Women's leadership and Policy Decisions: Evidence from a Nationwide Randomized Experiment in India

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Abstract

This paper uses the policy of political reservation for women adopted in India to study the impact of women's leadership on policy decisions. In 1998, one third of the positions of chief of the Village Councils of India were randomly selected to be reserved for women: In reserved village councils, only women could be candidates for the position of head. The Village Councils responsible for the provision of many local public goods in rural areas. Using a data set we collected on 165 Village Councils, we compare the type of public goods provided in reserved and unreserved Villages Councils. We show that women invest more in infrastructure that are directly relevant for rural women (water, fuel, and roads), while men invest more in education. The participation of women in the policy-making process is higher in reserved Village Councils, but there is no evidence of any difference between the level of efficiency and corruption of women and men.

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1 Introduction

Women are under-represented in all political positions. In June 2000, women represented 13.8% of all parliament members, up from 9% in 1987. Compared to economic opportunities, education, and legal rights, political representation is the area where the gap between men and women has reduced the least between 1995 and 2000 (Norris and Inglehart 2000).

Among policy makers, increasing the political representation of women is often presented as a "win-win" proposition. It would improve equity, by ensuring a better representation of women's needs, and efficiency, because women are supposed to be better politicians (less likely to be corrupt, more altruistic), and because the political agendas of women are supposed to lead to investment in child health and education, which has a positive long term consequence on growth. This position, articulated most clearly in the United Nations report, *The World's Women* (Nations (2000)), and in the World Bank's report, *Engendering Development* (for Reconstruction and Bank (2001)), shapes policies and debates around the world.

Because women's representation in political the sphere evolves slowly, and does not seem to be greatly affected by economic development, political reservations for women are often proposed as a way to rapidly enhance women's ability to participate in policy making. Political reservations of a certain number of positions for women in the assemblies or on the parties' lists of candidates are in place in over 30 countries (for Reconstruction and Bank (2001)). Five countries (Bangladesh, Eritrea, Tanzania, Uganda and Taiwan) have legal requirements of reserved seats in national or state parliament. A similar electoral law is being discussed in France. Since 1990, ten Latin American states passed electoral laws stipulating that all party lists had to contain a certain proportion of female candidates (Norris (2000)). Finally, quotas are often implemented by internal party rules. In 12 out of the 15 countries in the European community, at least one party (usually on the left) use quotas when selecting candidates for legislative elections (Norris (2000)).

Reservation policies clearly have a strong impact on women's representation.[1] Indirect evidence suggests that it may also affect policy decisions. An important political science literature,

[1]See Jones (1998) for a study of the Argentinian case, Norris (2000) for the impact of the reservation in the Labour Party in the UK. Women's representation dropped from 25% to 7% in Eastern Europe when gender quotas were dropped during the transition from Communism (for Reconstruction and Bank (2001)).

largely focusing on the US, discusses the "gender gap", i.e. the difference between the political preferences of men and women. It also shows that the gender of a representative affects her policy priorities (Thomas and Welch (1991b)). The interests of women in politics seem to closely reflect women's concern. Women place priority on legislation concerning women's, children, and family issues. In turn, there is evidence that politicians' decisions are strongly determined by personal ideology (Levitt (1996)). Women seem, indeed, to devote more energy to women-specific issues than men do, and to be more successful in passing bills on women's issues when introduced (Thomas and Welch (1991a)).

However, there is no convincing direct evidence on whether and how women's representation really affects policy decisions. The available evidence based on cross-sectional comparison is difficult to interpret, because the fact that women are more represented in a particular county or locality may be due to unobserved characteristics of that locality. For example, Dollar, Fisman and Gatti (1999) find a negative correlation between women representation in parliaments and corruption. Does it mean that women are less corrupt, or that countries that are less corrupt are also more likely to have women in parliament? Forest management committee rules in India are more sensitive to women's needs when there are women among the members (Agarwal (1997)). But communities that are more likely to take women's needs into account anyway may also be more willing to let them become members of the committees. In other words, the fraction of women who move into political leadership may reflect the political preference of the community who elects them. The correlation between policy outcomes and women's participation then not reflects only the causal effect of women's participation.[2] In summary, despite the importance of this issue for the design of institutions, very little is known about the causal effect of women's representation on policy decisions, and, by implication, about the potential consequences of mandated representation of women.

This paper studies the policy consequences of mandated representation of women by taking advantage of a unique experiment which has been taking place in India. Since 1998, one third of all positions of chief (Pradhan) of the village councils (Gram Panchayat, henceforth GP) are

[2]Besley and Case (1997) show that worker compensation and child support enforcement policies are more likely to be introduced in states where there are more women in parliament, after controlling for state and year fixed effects. But they recognize that the fraction of women in parliament may be a proxy for women's involvement in politics, more generally.

reserved for women: only women can be candidates for the position of Pradhan in a reserved GP. Furthermore, the reserved GP have been randomly selected: GP were ranked by their serial number, and every third GP was reserved for a women. This has had a dramatic impact on the number of women elected as Pradhan.[3] This policy was enacted five years after a constitutional amendment that gave substantial power to the village councils in defining and implementing local development projects, and maintaining local infrastructure, financed with state's funds. Thus, the GP Pradhan makes decisions about which public goods to provide, and where. We conducted a detailed survey of all investments in local public goods in all the GP of one district (Birbhum, in West Bengal), and we compared the investments conducted in reserved and unreserved GP. Since GP were randomly selected to be reserved for women (we will provide evidence suggesting that the policy was indeed implemented as planned), any difference can be confidently attributed to the policy. The fact that a GP is reserved for a woman can thus form an instrument for the gender of the Pradhan.

The results suggest that gender of the Pradhan does indeed affect policy decisions. In GP that are reserved for women, there are significantly more investments in drinking water infrastructure, recycled fuel equipment, and road construction. These are precisely the issues that are of high interest to women: gathering fuel and fetching water are their direct responsibilities, and they are the most likely to benefit from employment generated by road building. Concerns about drinking water and roads are by far the most frequent among the issues women had raised over the last six months in the villages we surveyed. By contrast, in unreserved GP, there are significantly more investmens in education, an issue that seems of little interest to women in the villages we surveyed. Female Pradhans do not raise or receive more funds, and there is no evidence that they are more efficient or less corrupt in using these funds. Thus, it seems that investments correspond more closely to women's needs in GP where a woman is in charge. This could be because the Pradhan's own priorities are more aligned to those of women, and her policy decisions reflect her interest rather than the preference of the electorate. We also show, moreover, that women participate more in the political process in GP reserved for women.

These results thus indicate that a politician's gender does influence policy decisions, and,

[3]In West Bengal, only 6% of Pradhans were women after the 1993 election. In the district we study, 6.5% of unreserved GP, and 100% of reserved GP, have female Pradhans.

in particular, enforcing greater participation of women through political reservation can affect policymaking. However, one cannot assume that it would be welfare-improving without defining a specific objective function.

The remainder of this paper proceeds as follows. Section 2 describes the political context, the policy, and the data set. Section 3 reviews the literature, in particular two arguments that suggest why a reservation policy for women may affect policy outcomes: One set of arguments is based on the idea that if policy makers cannot commit to implement a set of decisions after being elected, their personal preferences (and, hence, possibly their gender) will affect policies. The second set of arguments is based on the idea that, even if the gender of the policy maker does not directly affect her actions (or even her preferences), it may affect the participation of other women in the political process, and thus policy outcomes. Section 4 discusses these intervening mechanisms: It compares the characteristics of male and female Pradhans, and shows that the reservation policy did affect women's political participation. Section 5 presents the central results of the paper, on the difference in public goods provisions in GP headed by men and women. Section 6 concludes.

2 The Policy and Design of the Study

2.1 The Panchayat System in West Bengal

The Panchayat is a system of village level (Gram Panchayat), block level (Zilla Parishad), and district level (Panchayat Samiti) councils, elected by the people, responsible for the administration of local public goods. The Panchayat system has been formally in existence in most of the major states of India since the early 1950's. However, in most states, the system did not become an effective body of governance. Elections were not held and the Panchayats did not assume any active role (Ghatak and Ghatak 1999). In West Bengal, however, the Left Front Government came into power in 1977 with a promise to conduct agrarian and political reform. The most important part of the land reform was a tenancy reform, that enabled registration of tenants and restrict the eviction of registered tenants (Banerjee, Gertler and Ghatak 1998). The major political reform was to give life to a three-tiered Panchayat electoral system. The first election took place in 1978 and elections have taken place at five year intervals ever since.

The first election took place in the middle of a major political and social upheaval due to the land reform , and this arguably allowed the Panchayat to assume an important political role, independent of the traditional landowning class. This may account for the importance of the institution in West Bengal, compared to most other states of India (Ghatak and Ghatak 1999).

Each Gram Panchayat (GP) covers 10 to 12 villages and a population of about 10,000 people. The GP does not have jurisdiction over urban areas, which are administered by separate municipalities. Voters elect a council, which then elects a Pradhan (chief) and an Uppa-Pradhan (subchief). The position of Pradhan is a full-time appointment (this is not the case for other members of the council). The major responsibilities of the GP are to administer local infrastructure: Repair of public buildings (such as schools), repair and building of drinking and irrigation water infrastructure, excavation of ponds (used for bathing, fishing and irrigation), and maintenance and construction of roads. To finance this, its main source of revenue are state grants, administered by the district. Until 1992, district funds where distributed through "schemes", earmarked for a specific purpose. In 1992, the 73rd amendment to the Constitution of India established the ground principles for the establishment of a three-tiered Panchayat System with regular election all over India. It devolved to the GP the main responsibility of implementing development programs, and the responsibility of identifying the needs of the villages under its jurisdiction. The main source of financing is still the state, but the money which used to be earmarked for specific usage is now allocated through four broad schemes. First, money allocated under the Jawhar Rozgar Yojana (JRY) can be used for all work on infrastructure. Second, there is a separate scheme for drinking water infrastructure. Third, the GP is now responsible for the identification of beneficiaries of social programs and the disbursement of funds (Widower pension, relief) and receives money for this purpose. Fourth, the GP receives money for its own functioning (salary of the secretary, honorarium of the Pradhan, maintenance of the building, etc...). Finally, the GP was given the right to collect and retain its own sources of income, through taxation of assets, and establishment of collective fisheries. We collected and analyzed the 1999 balance sheet of 40 GP.[4] The JRY accounts for 31% of total GP income, the drinking water scheme of 5%, the welfare programs for 15.5%, the grant for GP functioning for 33%, and the GP own funds for 8%.

[4]See below for data collection.

In the wake of the 73rd amendment, the GP was given additional responsibilities in West Bengal. First, they were entrusted to establish and administer informal education centers (called SSK), an alternative form of education for children who do not attend school (a non-qualified instructor teaches children three hours a week in a temporary building or outside). They must also oversee adult literacy programs. Most importantly, since May 1998, they are required to organize two meetings per year of the "Gram Samsad", a village head meeting at which all voters are eligible to participate (one Gram Samsad is organized for 700 voters). The GP council submits the proposed budget to the Gram Samsad, and reports on their activities in the previous six months. Gram Samsads have been regularly held in most locations since September 1998. Attendance is low (16% of eligible participants), but a study of 20 Gram Samsad meetings by Ghatak and Ghatak (1999) shows that the meetings give rise to active debates over the kinds of projects that should be undertaken and the effectiveness of implementation of past projects (including charges of corruption and mismanagement).

The GP has no direct control over appointments of formal teachers or health workers. It is supposed to, however, monitor their performance. It also helps organize health information campaigns and immunizations. Finally, it is responsible for organizing women's organizations and committees for the management of community-based fisheries, forests, drinking water infrastructure, and schools.

2.2 Reservation for Women

In 1992, the 73rd amendment provided that one third of the seats in all Panchayat councils had to be reserved for women. Seats were also reserved for the two disadvantaged minorities, Scheduled Castes (SC) and Scheduled Tribe (ST), with their representation proportionate to the district population. In West Bengal, the proportion of women elected in the Panchayat councils increased to 36% after the 1993 election. The experience was considered to be disappointing, however, because very few women (196 out of 3,324 GP) acceded to the position of Pradhan, the only one to yield effective power (Kanango (1998)). In 1998, the Constitution was further amended to provide that one third of the positions of Pradhan be reserved for women, by rotation.

To conform to this amendment, the Panchayat Constitution Rules of West Bengal were

modified in April 1998(Government of West Bengal 1998). A specific set of rules ensured the random selection of the GP where the offices were to be reserved for a woman. First, all GP in a district were ranked in consecutive order, according to their serial legislative number (an administrative number pre-existing this rule). Second, they were ranked in two separate lists, according to whether or not the seats had been reserved for an SC/ST or not (which had been chosen randomly following a similar method). They were then assigned their rank in the list, and for the first election, every third GP starting with the first on the list was reserved for a woman.[5] From discussions with the government official at the Panchayat Directorate who devised the system, it appears that these instructions were successfully implemented in the entire state. After describing the setting of our study, we will provide more specific evidence for the district we studied.

2.3 Data Collection and Empirical Strategy

In the summer of 2000, we completed a survey of all GP in the district of Birbhum, West Bengal. Birbhum is located in the western part of West Bengal, about 125 miles from the state capital, Calcutta. At the time of the 1991 census, it had a population of 2.56 million. Agriculture is the main economic activity, and rice is the main crop cultivated. The male and female literacy rates were 50% and 37%, respectively, lower than the West Bengal average of 67% and 47%. The district is known to have a relatively well-functioning Panchayat system. It was therefore well-suited for our study, since it is a relatively poor and rural district, but one where the GP leader has effective control.

There are 166 GP in Birbhum, out of which five were reserved for pre-testing, leaving 161 GP in our study. We collected the data in two part. First, we conducted an interview with the GP Pradhan. We asked him or her a set of questions about her family background, her education, her previous political experience, and her political ambitions, and a set of questions about the activities of the GP since her election, in May 1998. We also collected the GP balance sheets when they were available.[6] We then completed a survey of three villages in the GP:

[5]For the second election, every third GP starting with the second on the list was reserved, etc... The Constitution Rule gave a list of which GP were to be reserved for female Pradhans for each general election as a function of the number of positions available, following this rule.

[6]We collected 100 balance sheets, out of which 40 are complete enough to be analyzed.

two randomly selected villages plus the village in which the GP Pradhan resides. During the village interview, we drew a resource map of the village with a group of 10 to 20 villagers. The map featured all the available infrastructure in the village, and we asked whether each of the available equipment items was built or repaired since May 1998. Previous experience of one of the authors, as well as experimentation during the pre-testing period, suggests that this method allows to obtain extremely accurate information on the village. We then conducted an additional interview with the most active participants of the mapping exercise, where we asked in more detail about investments in various public goods.[7]. For all outcomes where it was possible, we collected the same information at the GP level and at the village level. The village level information is likely to be more reliable, because it is not provided by the GP head, and because recalling investments made in their village in the last two years was easy for villagers. However, the information given by the GP head refers to investment in the entire GP, and is thus free from sampling error. Therefore, when an outcome is defined at both levels, we perform the analysis separately for both, and compare the results. Finally, we use village level information from the 1991 census.[8]

Due to the randomization built into the policy, the basic empirical strategy is straightforward. The reduced form effect of the policy can be obtained by comparing the mean of the outcomes of interest in reserved and unreserved GP. To obtain the effect of having a woman Pradhan, we use the fact that the position is reserved for a woman as an instrument for the fact that the Pradhan is a woman. The instrumental variable estimate is simply the estimate , the ratio of the difference in the means of the outcomes in reserved and unreserved GP and the difference in the probability that a woman is elected in a reserved and unreserved GP (this is the Wald estimate). Denoting Y_i the value of the outcome of interest (say, investment in drinking water between 1998 and 2000), R_i a dummy equal to 1 if the GP is reserved for a woman, and W_i a dummy equal to 1 if the Pradhan is a woman, the Wald estimate is equal to:

$$\hat{E} = \frac{E[Y_i|R_i = 1] - E[Y_i|R_i = 0]}{E[W_i|R_i = 1] - E[W_i|R_i = 0]}$$

As one could expect, all GP reserved for a woman do indeed have a woman Pradhan. Hence,

[7]The questionnaires are available upon request or on line at http://web.mit.edu/eduflo/www/.

[8]The village directory gives a list of infrastructure present in each village, and the primary census abstract provides basic demographic information for households in the villages.

$E[W_i|R_i = 1] = 1$, and the instrumental variable estimator identifies the effect of treatment on the treated (Angrist and Imbens (1994)). In other words, it tells us the effect of having a female Pradhan on GP that, in the absence of the policy, would have had a male Pradhan. As we will show below, a large majority of the villages seem to be in this situation, and this is therefore the policy parameter of interest in this case.

Some of the outcomes are linked by a budget constraint (monetary for some outcomes, and a time budget constraint for others). At the GP level we adjusted the standard errors for this by estimating the effect of the Pradhan's gender jointly on all outcomes linked together.[9] In the village level regressions, the standard errors are adjusted for the possible correlation within GP using the Moulton correction (Moulton (1986)). Unless otherwise indicated, we are running village level regressions using only the data for the two randomly selected villages, since the Pradham's villages are not selected and may be selected differently in reserved and unreserved GP.

2.4 Implementation of the Policy

Before turning to the consequences of the policy, we examine the evidence that it was implemented as intended.

First, the policy clearly had a very strong influence on the gender of the Pradhan. Table 1 shows the fraction of female Pradhans as a function of whether the position was reserved or not. All reserved positions have indeed a woman Pradhan. There are only 7 women among the 107 remaining Pradhans. The policy increased the factor of female Pradhans by 93.5 percentage points.

Second, we use the 1991 census to check that the selection of reserved GP appears indeed to be random. Table 2 shows means of the most relevant village variables in reserved and unreserved GP, and their difference. Panel A shows GP level variables, and panel B shows village level variables.[10] Female reserved GP have a somewhat smaller total population, but this difference is not significant. At the GP level, the total number of health facilities, the

[9] In practice, this has almost no effect on the standard errors

[10] The standard errors, like in the rest of the paper, are adjusted for clustering at the GP level, but the lack of significance of these differences does not depend on this correction.

number of public health facilities (hospital and primary health centers and subcenters), and the number of schools of all types is very similar in reserved and unreserved GP. Unreserved GP are marginally more likely to have a hospital. At the village level as well, all variables are very similar in reserved and unreserved GP. There is therefore no indication that reserved GP are different from unreserved GP.

Note that very few villages (4% of the unreserved villages) have tap water, the most common sources of drinking water are handpumps and tubewells. Most villages (88%) are accessible only by a dirt road. 91% of villages have a primary school but very few have any other type of school. Irrigation is important: 43% of the cultivated land is irrigated (some land is irrigated in all villages). Very few villages (8%) have any public health facility.

3 Why Would Mandated Representation of Women Affect Policy Decisions: Literature Review

Women and men have different policy priorities. In developed countries, women are more likely to support liberal policies, a difference known as the "gender gap". The composition of the voter pool is therefore likely to affect policy outcomes. Using time series and cross sectional data from US states from 1870-1940, Lott and Kenny (1999) show that giving women the right to vote has increased the size of the government. They argue that the preference for women for bigger government stems from their greater need for insurance. Edlund and Pande (2000) suggest that the gender gap is indeed related to women's expected need for insurance: the gender gap is bigger in states where divorce is easier. In developing countries, women's and men's roles are different, and they may therefore have different needs and favor different types of investment. The primary responsibilities of women in West Bengal, besides working on the fields, are to fetch water and fuel and to take care of children. Child health has been shown to be more responsive to women's income than to men's income (Thomas (1990), Thomas (1994)), Duflo (2000), which indicates that women are more concerned about child health than men. In practice it has been shown that when women are involved in collective decision making, this affects policy decisions. For example, a study of rules set up by village forest conservation committees shows that rules are very different in villages where women participated in the council (Agarwal (1997)).

However, the fact that men and women have different preferences is not enough to imply that policies could be influenced by the direct manipulation of the legislator's gender through quotas. In particular, if the candidates committed during the electoral campaign to a set of policies, and if finding out the preferences of voters was straightforward, then electoral incentives would cause candidates to commit to the policy bundle favored by a majority of electors. In this case, the gender of the elected official would not affect policy. There are therefore two main sets of arguments why mandated representation of women could affect policy decisions. The first set of arguments is based on the idea that the elected representative cannot commit *ex ante* to a set of policies. The second set of arguments is based on the idea that the presence of women representatives affects the mechanism aggregating preferences.

Empirical evidence suggests that the preferences of the legislators strongly affect the decisions they make. For example, Levitt (1996) shows that the senators' individual ideology is the single most important factor explaining the way they vote. If the politicians do not commit *ex ante* to a set of policies, the identity of the elected official will determine policy decisions (Alesina (n.d.), Osborne and Slivinski (1996), Besley and Coate (1997)). Constraining the candidate to be a woman may then affect policy decisions, if the overlap between women's and men's policy preferences is not perfect. In a related context, Pande (1999) presents evidence that the reservation of seats for minorities in India affects the level of transfers targeted to these minorities.

Women's quotas could potentially affect the identity of the policy makers in three relevant dimensions. First, elected women could have different preferences. In the US, it has been shown repeatedly that female legislators have different policy priorities than men (see, e.g. Thomas and Welch (1991a),Carroll (1994),Thomas and Welch (1991a)). They attach more importance to women's issues (abortion, equal opportunity) and child welfare issues (such as child support), while men the other hand, men devote more time to business and and economic legislations and they are more likely to spend more time to defend them than men.(Jones 1997) shows that the same results hold in Argentina as well.[11] Women advance these issues by introducing bills and

[11]Saltzstein (1986) also shows that there is a correlation between the fact that a woman is a mayor and the proportion of women in municipal employment, which suggests that women placed in power try to act in women's interest.

securing the relevant assignments (Berkman and O'Connor (1993)). They are more successful at passing bills on these issues than men are. Thus, in the US, the number of female legislators predicts whether policies preferred by more women than men will be adopted (Berkman and O'Connor (1993),Besley and Case (1997)). The idea that women tend to be more public spirited, less corrupt, and more "fair" is often advanced as an argument in favor of active measures to facilitate women's participation in political decisions (for Reconstruction and Bank (2001), Dollar et al. (1999)), although the available experimental evidence is somewhat ambiguous on this point (Andreoni and Vesterlund 2001). Second, they have a different background, they are less likely to have prior political experience, and the constraint they face as women may make it more difficult for them to be effective in lobbying for more resources from the state or in being effective in implementing programs in the villages.[12] Finally, they may have different political ambitions. Political ambitions of elected representatives do not seem to vary significantly with gender in the US (Carroll (1985), Carroll (1994)). However, elected female representatives are a group precisely selected according to a strong political ambition. In the case of quotas, women with little political ambition (or hope outside the quota system) may be induced to run. This is potentially important, as the desire to be re-elected may provide an incentive for the elected representatives to behave well while in office.[13] Khemani (2000) shows that Indian voters are more "vigilant" in state elections than in national elections.[14] The Gram Samsad (village meeting) institution ensures a high level of accountability of the GP Pradhans, which suggests that the need to please constituents in order to be re-elected may affect Pradhan's activity.

It has been suggested that all of these factors may not be relevant in the context of reservation in India, because most women act as proxy for their husbands (we collected some information to try to get at this point). However, women's quotas could affect policy decisions even if the policy did not affect the leader's preference or if the leader made the best decision on the basis of

[12]For the constraints faced by female politicians in the US, see Mezey (1978), and Alexander and Andersen (1993).

[13]Besley and Case (1995) present evidence that this effect is important using gubernatorial term limits. Governors that face term limits make decisions that are less likely to please voters (like increase taxes).

[14]In state assemblies, they reward incumbents for local income growth and punish them for growth in inequality over the entire term in office. In national assemblies, only the performance during the last year in office seems to affect future election prospects.

the information available to her on villagers' needs, by affecting the transmission of information. Both legally and in practice, the most important role of the Pradhan is to aggregate information and to decide how to spend relevant resources. This is done in the Gram Samsad, and during office hours where the Pradhans meet the villagers. However, the participation of women at the Gram Samsad is very limited (9% of participants are women in the 20 Gram Samsad studied by Ghatak and Ghatak (1999)), and even when women are present, they rarely raise questions. The influence of a female Pradhan is twofold. First, because she has to be present at the Gram Samsad, she will ensure that the time and location is convenient for a woman. It may encourage other women to attend. Second, the fact that a woman is present in a position of authority may encourage other women to raise issues, either during the Gram Samsad meetings or during her office hours. Their remarks may be less likely to be taken desultorily.[15] Enabling women to express their concerns may have very important effects on policy, even if the leader is not herself very sensitive to women's issues (and even if she is a proxy for her husband).Banerjee and Somanathan (2001) show that if a leader who is in charge of making decisions for a community on the basis of messages she receives from the community members can check their truthfulness (which is probably a good description of this context), communication will have a moderating influence. Those who gain the most from communicating with the leader are those who are further away from her, and can move her in their direction. This implies that if women are offered an opportunity that was not previously available to talk to the Pradhan, women who are the most sensitive to women's issue will talk, which has the potential to have a big influence on policy decisions.

In the next section, we provide evidence on some of these intervening mechanisms: the characteristics of the female Pradhans (including their background and their political ambitions) and the effect of the gender of the Pradhan on women's participation. In section 5, we turn to the main question of interest: Does the gender of the Pradhan affect the the provision of public goods in the community?

[15]There is some indicative evidence that this may be important: In the US, Thomas and Welch (1991a) shows that the level of support of a woman legislator for women's issue depends on the number of other women in the assembly, or the existence of a female caucus. In India, the study of joint forest management committee by Agarwal (1997) referred to earlier also indicate that women talk more when there are more women in the meetings.

4 Leaders and Voice: Characteristics of Female Pradhan, and Political Participation of Women

4.1 Characteristics of Female Pradhans

Table 3 presents differences according to gender in the Pradhan's background characteristics (panel A), previous political involvement and political ambition (panel B), and the perceptions of others(panel C). Column (1) is the average of the characteristics among men Pradhans (the coefficient of the constant), and column (2) presents the instrumental variable estimate of the difference between female and male Pradhans. Female Pradhans are significantly less educated and less likely to be literate. They also come from a more disadvantaged background, which may be more surprising: they are more likely to be officially classified as being below the poverty line, and they own fewer durable household goods.[16] Table 4 examines whether female Pradhans tend to come from different types of villages than men Pradhan. Using the 1991 census, we regress selected village characteristics on a constant (column (1)), an indicator for whether the Pradhan resides in the village (column (2)) , an indicator for whether the GP head is a woman (column (3)), and the interaction of these two variables (column (4)).[17] Male Pradhans tend to come from bigger, better connected villages (closer to the market and with a bus or train stop), with better resources (schooling, health, irrigation). The coefficient of the interaction between the dummy for female Pradhan and the dummy for the Pradhan village are always of the opposite sign, indicating that women are somewhat less likely to come from bigger villages. However, the coefficients are significant only in the population and irrigation regressions. In panel B and C of the same tables, we partition the sample of female Pradhan according to whether or not they are helped by their husband. For women who are helped by their husband (panel C), none of the differences are significant. However, for independent women (panel B), all the interactions are as big as the effect of the Pradhan's village dummy, and all are significant at least at the 10% level. This suggests that independent women come from "regular" villages, while women

[16] We asked whether the Pradhan's household owned a television, had electricity in the home, had a telephone, a cycle, a motorcycle, and a car. The durable goods variable is simply the sum of all of these variables.

[17] The instruments for this regression are reservation, and the interaction of reservation, and the dummy for whether the woman comes from this village.

who are helped by their husband come from the same type of villages as men.[18]

The results in panel B of table 3 confirm that female Pradhan have less political experience (89% of women in reserved positions are elected for the first time in any Panchayat position and most of them have never participated in any Panchayat activity before). They are less likely to have received any training (although only 6% of female Pradhan have not received any training). This reflects the effort to train the new women elected under the reservation rule (Kanango (1998))). They are more likely to be helped by their spouse (46% of the women in reserved positions report that they are helped by a member of their family –their spouse in 92% of the cases-, against 24% of Pradhans in unreserved positions). This fact is well known, and many people have argued (in India, in particular) that this made the reservation policy meaningless since women are really their husband's proxies. They also are more likely to claim that they will not run again, although the coefficient is only significant at 10%.

Finally, the variables in panel C indicate the extent to which it may be a challenge for a woman Pradhan to be taken seriously. We asked the interviewer to record their subjective impression of the Pradhan after his interview. They recorded whether the Pradhan was a "shadow" (that is, someone else seemed to make decisions on her behalf), and whether he or she was hesitant in answering questions. On all dimensions, they felt that women performed worse than men. We also asked the female Pradhans whether they experienced particular difficulties in their jobs. 17% reported that their families caused problems, and 11% that their neighbors caused problems. Much fewer reported problems originating from the party or the Panchayat members.

4.2 Effects on the Political Participation of Women

Table 5 displays the effect of having a woman Pradhan on the political participation of women. The percentage of women among participants in the Gram Samsad is significantly higher when the Pradhan is a woman (it increased by 3.3% from a basis of 6.6%). The fact that the Pradhan is a woman does not affect the percentage of eligible voters who attend the Gram Samsad, therefore this corresponds to a net increase in the participation of women. Women are also more likely to ask a question at the Gram Samsad (the coefficient is 0.092, from a basis of 0.29),

[18] We will therefore not use the data from the Pradhans' village in what follows, except in a subsection 5.1.

although this coefficient is not significant. Finally, women are twice as likely to have addressed a request or a complaint to the GP Pradhan in the last 6 months (the coefficient is 0.104, from a basis of 0.0997, and is significant).

The fact that the Pradhan is a woman therefore significantly increases the involvement of other women in the affairs of the GP. Further, women seem to have well-defined priorities. When women raised one or several issues in the last 6 months, we asked what these issues were. The questions were open ended, and we classified them ex-post into broad categories for the analysis. Table 6 shows the range of questions, the number of times a particular type of question was asked (in column (1)), and the fraction of the total amount of questions this represented (column (2)). Drinking water and roads were by far the issues most frequently raised (26% and 24% of the questions, respectively). The request for road improvement may be explained by the fact that road building is an important source of employment for women as casual workers. The next most important issue was welfare programs for women (maternity grants and widows' pension), followed by housing and electricity. Health and child care come next. Education, need for credit, irrigation, and women's organizations seem to be matters of less concern. Ideally, one would like to compare this table with issues raised by men to see whether their concerns do indeed differ. Unfortunately, we did not ask this question. However, Ghatak and Ghatak (1999) make a list of the questions raised at 21 Gram Samsads in West Bengal. Since most questions were raised by men, this gives an idea of the priorities of men. The questions that seem to appear most frequently have to do with mismanagement or corruption in program implementation (in about half the village), irrigation needs, road building (viewed both as an employment generating scheme and as needed infrastructure), choice of program beneficiaries or of project location. Road building therefore seems to be a common preoccupation, but women seem otherwise to have different priorities than men, oriented towards their immediate responsibilities.

In the next section, we examine whether the gender of the Pradhan affects the quantity and the type of public goods provided, in a direction that is consistent with these stated differences in preferences.

5 Effects on Public Goods Provision

5.1 Effect on the Budget

We start this section by studying whether the gender of the Pradhan affects the budget constraint, through different levels of own funds collection or different levels of composition of state grants. We also examine whether there is any evidence that women are less corrupt or use funds more effectively. For this, we are using information from the 40 complete balance sheets which we were able to collect during our study.[19] The results are presented in table 7.

There is no significant difference between the total value of the state grants received by male and female Pradhans. The amount of own fund collected is not significantly different either, although it is somewhat smaller for women. However, female Pradhans receive proportionally more funds earmarked for drinking water, and less non-earmarked development funds. This also translates into their expenditures. It is plausible that female Pradhan lobbied effectively to obtain funds earmarked for drinking water instead of non-earmarked fund, and thereby commit themselves to drinking water projects.

It has been argued that women are less likely to be corrupt than men, and may also use resources more effectively. We run three regressions to test this hypothesis. First, we look at whether the gender of the Pradhan affects expenditures in wages and honoraria. Second, we look at whether there are more expenses that are unaccounted for in the budget ("others", "Travel allowance" - this is a way the Pradhan can pay herself more, "contingency"). Third, we compare the share of the budget that remained unspent at the end of the fiscal year. One major problem with the implementation of programs in India is that at all levels, administrations do not succeed in spending the money that is allocated to them. All the GP in the data set have money left over at the end of the year. The share of the budget that an administration manages to spend is often used as an indicator of relative efficiency and diligence. None of these regressions show any significant difference. There is no evidence in this data that women are more or less corrupt or inefficient than men.

[19] We obtained some balance sheet information for 100 GP, but it was too incomplete to be analyzed in 60 cases. In 65 cases, we were not given a balance sheet. Balance sheets were no more or less likely to be complete in reserved than in unreserved GP, as shown in the first line of table 7.

This is confirmed by another piece of evidence, the ability of the Pradhan to coordinate public action in the village. We have seen above that women were more active politically in villages where the Pradhan is a woman. Is it because female Pradhan are generally more effective at inducing collective participation? To address this question, we regress in table 8 variables that reflect the extent of organization in the GP and in the villages: number of women's organizations, number of water and forest management committees, number of village education committees, areas brought under social fishery and social forestry, and proper organization of the Gram Samsads. For none of these dimensions of organization is there a significant difference between male and female GP. Again, this suggests that female and male Pradhans are equally as effective as leaders.

5.2 Public Good Investments

Table 9 presents the effects of the Pradhan's gender on all public good investments made by the GP since the last election, in May 1998. We aggregated investments in categories, and these regressions therefore reflect all the data we collected on public good investments. We present both village and GP level regressions. The main results are consistent in the GP level and the village level data. The gender of the GP Pradhan affects the type of public goods provided.

Both at the GP level and at the village level, there is significantly more investment in drinking water equipment and roads in GP where the Pradhan is a woman. In addition, there is also more investment in other labor intensive projects (culvert and minor irrigation canals), a variable that we have only at the GP level. The magnitude of these effects are large: there is almost twice as much investment in drinking water equipment in GP where the Pradhan is a woman, and the roads are almost twice as likely to be in good shape. In all GP where the Pradhan is a woman, tubewells were built, and labor intensive construction work was undertaken. Major roads are 1.5 more likely to have been repaired (dirt roads have been repaired in all GP, therefore there is no variation in this outcome).

The village level regression (but not the GP regression) also shows a very large difference in the introduction of biogas projects (the coefficient of the woman dummy is 0.22, while the constant is 0.039). Biogas projects are installations that exploit animal waste's decomposition to generate methane, used for cooking or lighting gas. They are therefore a substitute for cooking

fuel and electricity. Getting cooking fuel, as well as getting water, is the primary responsibility of the women, and in Birbhum, where the forest cover is very limited, it can be particularly difficult to obtain wood.

Both the GP and the village level regression show a negative (and large in the village level regression) but insignificant impact of having a woman Pradhan on investment in sanitation. This could seem somewhat surprising, but it should be noted that it never arises as a woman's question, while it appeared at least twice among the questions asked at the Gram Samsad studied by Ghatak and Ghatak (1999).

Finally, there is less investment in informal education for children in GP that are headed by women. Since 1998, the GP have been given the responsibility of organizing informal education centers, by hiring and paying someone without formal qualifications to teach out-of-school children in a temporary building (or outside). Both at the GP and the village level, the number of centers is negatively associated with the fact that the woman is a Pradhan. The coefficient is significant at 95% only in the GP level regression, but the point estimate in the village level regression is large: villages located in GP where the Pradhan is a woman are only half as likely to have an informal education center than villages in GP where the Pradhan is a man. To confirm the validity of these results, we also regressed the number of teachers, teacher per capita, children, and children per capita, enrolled in the informal center (the regressions are omitted to save space). At the GP level, the coefficient of the woman dummy is significantly negative for all these variables. There is no difference in investments in the repair of school buildings. However, in GP headed by women, there is more investment in buildings used for *adult* education (of which women are more often beneficiaries). Note that there are almost no investments in the repair of the adult literacy centers in male GP, even though all GP receive an allocation specifically earmarked for adult education.[20]

These results suggest that the reservation policy had important effects on policy decisions at the local level. They are consistent with the policy priorities expressed by women (drinking water, road and power were the highest priorities, and education was one of the lowest priorities) and with the view that women's priorities are closely linked with their role in the household. The education results, and the absence of a positive effect on sanitation, on the other hand, do

[20]Female GP, on the other hand, are no more likely than male GP to have had a literacy campaign since 1998.

not vindicate the hypothesis that women have a inherent preference for health and education of children, relative to men.

5.3 Influence

The GP has no control over the establishment of health centers, or the appointments of health workers, doctors, or school teachers, which are administrative apointments.[21] However, it is supposed to exercise some control over health workers and teachers, even though in practice its influence over them is limited. Likewise, they have no direct control over the establishment of pre-primary child care centers (Angan Wadi), which are implemented within a centrally administered program (The Integrated Child Development Service), but they may seek to influence their placement. In table 10, we examine whether the gender of the Pradhan also affects outcomes that she can indirectly influence. The first two rows indicate that the gender of the Pradhan has no influence on the opening of pre-schools. There were slightly below two centers open per GP on average since 1998, but they were equally distributed in female and male GP. This is somewhat surprising, given that child care is generally accepted as a woman's priority.

The next two rows, however, confirm the results we obtain when looking at informal education. Male GP Pradhans are much more likely to say that the village education committee (instituted in all GP since 1993) is effective. Since this is the Pradhan's own report, this could indicate that men are more likely to report that they have influence. However, we also asked them what problems they thought were present in the primary schools, and men are more likely to report low teacher turnout as a problem. Since this is one of the principal problems of primary education, and one that effective monitoring by village institutions could most likely affect, this suggests that male Pradhans are more concerned than female Pradhans about the quality of education in the GP.

The next rows suggest that the opposite is true for health workers. The number of visits by health workers to the village in the last six months is significantly higher when the Pradhan is a woman. That this is due to active monitoring is suggested by the fact that this is entirely due to visits to villages that do receive visits by health workers. Female Pradhans have no influence

[21] We collected data on these variables and verified that the number of health workers or teachers is not affected by the gender of the Pradhan.

on the route of village workers, but seem to be effective in getting them to actually visit the villages they are supposed to visit.

5.4 Do Women Invest Less in Their Own Villages?

Our last set of results uses data on investments in the Pradhan's village, which we have not exploited thus far. The interpretation of these results is not as straightforward as in the rest of the paper, since the Pradhan's village is not a random village, and the sample selection may therefore be different in reserved and non-reserved villages. As we have seen above, men Pradhan come from bigger, more affluent, and better connected villages, while female Pradhan, especially those who are not the wife of a politically influential man (i.e., those who are not helped in their jobs) come from more ordinary villages.

Nevertheless, the results in this data are striking. In table 11, we use as a dependent variable the same investments variable as in table 9. We run the following regression:

$$y_{ij}^k = C^t \alpha^k W_i + \beta^k P_{ij} + \gamma^k W_i * P_{ij} + \epsilon_{ij}^k,$$

where y_{ij}^k is the investment in good k in village j of Panchayat i, W_i is a dummy that indicates whether the GP has a female Pradhan, and P_{ij} is a dummy that indicates whether village j is the Pradhan's village. We use the dummy R_i that indicates whether the GP is reserved and the interaction $R_i * P_{ij}$ as instruments for W_i and $W_i * P_{ij}$. Thus, β^k is the expected difference between the investments in Pradhan's and non Pradhan's village in male-headed GP, and γ^k indicate whether the difference is the same among female and male differences. In columns (1) and (2) of table 10, we report β^k and γ^k. The first striking fact is that almost all investments are significantly larger in the Pradhan's village. These differences are usually larger than the constant, indicating that the Pradhan's village receives more than twice as much as other villages receive. Second, the coefficient of the interaction between the Pradhan's village and female Pradhan is negative for all outcomes but one, and significant for three individual outcomes as well as for all investments taken together (shown in the last line). The coefficients of the interaction are of the same magnitude as the coefficient of the direct Pradhan effect: there is no difference in investment between the Pradhan's village and other villages when the Pradhan is a woman.

As we discussed in section 4, female Pradhans tend to come from smaller and poorer villages, especially when they are not helped by their husband. This pattern may therefore be explained by the fact that less investments are made in smaller villages.[22] To examine whether this is the case, we ran the same regressions in the sample consisting of male Pradhans and Pradhans who are helped by their husbands. As shown in panel C of table 4, female Pradhans who are helped by their husbands come from villages which are similar to those of male Pradhans. The results are at least as strong in this subsample. This suggests that the coefficients of the interaction are not pure artifacts of a composition bias in the sample, and that female Pradhans do indeed invest less in their own villages.

This difference may be explained by differences in political ambition of women and men. To be re-elected, the Pradhan must first be elected as a council member in his or her own village. Because women are less likely to seek re-election, they need to please their own electors less. Levitt (1996) shows that senators are more likely to please their own constituencies with their votes in their states when the election nears. On the other hand, they would directly benefit from investment realized in their own villages, and at least for two investment we have seen that while they directly care about (drinking water and adult education), they are not more likely to invest in their village than in any other. This suggests, at a minimum, that women elected as Pradhan do not try to grab as much as they can while they are in office.

6 Conclusion

The policy of mandated representation of women has important effects on policy decisions. Women elected as leaders under the reservation policy invest more in public goods that appear to be most closely linked to women's concerns: drinking water, fuel, and employment-generating activities (such as road construction). They also seem to exercise influence over health workers to induce them to visit the villages more often.

However, women do not seem to be more (or less) efficient in spending the resources available to them or in mobilizing citizens' participation. The increase in investments in drinking water, fuel, and roads seems therefore to come at least partly at the expense of investments in children's

[22]The results are not changed when we run the regressions with the outcomes expressed in per capita terms. But there may also be less investments in poorer villages.

schooling. Men invest more resources in informal education centers, and seem also more aware of the need to exercise influence over teachers to elicit more regular attendance. This relative lack of interest of women in charge for education is not as surprising as the commonly held view that women strongly support everything that is good for children might suggests: Among the problems mentioned by women in the village we surveyed, education is the one that appears least frequently.

It is therefore not possible to evaluate the welfare consequences of this policy without specifying an objective function. Raising the level of political involvement of women would clearly have consequences, but is not necessarily the "win-win" solution that it is often portrayed to be.

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

	Reserved GP	Non reserved GP	Difference
	(1)	(2)	(3)
Total number	54	107	
% Female	100	6.5	93.5
			(3.38)

Table 2: Village characteristics in reserved and unreserved GP, 1991 Census

	Mean, Non-Reserved GP	Mean, reserved GP	Difference
	(1)	(2)	(3)
A. GP Level			
Total Population	13582.96	12606.28	-976.68
			(656.37)
Number of public health facilities	1.11	0.74	-0.37
			(.24)
Number of health facilities (total)	7.12	7.11	-0.01
			(1.12)
Number of Hospitals	0.09	0.00	-0.09
			(.05)
Number of High Schools	1.38	1.17	-0.22
			(.25)
Number of Middle Schools	0.65	0.70	0.05
			(.13)
Number of Primary Schools	12.07	12.26	0.18
			(1.06)
B. Village level			
Total Population	1022.07	975.27	-46.79
			(75.49)
Female Literacy Rate	0.34	0.35	0.01
			(.01)
Male Literacy Rate	0.58	0.57	-0.01
			(.01)
% Cultivated land that is irrigated	0.43	0.45	0.02
			(.04)
Dirt road	0.91	0.92	0.01
			(.02)
Metal road	0.15	0.18	0.02
			(.03)
Bus or train stop	0.27	0.31	0.04
			(.04)
Number of Public health facilities	0.08	0.06	-0.03
			(.02)
Number of tuwells and hand pumps	1.20	1.13	-0.07
			(.14)
Number of drinking water wells	0.46	0.45	-0.02
			(.08)
Tap Water	0.03	0.05	0.01
			(.03)
Number of Primary Schools	0.91	0.95	0.04
			(.08)
Number of Middle Schools	0.05	0.05	0.01
			(.01)
Number of High Schools	0.10	0.09	-0.01
			(.02)

Notes:
1) There are 161 observations in the GP level regressions and 2120 observations in the village level regressions
2) In the village regressions standard errors are corrected for clustering at the GP level

Table 3: The Effect fo Pradhan's gender on Pradhan's characteristics, IV estimates

	Constant (1)	Pradhan is a Woman (2)	Number of observations (3)
A. PRADHAN'S BACKGROUND			
Age	40.35	-8.48	161
	(.966)	(1.659)	
Education	10.141	-3.011	161
	(.325)	(.558)	
Literacy	0.996	-0.200	161
	(.027)	(.046)	
Married	0.868	0.021	161
	(.035)	(.06)	
Number of children	2.504	-0.053	145
	(.166)	(.279)	
Below poverty line	0.266	0.197	161
	(.049)	(.084)	
Number of household assets	2.416	-0.694	161
		(.255)	
B. PRADHAN'S POLITICAL AMBITION AND EXPERIENCE			
Elected in GP council for the first time in 1998	0.544	0.345	161
	(.047)	(.081)	
Took part in Panchayat activities before elected	0.816	-0.538	161
	(.046)	(.079)	
Knew how GP functioned	0.374	-0.374	161
	(.042)	(.072)	
Did not receive any formal training	-0.004	0.060	161
	(.014)	(.024)	
Does spouse help?	0.107	0.319	161
	(.042)	(.071)	
Will not run again	0.195	0.138	161
	(.045)	(.077)	
C. SOCIAL ATTITUDES			
Family cause problems		0.167	161
		(0.0519)	
Neighbors cause problems		0.110	161
		(0.043)	
"shadow pradhan" (interviewer's impression)	0.443	0.406	145
	(.051)	(.084)	
Hesites when answering the questions (interviewer's impression)	0.381	0.374	145
	(.055)	(.09)	

Note:
(1) The question "family causes problems" and "Neighbors cause problems" were asked only of women The table indicate the percentage of positive response among women in reserved position
(2) A dummy indicating for whether the GP is reserved is used as an instrument for pradhan's gender

Table 4: Characteristics of pradhan's village in reserved and unreserved GP, IV regressions

	All Gram Panchayat				Exclude women helped by their husbands		Include only women helped by their husbands	
	constant	pradhan is a woman	Pradhan's village	woman pradhan* pradhan's village	Pradhan's village	woman pradhan* pradhan's village	Pradhan's village	woman pradhan* pradhan's village
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Population	939	-10	1210	-585	1226	-819	1189	-271
	(44)	(77)	(183)	(286)	(183)	(239)	(185)	(499)
Female literacy	0.342	0.008	0.016	-0.021	0.015	-0.021	0.015	0.034
	(.009)	(.015)	(.015)	(.025)	(.015)	(.029)	(.016)	-(.024)
Distance to market	1.319	0.055	-0.171	0.065	-0.172	0.084	-0.169	0.041
	(.038)	(.074)	(.061)	(.104)	(.061)	(.116)	(.062)	(.161)
Bus or train stop?	0.254	0.046	0.115	0.008	0.115	0.011	0.115	0.005
	(.038)	(.097)	(.061)	(.116)	(.05)	(.099)	(.05)	(.125)
% cultivated area irrigated	0.425	0.026	0.042	-0.054	0.041	-0.045	0.023	0.053
	(.025)	(.044)	(.023)	(.04)	(.023)	(.049)	(.044)	-(.076)
Primary schools	0.879	0.042	0.363	0.005	0.375	-0.187	0.095	0.262
	(.027)	(.079)	(.093)	(.148)	(.092)	(.105)	(.346)	(.255)
Public health facilities	0.080	-0.032	0.086	0.039	0.091	-0.033	0.080	0.135
	(.014)	(.019)	(.046)	(.075)	(.046)	(.076)	(.047)	(.117)
Drinking water wells	0.460	-0.019	0.091	-0.013	0.094	-0.042	0.087	0.035
	(.046)	(.089)	(.045)	(.073)	(.045)	(.095)	(.045)	(.088)

Notes:

1) The table reports the result of a regressions of each independent variable on a constant, a dummy for whether the pradhan is a woman, a dummy for whether this is the pradhan's village, and the interaction of the pradhan's village and the woman pradhan dummies

2) In column (1) to (4), the regression is run in the entire sample. There are 2120 observations

3) In column (5) and (6) the regression is run in a sample that exclude women who are helped by their husbands. There are 1839 observations. To save space, we don't report the coefficient of theconstant and the coefficient of the woman pradhan dummy

4) In column (7) and (8) the regression is run in a sample that exclude women who are not helped by their husbands. There are 1703 observations. To save space, we don't report the coefficient of theconstant and the coefficient of the woman pradhan dummy

5) All standard errors (reported in parentheses below the coefficient) are corrected for clustering at the GP level

Table 5: The effect of Pradhan's gender on women's political participation, IV estimates

	Constant (1)	Pradhan is a Woman (2)	Number of observations
Participation rate in last Gram Samsad (in percentage)	13.14	-0.88	304
	(0.90)	(1.51)	
Fraction of women among participants in the Gram Samsad (in percentage)	6.62	3.26	302
	(0.89)	(1.50)	
Did women raise questions at the last Gram Samsad?	0.286	0.092	304
	(0.036)	(0.062)	
Did women addressed a complaint to the GP in the last 6 months	0.0997	0.104	322
	(0.025)	(0.044)	

Note:
(1) Village level regression
(2) Standard errors (in parentheses) corrected for within-GP correlation using the Moulton formula
(3) A dummy indicating for whether the GP is reserved is used as an instrument for pradhan's gender

Table 6: Issues raised by women in the last 6 months

Issue	Occurrences (1)	Percentage (2)
Drinking water	89	0.26
Road improvement	82	0.24
Welfare programs for women	36	0.11
Housing	30	0.09
Electricity/fuel	27	0.08
Child care	16	0.05
Health	16	0.05
Irrigation and ponds	12	0.04
Women organisation	10	0.03
Education	8	0.02
Credit	4	0.01
Other	6	0.02

Table 7: Effect of Pradhan's gender on GP's balance sheet, IV regressions

	Constant	Pradhan is woman	Number of Observations
	(1)	(2)	(3)
Balance sheet information	0.25	-0.01	161
is complete?	(0.045)	(0.078)	
A. INCOME			
Total Own fund collected	79	-25	40
(rs. 1000)	(11.7)	(20.4)	
Total Grants from the State	913	-12	40
(rs. 1000)	(98)	(170)	
Share of Own funds in new income	0.089	-0.022	40
	(0.014)	(0.024)	
Share of development funds	0.34	-0.071	40
(not earmarked)	(0.025)	(0.044)	
Share of funds for drinking	0.036	0.039	40
water	(0.015)	(0.026)	
Share of Social Welfare funds	0.16	-0.0037	40
	(0.014)	(0.025)	
Share of education funds	0.017	-0.0043	40
	(0.0069)	(0.012)	
Share of grant for administration	0.31	0.075	40
	(0.024)	(0.042)	
B. EXPENDITURES			
Share spent on water	0.031	0.032	40
	(0.012)	(0.029)	
Share spent on other schemes	0.25	-0.034	40
	(0.017)	(0.030)	
Share spent on Welfare	0.13	-0.0081	40
	(0.013)	(0.021)	
Share spent on Education	0.019	-0.011	40
	(0.0068)	(0.012)	
Share spent on administrative	0.27	0.048	40
expenditures	(0.023)	(0.040)	
Including:			
share of wage and honorarium	0.21	0.039	40
	(0.020)	(0.035)	
share of unaccounted expenses	0.031	-0.0075	40
	(0.0044)	(0.0077)	
Share unspent (closing balance)	0.2	-0.021	40
	(0.019)	(0.034)	

Note:
(1) A dummy indicating for whether the GP is reserved is used as an instrument for pradhan's gender

Table 8: Effect of Pradhan's gender on organizations in the GP, IV regressions

Table 8: organization effort

Type of organization	Village level regressions			GP level regressions		
	Dependent variable	Constant	Pradhan is a woman	Dependent variable	Constant	Pradhan is a woman
	(1)	(2)	(3)	(4)	(5)	(6)
Women organization	Women organisations, self help groups created since 1998	0.017 (0.035)	0.015 (0.024)	Women organisations, self help groups and micro-credit groups created since 1998	2.11 (0.15)	-0.18 (0.26)
Forest and water management	Number of tubewells management comittees created since 1998	0.018 (0.035)	0.032 (0.022)	Forest and water management commitees created since 1998	1.37 (0.052)	-0.017 (0.089)
Social forestry and fishery				New areas brought under social forestry or social fisheries since 1998	0.58 (0.030)	0.35 (0.52)
Village education	Village education and Village attendance committees created since 1998	0.97 (0.11)	0.065 (0.078)	Village education and Village attendance committees created since 1998	10.6 (0.75)	-0.43 (1.28)
Health information and immunization	Number of health information campaigns and immunization campaigns since 1998	2.94 (0.45)	-0.12 (0.31)	Number of health information campaigns and immunization campaigns since 1998	6.58 (0.84)	-1.15 (1.44)
Organization of Gram Samsad	All the previous 5 planned Gram Samsad were held.	0.76 (0.087)	-0.062 (0.060)			

Notes:
1-There are 322 observations in all village level regressions, and 161 in all GP level regressions.
2-Standard errors are corrected for clustering at the GP level in the village level regressions
3-All equations are estimated joinlty in the GP level regressions, and the standard errors account for inter-equation correlation.
4- A dummy indicating for whether the GP is reserved is used as an instrument for pradhan's gender

Table 9: Effect of Pradhan's gender public good investments, IV regressions

Table 9: public good provision

	Village level regressions			GP level regressions		
	Dependent variable	Constant	Pradhan is a woman	Dependent variable	Constant	Pradhan is a woman
	(1)	(2)	(3)	(4)	(5)	(6)
Drinking water	Number of constructions and repairs of drinking water equipment	14 (2.49)	10* (4.28)	1 if a new tubewell was built	0.93 (0.021)	0.071* (0.036)
Irrigation	Number of constructions and repairs of irrigation equipment	3.69 (0.71)	-0.37 (1.22)	1 if any irrigation pump was built	0.087 (0.034)	0.079 (0.058)
Road	Condition of the road (1 if good)	0.22 (0.033)	0.19* (0.058)	1 if a metal road was built or repaired	0.46 (0.052)	0.21* (0.088)
Other labor intensive work				1 if a culvert or a minor irrigation canal was built or repaired	0.84 (0.31)	0.16* (0.053)
Sanitation	Number of construction and repair of latrines and drainage pits	0.44 (0.12)	-0.3 (0.20)	1 if new toilets or new drainage pits were constructed	0.58 (0.052)	-0.076 (0.090)
Biogas	Number of new biogas equipments	0.039 (0.053)	0.22* (0.092)	1 if a new biogas equipment was introduced	0.44 (0.052)	0.056 (0.090)
Informal education	Number of informal education centers	0.13 (0.028)	-0.061 (0.048)	Number of informal education centers	0.84 (0.043)	-0.17* (0.074)
Adult education	Repair or construction of adult education centers	0.0069 (0.019)	0.094* (0.033)	1 if there is a Continuing education center or if there was a literacy campaign	0.87 (0.034)	0.041 (0.058)
Formal education	Number of construction or repair of formal school buildings	0.51 (0.061)	0.085 (0.11)			

Notes:

1-There are 322 observations in all village level regressions, and 161 in all GP level regressions.

2-Standard errors are corrected for clustering at the GP level in the village level regressions

3-All equations are estimated joinlty in the GP level regressions, and the standard errors account for inter-equation correlation.

4- A dummy indicating for whether the GP is reserved is used as an instrument for pradhan's gender

Table 10: Effect of Pradhan's gender on monitoring, IV regressions

	constant	Pradhan is a woman	Number of observations
	(1)	(2)	(3)
Number of pre-school centers opened since 1998 (GP)	1.79	-0.34	160
	(0.45)	(0.77)	
Number of pre-school centers opened since 1998 (Village level)	0.13	0.008	321
	(0.034)	(0.059)	
Pradhan reports that the Village education Committee has influence over the primary school	0.93	-0.099*	160
	(0.032)	(0.055)	
Pradhan reports that low teacher attendance is a problem.	0.67	-0.22*	160
	(0.051)	(0.087)	
Number of health workers or doctor visits in the village in the last 6 months	8.75	3.35*	322
	(1.04)	(1.77)	
Number of health workers or doctor visits in the villages in the last 6 months (village with at least 1 visit).	10.66	4.37*	262
	(1.20)	(1.94)	
Do health workers visit the village?	0.82	-0.013	322
	(0.029)	(0.050)	

Notes:
1-Standard errors are corrected for clustering at the GP level in the village level regressions
2- A dummy indicating for whether the GP is reserved is used as an instrument for pradhan's gender

Table 11: Pradhan's gender and investment in Pradhan's village, IV regressions

	All GP		GP where woman is helped	
	Pradhan's village	woman pradhan *pradhan's village	Pradhan's village	woman pradhan *pradhan's village
	(1)	(2)	(3)	(4)
Drinking water	62	-49*	62	-62*
	(19)	(21)	(20)	(23)
Irrigation	1.98	2.03	2.04	-3.5
	(2.31)	(1.23)	(1.24)	(1.95)
Road	0.23	-0.16	0.22	-0.12
	(0.057)	(0.099)	(0.057)	(0.15)
Sanitation	2.08	-1.84	2.08	-1.42
	(1.02)	(1.04)	(1.03)	(1.09)
Biogas	0.41	-0.075	0.41	0.0045
	(0.14)	(0.27)	(0.14)	(0.40)
Informal education	0.094	-0.024	0.94	-0.045
	(0.058)	(0.082)	(0.058)	(0.12)
Adult education	0.34	-0.26*	0.35	-0.28*
	(0.085)	(0.11)	(0.086)	(0.11)
Formal education	0.74	-0.69*	0.74	-0.78*
	(0.13)	(0.19)	(0.13)	(0.20)
All invesments cumulated	71.5	-54*	73	-74*
	(0.22)	(23)	(21)	(24)
Number of observations	477		384	

Notes:
1-Standard errors are corrected for clustering at the GP level
2- A dummy indicating for whether the GP is reserved is used as an instrument for pradhan's gender, and the interaction of a dummy for pradhan's village and reserved GP is used as an instrument for the interaction pradhan gender*pradhan's village
3-The regressions also includes pradhan's gender (omitted in the table to save space)