	(0.927)
Reserved lag1	0.0399***	0.0320**	0.0453***
	(2.929)	(2.316)	(3.322)
Reserved lag1	0.0382**	0.0367**	0.0236
* female	(2.543)	(2.501)	(1.610)
Reserved lag2	-0.00162	-0.00450	-0.00393
	(-0.110)	(-0.303)	(-0.270)
Reserved lag2	0.00780	-0.00334	-0.00322
* female	(0.526)	(-0.225)	(-0.224)
Observations	19,245	19,245	19,245
R-squared	0.105	0.107	0.109
Tests	4.27**	1.16	0.61
	39.18***	31.02***	31.28***
	0.32	0.37	0.31

Note: The dependent variable is a zero-one indicator of whether an individual thinks it is 'easy' or 'very easy' to achieve the desired outcome.

Regressions are clustered at household level and information on education, age, gender, marriage status, household size as well as dummies for cast, religion, land ownership, and overall wealth are included in all regressions but not reported.

Table 8: Impact of reservation on attendance and nature of participation in panchayat meetings

	Attending meeting	Participated discussing	Relevant issues discussed
Model 1			
Reserved now	-0.0540***	0.0216	-0.0339*
	(-7.904)	(1.245)	(-1.934)
Reserved now	0.0890***	0.157***	-0.0141
* female	(11.98)	(5.172)	(-0.510)
Reserved lag1	-0.0430***	0.00547	0.0592***
	(-5.912)	(0.333)	(4.542)
Reserved lag1	0.0463***	-0.152***	0.0879***
* female	(5.464)	(-4.687)	(3.412)
Observations	92,886	16,453	16,453
R-squared	0.344	0.202	0.093
Tests	41.39***	26.53***	1.93
	0.29	19.14***	27.85***
Model 2			
Reserved now	-0.0514***	0.0180	-0.0365*
	(-6.480)	(0.868)	(-1.699)
Reserved now	0.111***	0.212***	-0.0131
* female	(12.74)	(6.084)	(-0.427)
Reserved lag1	-0.0472***	-0.0298	0.0542***
	(-5.820)	(-1.543)	(3.431)
Reserved lag1	0.0734***	-0.110***	0.107***
* female	(7.633)	(-2.892)	(3.762)
Reserved lag2	-0.0348***	-0.0784***	-0.0617**
	(-4.163)	(-3.145)	(-2.374)
Reserved lag2	0.126***	0.102***	0.102***
* female	(14.77)	(2.717)	(3.337)
Observations	70,677	11,920	11,920
R-squared	0.389	0.175	0.112
Tests	82.56***	32.02***	1.60
	13.77***	12.37***	25.91***
	184.99***	0.30	0.94

Note: In each column, the dependent variable is a zero-one indicator of meting attendance in column 1 and, conditional on having attended the meeting, whether issues relevant to the respondent were discussed and whether s/he participated discussing.
Regressions are clustered at household level and information on education, age, gender, marriage status, household size as well as dummies for cast, religion, land ownership, and overall wealth are included in all regressions but not reported.

Table 9: Impact of reservation on willingness to contribute money to public good provision

	Total contribution willing to make	Water, schools, health, sanitation	Roads, electricity, lights, irrigation	Credit, schemes, NRM, communic.
Reserved now	0.222***	0.0172	0.0693***	0.135***
	(6.378)	(0.912)	(4.233)	(7.420)
Reserved now	-0.0755***	0.0301	-0.0465***	-0.0590***
* female	(-2.749)	(1.564)	(-2.836)	(-3.598)
Reserved lag1	0.359***	0.0604***	0.161***	0.138***
	(8.092)	(2.860)	(8.199)	(6.413)
Reserved lag1	-0.0740**	0.0513***	-0.0676***	-0.0578***
* female	(-2.556)	(2.619)	(-3.979)	(-3.470)
Observations	24,071	24,071	24,071	24,071
R-squared	0.659	0.508	0.514	0.419
Tests	21.46***	6.16**	1.96	23.77***
	47.29***	29.53***	24.74***	18.15***
Model 2				
Reserved now	0.305***	0.0142	0.113***	0.178***
	(7.162)	(0.666)	(5.820)	(8.060)
Reserved now	-0.0707**	0.0393*	-0.0565***	-0.0535***
* female	(-2.138)	(1.769)	(-2.972)	(-2.707)
Reserved lag1	0.453***	0.0793***	0.201***	0.173***
	(8.352)	(3.203)	(8.687)	(6.662)
Reserved lag1	-0.0641*	0.0676***	-0.0768***	-0.0549***
* female	(-1.822)	(2.980)	(-3.905)	(-2.743)
Reserved lag2	-0.108**	-0.123***	-0.00486	0.0195
	(-2.163)	(-5.024)	(-0.224)	(0.818)
Reserved lag2	0.0261	0.0469**	-0.0434**	0.0226
* female	(0.802)	(2.129)	(-2.202)	(1.208)
Observations	18,476	18,476	18,476	18,476
R-squared	0.634	0.479	0.509	0.417
Tests	37.89***	6.04**	8.85***	42.90***
	58.69***	36.90***	31.39***	26.21***
	3.62*	10.17***	5.61**	4.21*

Note: In each column, the dependent variable is the total amount of voluntary contributions (in Rs. 100 increments) the respondent was willing to make for the category in question.
Regressions are clustered at household level and information on education, age, gender, marriage status, household size as well as dummies for cast, religion, land ownership, and overall wealth are included in all regressions but not reported.

References

Anderson, S. 2003. "Why Dowry Payments Declined with Modernization in Europe but Are Rising in India." *Journal of Political Economy 111* (2): 269-310.

Bagnoli, M. and B. L. Lipman. 1989. "Provision of Public-Goods - Fully Implementing the Core Through Private Contributions." *Review of Economic Studies 56* (4): 583-601.

Bagnoli, M. and B. L. Lipman. 1992. "Private Provision of Public-Goods Can be Efficient." *Public Choice 74* (1): 59-78.

Ban, R. and V. Rao. 2008. "Tokenism or Agency? The Impact of Women's Reservations on Village Democracies in South India." *Economic Development and Cultural Change 56* 501-30.

Bardhan, P., D. Mookherjee and M. Parra Torrado. 2010. "Impact of Political Reservations in West Bengal Local Governments on Anti-Poverty Targeting." *Journal of Globalization and Development 1* (1): 1-34.

Beaman, L., R. Chattopadhyay, E. Duflo, R. Pande and P. Topalova. 2009. "Powerful Women: Does Exposure Reduce Bias?" *Quarterly Journal of Economics 124* (4): 1497-540.

Beaman, L., E. Duflo, R. Pande, and P. Topalova. 2010. "Political reservation and substantive representation: Evidence from Indian village councils." Paper presented at the 2010 India Policy Forum. New Delhi: National Council of Applied Economic Research.

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

Besley, T., R. Pande, L. Rahman and V. Rao. 2004. "The Politics of Public Good Provision: Evidence from India Local Governments." *Journal of European Economic Association 2* (2-3): 416-26.

Besley, T., R. Pande, and V. Rao. 2005. "Political Selection and the Quality of Government: Evidence from South India." Center Discussion Paper No.921Economic Growth Center, Yale University.

Bhalotra, S. and I. Clots-Figueras. 2010. "Health and the political agency of women." . Bristol and Madrid: University of Bristol and Carlos Madrid III Working Paper.

Bhalotra, S. and S. Rawlings. 2011. "Intergenerational persistence in health in developing countries: The penality of gender inequality." *Journal of Public Economics forthcoming*.

Bhavnani, R. R. 2009. "Do Electoral Quotas Work after They Are Withdrawn? Evidence from a Natural Experiment in India." *American Political Science Review 103* (1): 23-35.

Chandrashekhar, S. 2008. "Willingness to contribute to public projects - evidence from India." Working Paper. Mumbai: Indira Ghandi Institute of Development Research.

Chattopadhyay, R. and E. Duflo. 2004. "Women as Policy Makers: Evidence from a Randomized Policy Experiment in India." *Econometrica 72* (5): 1409-43.

Clots-Figueras, I. 2009. "Are female leaders good for education? Evidence from India." . Madrid: University Working Paper.

Dahlerup, D. 2006. "Women. Quotas and Politics." Routledge London and New York.

Dollar, D., R. Fisman and R. Gatti. 2001. "Are Women Really the "Fairer" Sex? Corruption and Women in Government." *Journal of Economic Behavior and Organization 46* (4): 423-9.

Dongre, A. 2010. "Female political leadership and the prevalence of water borne diseases: Evidence from a natural experiment in India." . Santa Cruz, CA: University of California Santa Cruz.

Downs, A. 1957. *An Economic Theory of Democracy*. Boston, MA: Addison Wesley.

Edlund, L. and R. Pande. 2002. "Why have Women Become Left-Wing? The Political Gender Gap and the Decline in Marriage." *Quarterly Journal of Economics 117* (3): 917-61.

Ferreira, F. and J. Gyourko. 2010. "Does gender matter for political leadership: The case of U.S. mayors." . Philadelphia, PA: Wharton School, University of Pennsylvania.

Frechette, G. R., F. Maniquet and M. Morelli. 2008. "Incumbents' interests and gender quotas." *American Journal of Political Science 52* (4): 891-909.

Funk, P. and C. Gathman. 2008. "Gender gaps in policy making: Evidence from direct democracy in Switzerland." . Barcelona: University Pompeu Fabra.

Gajwani, K. and X. Zhang. 2008. "Gender, caste, and public goods provision in Indian village governments." Discussion paper 00807. Washington DE: IFPRI, Development strategy and governance division.

International Institute for Democracy and Electoral Assistance (IDEA). 2008. "Global database of quotas for women." www.quotaproject.org.

Iyer, L., A. Mani, P. Mishra, and P. Topalova. 2010. "Political representation and crime: Evidence from India." Draft paper. Washington DC: International Monetary Fund.

Knack, S. and P. Sanyal. 2000. "Making a Difference: Do Women in Government Affect Health and Education Outcomes." Mimeo, World Bank.

Krishnan, N. 2007. "Political Reservation and Rural Public Good Provision in India." Discussion Paper Series No.175Department of Economics, Boston University.

Krook, M. L. 2009. *Quotas for women in politics: Gender and candidate selection worldwide*. New York and London: Oxford University Press.

Lott, J. R. and L. W. Kenny. 1999. "Did Women's Suffrage Change the Size and Scope of Government?" *Journal of Political Economy 107* (6): 1163-98.

Ministry of Panchayati Raj. 2008. *Study on elected women representatives in Panchayati Raj institutions*. New Delhi: Government Printer.

Messer, K. D. and H. Zarghamee. 2007. "New hope for the voluntary contributions mechanism: The effects of context." *Journal of Public Economics 91* (9): 1783-99.

Miller, G. 2008. "Women's suffrage, political responsiveness, and child survival in American history." *Quarterly Journal of Economics 123* (3): 1287-327.

Munshi, K. and M. R. Rosenzweig. 2008. "The efficiency of parochial politics: Caste, commitment, and competence in Indian local governments." Center Discussion Paper 964. New Haven, CT: Economic Growth Center Yale University.

Osborne, M. J. and A. Slivinski. 1996. "A model of political competition with citizen-candidates." *Quarterly Journal of Economics 111* (1): 65-96.

Page, S. E. 2007. *The Difference: How the Power of Diversity Creates Better Groups,Firms, Schools, and Societies*. Princeton: Princeton University Press.

Pande, R. 2003. "Can Mandated Political Representation Increase Policy Influence for Disadvantaged Minorities? Theory and Evidence from India." *The American Economic Review 93* (4): 1132-51.

Paxton, P. and M. M. Hughes. 2007. *Women, Politics, and Power: A Global Perspective*. Los Angeles: Pine Forge Press.

Powley, E. 2007. "Rwanda: The impact of women legislators on policy outcomes affecting children and families." The state of the world's children 2007: Background paper. Geneva: UNICEF.

Raabe, K., M. Sekher, and R. Birner. 2009. "The Effects of Political Reservations for Women on Local Governance and Rural Service Provision." IFPRI Discussion Paper 00878. Washington D.C.: International Food Policy Research Institute.

Rajaraman, I. and M. Gupta. 2008a. "Further evidence on the policy impact of randomised political reservation." . New Delhi: National Institute of Public Finance and Policy.

Rehavi, M. M. 2008. "Sex and politics: Do female legislators affect state spending?" . University of Berkeley working paper.

Reingold, B. 1992. "Concepts of Representation among Female and Male State Legislators." *Legislative Studies Quarterly 17* (4): 509-37.

Saint-Germain, M. A. 1989. "Does Their Difference Make a Difference? The Impact of Women on Public Policy in Arizona Legislature." Conference Papers No.150. Atlanta: 85th Annual Meeting of the American Political Science Association.

Schwarz, J. A. 2010. "Election behavior with high-female representation: A regression discontinuity analysis." . Pittsburgh: University of Pittsburgh, Department of Economics.

Singh, N. 2007. "Fiscal federalism and decentralization in Inida." Working Paper. Santa Cruz, CA: University of California.