Social Norms and Governance: The Behavioral Response to Female Leadership *

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Abstract

Women in leadership positions make different policy choices compared to men. An increase in the proportion of female leaders can therefore alter both the nature of governance as well as the types of public services provided. This paper uses survey and experimental data from 40 Indian villages to examine the following questions: First, do males and females respond differently to women as leaders, and what is the reaction of women leaders to mens perception? Second, to what extent is behavior towards leaders influenced by experience with female leaders? Finally, what are the reasons for male backlash against womens leadership, and does it persist over time? We find evidence of a significant male backlash against female leaders. Our results suggest that resistance to women leaders is due to violation of social norms. We also find that increased exposure to female leaders reduces the extent of bias.

JEL Codes: D71, D72, H41, J16.

Keywords: Gender, Governance, Leaders, Affirmative action, Artefactual Field experiment, India.

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1 Introduction

Women in leadership positions often make different policy choices compared to men.[1] Female leaders can therefore alter the nature of governance, resulting in substantial changes to the types and quantities of services provided. However, when male leadership is the social norm, social acceptance of female leaders is rather limited. In such a situation, women in leadership positions might not be able to make a sustained difference. Gender-based quotas are often used to counter such perceptions to potentially alter the social norms associated with female leaders. In two prominent examples, Norway reserved 40% of seats on corporate boards and India imposed quotas in village headship positions for women.

Despite substantial scholarship comparing the policy choices of male and female leaders, relatively little is known about the behavioral response to women as leaders. This paper addresses the relationship between gender and leadership by combining data from an artefactual field experiment on leadership in the context of public good provision conducted in India with extensive post-experiment surveys. This is set against the background of a natural policy experiment that introduced a quota for women in positions of village chief.[2]

Our focus is on the following aspects of leadership. First, do men and women respond differently to female leaders, and what is the consequent reaction of women leaders to mens perception? Second, to what extent is behavior towards leaders (specifically that of male citizens with respect to female leaders) influenced by experience with female leaders? Finally, we explore possible reasons for male backlash against womens leadership and if this is sustained overtime.

The challenge to examining behavioral responses to womens leadership is that actions of female leaders are rarely observed independent of those around her. Women might be tokens of other powerful interests in the village with male leaders and elites electing close relatives as their surrogates Ramesh and Ali (see for example 2001), Ban and Rao (see for example 2008). Therefore, identifying the impact of gender and isolating it from the influence of other factors is difficult. While both male and female leaders can be token heads, this is a

[1] For example, see Lott and Kenny (1999), Edlund and Pande (2001), Chattopadhyay and Duflo (2004b), Pande and Ford (2012).

[2] The 73^{rd} Constitutional Amendment in India mandates that in each of the elections at the village council level, one-third of the council leader positions have to be reserved for women. In 2006, the percentage of seats reserved for women was increased to 50% in some states. We discuss this in more detail Section 2.2 below. See Chattopadhyay and Duflo (2004a), GOI (2008) for a discussion of the Panchayati Raj system of governance in rural India.

particularly relevant problem for women where they have very little leadership experience and citizens are unsure about the quality of female leaders.

Our experimental design offers a way to circumvent these challenges, while preserving facets of the context in which decisions are made. We invite men and women residing in villages located in Bihar, India to participate in a modified public goods experiment where one group member is randomly selected as the leader. [3] The leader proposes a non-binding contribution to finance a public good to the rest of the group. Then the entire group, including the leader, chooses their actual contribution. By revealing the leaders gender identity in the treatment and not in the control, we are able to identify the impact of womens leadership on citizens public contributions. Additionally, participants might bring their prior ideas and prejudices into the sessions and their behavior might be shaped by prior experiences with the female village chief. We use the random allocation of females to the position of the chief of the Gram Panchayat (GP) as a second source of exogenous variation in exposure to female leadership.

We find a large and statistically significant behavioral response to women as leaders, both by citizens and, interestingly, by women leaders themselves. Men are significantly less likely to contribute towards the public good when women rather than men are group leaders. In response, women leaders are more likely to reduce their own contributions to the public good compared to their proposed amount when their gender is made salient (relative to when their gender is not revealed), suggesting that they anticipate the reactions of the citizens. Our results on male bias against female leaders are considerably stronger in villages with female chiefs, or *mukhiyas* (also known as *pradhan* or *sarpanch*). Analysis using survey data from these villages suggest that male backlash is not a result of females being ineffective leaders or tokens for powerful elites, and is instead driven by ingrained social norms associated with female leaders. Men perceive that social norms are violated when women are in leadership positions, and these perceptions are correlated with their behavior in the experiment. We also find that male bias against female leaders is reduced with greater exposure to female leaders. This suggests that while there are entrenched social norms against women leaders, continued affirmative action policies can potentially change these social norms.

[3]Several recent papers have used experimental methods to analyse different aspects of leadership. These have typically involved a single centrally observed player sending a signal to (generally) a group of citizens. This type of design is commonly called leading by example as the leaders effort (contribution) is commonly observed prior to citizens effort. (See for example Güth et al., 2007, Levy et al., 2011, Meidinger and Villeval, 2002).

An extensive literature examines the effect of gender-based quotas in village governments in India. The policy has resulted in greater investment in public goods demanded by women (Chattopadhyay and Duflo, 2004b), resulted in improved educational attainment of children (Clots-Figueras, 2012), greater reporting of and arrests for crimes against women (Iyer et al., 2010), has increased female aspirations and educational attainment of girls (Beaman et al., 2012) and has reduced male subconscious biases about the appropriateness of women being leaders (effectively changed the social norms). However, these positive effects are not universal and might be region specific or take time to eventuate. Using data from South India, Ban and Rao (2008) fail to find evidence that women leaders favor female-preferred goods or significantly impact government services. Bardhan et al. (2010) using a unique time series data from West Bengal villages find no impact of female reservation on public good provision. Rather they find that female reserved villages perform worse in targeting government programs towards the most disadvantaged households. Afridi et al. (2013) suggest that female reservation is beneficial only in the long term. They find that greater inefficiencies and leakages occur in a government employment program in those villages that have a single female reserved leader.[4]

Our paper builds on and contributes to the literature on womens leadership and governance in a number of different ways. First, while the existing literature mainly discusses the impact of female leadership on policy choices, we explore the behavioral response to female leaders, thereby illustrating potential barriers to the effectiveness of women as leaders. Second, our experimental approach allows us to isolate the actions of the leader (irrespective of gender) and ensures that differences in actions of male and female leaders cannot be attributed to differences in experience. Third our experimental design is the first to our knowledge to study leadership in a field experiment. We then use this novel setting to study how actual exposure to leaders affects behavior. Lastly, we use unique survey and experimental data to examine the channels by which gender quotas affect behavior, a pertinent issue as quotas become increasingly common.

[4]A 2008 survey conducted by the Government of India found that 89% of female chiefs who were interviewed did not contest a second election and everyone who did lost. They reported that while in the first instance spouses and other influential people within the village encouraged them to contest the election, the same spouses and relatives later discouraged them from re-contesting (GOI, 2008).

2 Methodology

This section describes the details of the experimental design, the setting, the methods used to select the villages for our study and the recruitment of participants from these villages. Finally, we describe the surveys administered by the research team.

The use of an artefactual field experiment has several advantages in our context. First, the randomized assignment of leadership status allows us to avoid selection issues relating to the identity of the leader and we can therefore interpret the actions of the leader and those of the citizen in response to the gender of the leader as causal. Second, in our setting, there are no confounding effects driven by differences in the level of experience of male and female leaders. Finally, this approach allows us to explicitly identify the actions of the leader.

2.1 Experimental Design

The task in the artefactual field experiment is based on the linear voluntary contribution mechanism (VCM) game or a public goods game. We implement a one-shot version of the game with subjects participating in groups of four. We chose a one shot game to avoid reputation and learning effects and to avoid subject fatigue. Each subject is initially endowed with Rs. 200. The task of the subjects is to decide how much of their endowment to contribute to a group account. Whatever they do not contribute they keep for themselves. Each rupee placed in the private account earns Rs. 1 for the subject, while each rupee placed in the group account earns Rs 0.5 for each member of their group (including themselves). The payoff function is

$$P_i = e - g_i + \beta \sum_n g_j$$

where g_i is the contribution of subject i to the group account, β is the marginal payoff of the public good; and $\sum_n g_j$ is the sum of the n individual contributions to the public good. With $0 < \beta < 1 < n\beta$, the Nash equilibrium is for each subject to invest their entire endowment in the individual account. However, since $n\beta > 1$, the socially efficient outcome is to contribute everything to the group account.

Each group consists of 4 members: 2 males and 2 females and all participants are informed of this group composition. One member of the group is randomly selected to be the leader.

The non-binding announcement feature of our design allows us to examine the potential deception on the part of the leader and connect this to governance. Each group therefore consists of one leader and 3 non-leaders whom we henceforth refer to as citizens. Half the groups have male leaders while females are assigned as leaders in the remaining groups. Individuals are randomly assigned to male and female led groups, which are balanced on observable characteristics (see Table 3 and discussion in Section 3 below). All decisions are made in private, and subjects are never informed of the identity of their group members.

The experimental task comprises two stages. In the first stage, the leader proposes a non-binding contribution between Rs. 0 and 200 towards the group account. Group members are informed of the leaders proposal. In the second stage, all group members including the leader choose their contribution to the group account. Subjects are never informed of their fellow group members actual contribution towards the group account.

The experiment consists of the following treatments: *own information* treatment and *full information* treatment. In the own information treatment, gender is made salient by reminding all subjects of their own gender, prior to the leader making his or her proposal.[5] In the full information treatment, the leader's gender is announced to citizens and subjects are reminded of their own gender before the leader makes his or her proposal. From the perspective of the leader this leads to four scenarios.

1. Gender not revealed for male leaders;
2. Gender not revealed for female leaders;
3. Gender revealed for male leaders;
4. Gender revealed for female leaders

Citizens are unaware of the leaders gender in the *own information* treatment. Hence in this case, scenarios 1 and 2 can be merged. Hence, the citizens decisions are analyzed under three scenarios

1. No information about leaders gender;
2. Informed leader is male;

[5]Benjamin et al. (2010) and Chen et al. (2014) show that priming of identity can cause changes in the behaviour of participants.

3. Informed leader is female

Since the proposed contribution by the leader is non-binding (akin to cheap talk, see Levy et al., 2011), standard economic theory would suggest that the proposal stage should not impact a citizens contribution decision. The leader also knows that the group members may not follow the proposal, and therefore has little incentive to follow it as well. We therefore expect low contributions to the group account and provision of public goods below the socially optimal level in both the own and full information treatments.

Recent experimental evidence suggests however that leaders non-binding suggestions can help increase group contributions, as in Levy et al. (2011). All citizens receive the same information and this common signal can indicate the value of cooperation and perhaps reciprocity, thus providing an upper bound to their contributions. Hence, citizens might be more likely to contribute high amounts, leading to greater contribution by the leader and higher public good provision in both the treatments. Insofar that beliefs about leaders' potential for deception are conditioned by gender, citizen's contributions may be different when the leaders gender is revealed. This in turn will influence the leaders propensity to deceive if citizens expect lower deception and contribute more, then leaders propensity to contribute will be higher.

We compare the behavior of the citizens when they are informed of the leaders gender to when they are not provided this information. No difference in citizens behavior across treatments implies that information on the leaders gender has no effect on contributions. Conversely, a systematic difference, either positive or negative, across treatments implies that attitudes associated with gender can be important for decision-making. Similarly, differences in the leaders deception (represented by the difference between proposed and actual contributions) by treatment represents the impact of gender attitudes on the part of the leader.

2.2 Setting and Village Selection

The artefactual field experiment was conducted in the villages of Bihar, India. Specifically, our data was collected from 40 villages in the districts of Gaya, Madhubani and Khagaria, which are roughly equidistant from the capital city of Patna (see Figure 1). Almost 10% of India's population resides in Bihar, which is characterised by substantial gender inequality.

The 2011 Census reports that the literacy rate for Bihari women is 53.3% compared to 73.4% for Bihari men. The sex ratio in Bihar is 0.916 women per man compared to 0.943 for India. At the same time, Bihar is one of the fastest growing states in India with an average 10% GDP increase between 2010 and 2014.

In a separate but relevant context, each village within Bihar (and India) is governed by a village council or Gram Panchayat (GP). Gram Panchayats are democratically elected and generally encompasses 5,000+ people often across several villages. The GP's are responsible for the provision of local services, identifying villagers below poverty and resolving disputes. Each GP consists of a village chief called a Mukhiya, a vice chief called an Upmukhiya and councillors or ward members. The 73^{rd} amendment to the Indian Constitution in 1992 reserved one third of all positions of village mukhiya to women. Importantly, reserved villages were decided at random according to a rotating schedule.[6] In Bihar, the first GP election took place in 2001.

The 73^{rd} Amendment to the Indian Constitution was superseded in Bihar by the Bihar Panchayati Raj Ordinance, 2006 which stipulated that 50% of GP positions including the mukhiya must be reserved for women. This law took effect prior to the 2006 election. After the 2006 Panchayat elections in Bihar, 50.06% of all mukhiya positions were occupied by women. This implies that the gender of the village chief is decided exogenously based on reservation.

Using the 2011 census of India and a list of villages provided by the Bihar Rural Livelihoods Project (BRLP), we randomly chose 40 villages in the three districts of Gaya, Khagaria and Madhubani. Only one session was conducted in each village. The matching of treatment (own or full information) and session (village) was random. Panel A of Table 1 shows that that there are no statistically significant differences in the village level characteristics between the own and full information treatment villages.

Panel A of Table 2 shows that in terms of observable characteristics the sample is balanced overall across male and female mukhiya villages. A village is categorised as a female mukhiya village if it had at least one female mukhiya in the last 3 GP elections (conducted in 2001, 2006 and 2011). Otherwise it is categorized as a male mukhiya village. A male

[6]GPs are randomly assigned to three lists: Reserved for Scheduled Castes, Reserved for Scheduled Tribes and unreserved. Every third (second after 2001) village in each list is reserved for women. New lists are created every election cycle so that no village is reserved for scheduled tribes or castes in two consecutive elections. Within each new list one third (half after 2001) of GP's were reserved for women, this means a village maybe reserved for females in consecutive years.

mukhiya village therefore has never had a female mukhiya.[7] While a greater proportion of the sample in female mukhiya villages are Hindu and belong to a backward caste, a significantly higher proportion of the sample in male mukhiya villages belong to general caste. The F-statistic shows that we cannot reject the joint hypothesis that the observable characteristics are similar on average across the female and male mukhiya villages. Panel B of Table 2 shows that in terms of observable characteristics the sample is also balanced by the number of female mukhiyas over the last 3 elections (0, 1 and 2). Once again, while there are some differences, the F-statistic shows that we cannot reject the joint hypothesis that the observable characteristics are similar on average across the different categories of villages.

2.3 Recruitment

To recruit participants for the experiment, two members of the research team (one male and one female) visited each village the day before the session was scheduled in that village. Each visit included informing villagers of the event and distributing flyers. The flyers contained information about participation requirements (including age restrictions 18 or older and that they needed to be literate), remuneration, time and location of the experimental session. Flyers were also posted at prominent village landmarks (community centers, temples and mosques).

2.4 Procedure

We conducted one session of the experiment in each village. Each session had approximately 24 participants.[8] Upon arrival, participants were screened to ensure that they satisfy the eligibility criteria and then their names were recorded on a participant list. Once they were seated, they were given a folder to write on, a pen, and a number tag that represented their ID (distributed at random). The experimenter read aloud instructions to establish common knowledge. To determine whether subjects understood the instructions, each participant

[7] Of the 40 villages where we conducted our experimental sessions, 17 (42.5%) villages have had no female mukhiya following the last three GP elections; 16 (40%) have had one female mukhiya; 5 (12.5%) have had two female mukhiyas and 2 (5%) have had all three female mukhiyas. Randomization is independent across elections, so in each election one-third (one-half in 2006 and 2011) of the mukhiya positions had to be reserved for women.

[8] One village had 20 participants. Additionally the survey data for one participant cannot be used, though experimental data is available for this subject.

answered a set of control questions in private before the experiment commenced.[9] The experimenter cross-checked answers and started the experiment once the research team was satisfied that all subjects understood the task. To ensure anonymity of the leader, decisions in the first stage were made after control questions were answered but before collection. After all leaders had made their decision all sheets (including control questions) were collected and sorted in private.

Subjects also participated in a trust game before the public goods game but were not provided feedback between the trust and public goods game. Subjects were paid for only one task, randomly chosen at the end of the experiment. Finally, an incentivized risk task (similar to Gneezy and Potters (1997)) was embedded in the post-experiment survey. The average payout to participants was AUD 7 (420 INR), or approximately two days wage for a semi skilled laborer.[10] Including the post-experiment surveys, each session lasted four hours on average. We followed a double entry procedure for data input: all experimental data were entered twice and was subsequently cross-checked by two different research assistants. The results were compared against the experimental task sheets' (hard copies) in case of any inconsistencies.

2.5 Survey data collection

In addition to the experiment, we also collected data using three surveys. A Community Survey collected information from the village chief (or another influential person in the village if the village chief was not available) on village characteristics such as population, Gram Panchayat schemes, sources of village income etc. An Infrastructure Survey was completed by the research team and included coordinates of the key village infrastructural landmarks. In the post-experiment survey, each participant answered questions on attitudes towards governance, corruption, political competition and on individual and household level demographic and socio-economic characteristics. The data from the surveys were directly entered into tablets. This reduced data entry related errors.

[9] We conducted 5 pilot sessions including 4 with participants selected from villages around Patna. These sessions were used to fine-tune the experimental instructions and the survey questions. These sessions were also used to train the research team on survey methods. The control questions were used to help subjects understand the instructions and if their answers were incorrect, assistants explained the questions again in private.

[10] The minimum wage according to the India Minimum Wage Act is 184 INR per day for a semi skilled worker in Bihar (see GOI, 2013).

3 Overview of the data

In Column 1 – 3 in Panel B of Table 1 we present the means for the set of explanatory variables that we include in our regressions. On average 39% of our sample are currently in paid employment and a large proportion (63%) of our sample did not earn any income in the month prior to the experimental session. The average age of participants in our sessions is 27, they come from fairly large households (average household size is 7.7) and the sample is predominantly Hindu (90%), with a mix of upper caste (26%), Scheduled Caste (24%) and Other Backward Caste (42.5%). Close to half the sample have completed high school and there is evidence of significant intergenerational mobility in educational attainment, with participants schooling outcomes being better than their fathers.

To examine whether the random assignment of participants to treatments was effectively implemented, we report differences in participant characteristics by treatment in column 4. For most characteristics, there are only minor differences across individuals assigned to the two treatments. Individuals assigned to the own information treatment were significantly more likely to belong to larger households, are more likely to be Hindu, are more likely to belong to a Scheduled Caste and are less likely to have attained some tertiary education, though more likely to have completed high school. However as the F-statistic shows, we cannot reject the joint hypothesis that these observable characteristics are similar on average across the two treatment arms.

Further, within each treatment (own and full information), individuals were randomly assigned to male and female-led groups. As Table 3 shows, there is virtually no difference in terms of observable characteristics between subjects assigned to male and female-led groups. As the F-statistic shows, we cannot reject the joint hypothesis that the observable characteristics are similar on average across the male and female-led groups.

One individual from each group was randomly assigned to be the group leader the remaining group members were citizens. As Table 4 shows, in terms of observable characteristics, individuals assigned to be leaders are no different to individuals assigned to be citizens. The F-statistic shows that we cannot reject the joint hypothesis that the observable characteristics are similar on average across the leaders and citizens. The results presented in Tables 1 – 2 show that at the individual level our sample is randomized across several important dimensions.

Table 5 presents the sample averages of the decisions made, separated by males and fe-

males. Panel A reports the means for those assigned to be group leaders and Panel B the corresponding means for the citizens. In column 1 we present the sample averages for the full sample, columns 2 and 3 the averages for males and females respectively and in column 4 the t-statistics to examine the difference in choices made by male and female participants. The results presented in Panel A show that there are no statistically significant gender differences in the amount proposed by the leader and the actual contribution made to the public good. However female leaders are significantly more likely to deceive (a dummy variable that takes the value of 1 if Amount contributed to the group account - Amount proposed ¡ 0) or deceive strongly (a dummy variable that takes the value of 1 if Amount contributed to the group account - Amount proposed ¡ -10). However while males are significantly less likely to choose to deceive, should they choose to deceive, they do so by a significantly larger amount. Next we examine the choices made by the citizens (Panel B). We find that male citizens contribute significantly more to the group account on average, particularly when the group leader is male. We also report a measure of deviation from the leaders proposed contribution (Amount proposed by leader amount sent to the group). Female citizens deviate more than males from the leaders proposals.

In Table 6 we examine the behavior of group leaders and citizens separately in male and female mukhiya villages. A village is categorized as a female mukhiya village if it had at least one female mukhiya in the last 3 GP elections (in 2001, 2006 and 2011) and 0 otherwise. A village is a male mukhiya village if it never had a female mukhiya. Of the 40 villages where we conducted our experimental sessions, 17 (42.5%) villages have had no female mukhiya in the past 3 GP elections; 16 (40%) have had one female mukhiya; 5 (12.5%) have had two female mukhiyas and finally 2 (5%) have had 3 female mukhiyas.[11] The sample averages presented in Panel A show that the behavior of the group leader is no different depending on the gender of the mukhiya. The results presented in Panel B show that male citizens contribute significantly less in female mukhiya villages.

Two points are worth emphasizing from the descriptive statistics that we have presented in Tables 1 – 6. First, we find that females assigned as leaders are frequently more deceptive. Second, under an assigned female leader, citizens are less cooperative in female mukhiya villages. This is predominately driven by male citizens.

These results based on sample averages are merely suggestive and require further analysis.

[11] As mentioned before, randomization is independent across elections. Therefore, in each election one-third of the mukhiya positions are randomly assigned to be reserved for women; this increased to half in 2006 and 2011.

Additionally, to avoid the confounding implications of heterogeneity across villages and to control for session effects, in the next section we use regression analysis to examine the behavior of females and males in the public goods game.

4 Empirical Analysis: Citizen behavior

The following specification examines the differential contributions of male and female citizens, controlling for the gender of the leader, amount proposed by the leader and a number of other factors that might effect contributions.

$$C_{ijk} = \beta_0 + \beta_1 Female_{ijk} + \beta_2 L^f_{jk} + \beta_3 L^m_{jk} + \gamma \mathbf{X}_{ijk} + \eta_k + \varepsilon_{ijk} \tag{1}$$

In this specification, C_{ijk} is the contribution of citizen i belonging to group j in village k. The citizen's gender is denoted by $Female_{ijk}$ so β_1 represents systematic differences in contribution levels between men and women. L^f_{jk} and L^m_{jk} are indicator variables that are 1 if the group leader is female and male, respectively. Also included in the specification is a vector of individual controls ($\mathbf{X}_{ijk}$) that might influence a citizen's contribution – educational attainment, occupational status, income, age, religion, caste, household size, father's school completion and amount proposed by the leader. Finally, the specification includes village fixed-effects (η_k) to account for all village-level factors and session-specific variations that might impact individual contribution. Standard errors are clustered at the group level to account for within group correlation in citizen choices.

The analysis of citizens behavior discussed in this section predominately focuses on citizen's contribution towards the group rather than a measure of deviation from the leaders proposed contribution. This measure is preferred for at least three reasons: First, approximately 30% of followers contribute more than what is proposed by their leader, while over 50% contribute less than what is proposed. Because of this variability subjects that contribute above the proposed amount should be treated differently to those who contribute below as they are exerting completely divergent behavior towards the leader. This implies considerable heterogeneity in how citizens react to the leader's proposal and makes any measure of deviation proposed from the leader difficult to interpret. Second, all regressions where contribution to the group account is the dependent variable controls for the amount proposed by the leader. Since groups are randomly allocated and we control for the amount proposed if differences exist between groups contribution the effect can be attributed to the

leaders gender. The leader's gender and the differences in behavior of citizens is a specific focus of this paper. Third, Indian villagers sampled here commonly work in communities and small teams in both their daily life and other civic duties. The design of this experiment primes subjects both by assigning subjects to groups and by informing subjects that their group has been assigned a random leader (and the leaders gender). Therefore, when making decisions contribution to the group account could be interpreted as a measure of effort or attitude about the suitability of this leader. It is for these reasons we focus our analysis on the contributions towards the group account.[12]

The results from estimating equation (1) are presented in Table 8. In this and in all subsequent tables, we present the difference estimates as our interest is in analyzing the differential effects of the gender of the citizen, that of the group leader and that of the mukhiya of the village.[13] The results presented in Column 1 of Table 8 show that citizens' contributions to the group account are not different by the gender of the group leader. This result is different from the sample averages presented in Table 5 and highlights the importance of accounting for village level unobserved heterogeneity.

However, the gender of the group leader could have differential effects on male and female citizens. To examine this, we add variables to equation (1) that interact the gender of the leader and that of the citizen.

$$\begin{aligned} C_{ijk} = \beta_0 + \beta_1 Female_{ijk} + \beta_2 L^f_{jk} + \beta_3 L^m_{jk} + \beta_4 (Female_{ijk} \times L^f_{jk}) \\ + \beta_5 (Female_{ijk} \times L^m_{jk}) + \gamma \mathbf{X}_{ijk} + \eta_k + \varepsilon_{ijk} \end{aligned} \tag{2}$$

In equation (2), β_4 and β_5 indicate the marginal propensity to contribute to the group account by female citizens, when the group leaders are female and male, respectively. Therefore, $(\beta_2 + \beta_4) - (\beta_3 + \beta_5) < 0$ implies that female citizens contribute less in groups where the group leader is female compared to groups where the group leader is male. Correspondingly, $\beta_2 - \beta_3 < 0$ implies lower contributions by males in groups where the group leader is female compared to groups where the group leader is male.

The results presented in Column 2 of Table 8 show that men contribute Rs 13 less to the group account when the group leader is female, compared to when the group leader is male. This difference is statistically significant. In contrast, the gender of the group leader does

[12] We also report analysis of citizens' deviation from leader's proposed amount as a secondary analysis (see Table 9). Our results are consistent with our main reported results, although somewhat weaker.

[13] The coefficient estimates are available on request.

not have a statistically significant effect on the contributions of women.

The behavior of the participants (both citizens and leaders) in the experimental sessions might depend on their perception of female leaders and norms relating to women as leaders. For most participants in our experiment, the only experience with female leaders would be women elected to positions in Gram Panchayats, including the mukhiya position. A key advantage of artefactual field experiments is that subjects are taken from a natural setting (Harrison and List, 2004). The rationale is that subjects in this setting incorporate prior information evolved in their natural field when making decisions.[14]

Our next question asks: to what extent is participant behavior in the artefactual field experiment colored by experience or perceptions of female chiefs. Do citizens contribute less to groups with a female leader because they perceive female leaders to be ineffective or because they believe having female chiefs is against the existing social norms. If it is the latter, can one change the norms so that males are more accepting of female leaders?

The first set of regressions control for exposure to female mukhiyas by defining a dummy variable H_k^f that takes the value 1 if the GP has had at least one female mukhiya in the last 3 GP elections (conducted in 2001, 2006 and 2011) and 0 otherwise.[15] This is termed a female mukhiya village. $H_k^f = 0$ implies that the village has never had a female mukhiya, which we term a male mukhiya village. By interacting this variable with the gender of the leader of the experimental group, we are able to isolate the effect of the female mukhiya on citizens' perceptions of female and male leaders in the artefactual field experiment.

$$\begin{aligned} C_{ijk} = {} & \beta_0 + \beta_1 Female_{ijk} + \beta_2 L_{jk}^f + \beta_3 L_{jk}^m + \beta_4 (Female_{ijk} \times L_{jk}^f) \\ & + \beta_5 (Female_{ijk} \times L_{jk}^m) + \beta_6 (L_{jk}^f \times H_k^f) + \beta_7 (L_{jk}^m \times H_k^f) \\ & + \gamma \mathbf{X}_{ijk} + \eta_k + \varepsilon_{ijk} \end{aligned} \tag{3}$$

In this specification, the coefficients on the interacted terms $L_{jk}^f \times H_k^f$ and $L_{jk}^m \times H_k^f$ capture

[14] For example, Burns (1985) examines the behavior of floor traders in induced market experiments. She finds that trader's prior knowledge and experience is an important factor in behavior. Using artefactual field experiments conducted in India, researchers have examined prior perceptions towards caste (Hoff and Pandey, 2014) and religion (Gupta et al., 2014). These suggest that prior experiences are a contributing factor in decision-making.

[15] While the 73^{rd} Amendment to the Indian Constitution required the formation of democratically elected GPs, with Panchayat elections to be held every five years, the speed with which states implemented the scheme varied considerably. Bihar was one of the late states with the first GP elections in the state held in 2001. Compare this to a state like West Bengal where the first Panchayat elections were held in 1978, well before the constitutional amendment.

the effect of a female and male group leader respectively in a female mukhiya village.[16] Hence, $(\beta_2 + \beta_6) - (\beta_3 + \beta_7) < 0$ implies that the citizen's contributions to the group account in female led groups are lower than those in male led groups, when the village mukhiya is a woman. We estimate equation (3) separately for male and female citizens and examine the difference estimate $(\beta_2 + \beta_6) - (\beta_3 + \beta_7)$ in the two cases. The corresponding estimates are presented in columns 3 and 4 of Table 8, for males and females respectively.

Our finding is that male citizens behave differently in female mukhiya villages. In male mukhiya villages, contributions to the group account by citizens of either gender is not affected by the gender of the group leader. On the other hand, male citizens in female mukhiya villages contribute Rs 24 less to the group account when the group leader is female than when the group leader is male. This difference is statistically significant. Contributions to the group account by female citizens in female mukhiya villages are unaffected by the gender of the group leader. This behavior on the part of male citizens is consistent with male backlash against female leaders. The next section discusses why this backlash exists.

But before we examine male backlash in more details, we report on the robustness of our results to different choices of the dependent variable and also estimation techniques. First, an alternative to contribution to the group account as being the dependent variable one could consider deviation from the amount proposed by the leader as the dependent variable. We therefore define a variable Deviation Percent = 100 × (Contribution to the Group Account – Amount Proposed by the Leader)/Amount Proposed by the Leader. This variable takes the value 0 if the contribution to the group account is equal to or greater than the amount proposed by the leader. Results are reported in Table 9. We find that citizens deviate away from male and female leaders in similar amounts. Upon examination of males in female mukhiya villages we find that males citizens are more likely to deviate away from female led groups compared to male led groups. However this is not statistically significant at any conventional level ($p - value = 0.13$). Turning to females we find that females are more likely to contribute a similar amount to female leaders in female mukhiya villages. This possibility indicates that female citizens may learn from experience with female mukhiyas and thus exert some in-group bias towards female leaders within these villages. In summary this results is consistent with that found above.

Second, the regression results presented thus far include village fixed effects to account for unobserved village level heterogeneity. This allows for within village comparison. However,

[16] Including village fixed-effects implies that a separate term for female village mukhiya cannot be included in the specification.

this may exclude important differences across villages. To overcome this issue we estimate the main models with block level fixed effects. The corresponding OLS results are similar (in most cases stronger) compared to the fixed effects regression results presented and discussed. These results are available on request.

4.1 Why does backlash exist?

To examine this behavior on the part of male citizens, we focus on three potential channels of male backlash in this paper: (1) Leaders effectiveness- women may be perceived to be ineffective leaders or female mukhiya's actual performance is ineffective; (2) tokenism- resentment against females arising from the belief that women are not independent or influential (they are simply tokens for spouses or more powerful elites within the village) and thus ineffective leaders; and (3) social norms- males may believe that electing female leaders is contradictory to traditional social norms. To do this, in addition to our experimental data, we also utilize our post-experiment survey data that collected information on male and female attitudes on gender, leadership and governance and also on actual services provided by the GP to understand these potential channels.

4.1.1 Perceived or Actual Inefficiency of Female Leaders

Backlash may stem from the fact that women are ineffective leaders. If this is the case men may use this information to update their beliefs and attitudes towards female leaders. Therefore, we first investigate if women are perceived to be bad leaders. We ask participants whether they agree or strongly agree with the statement: Villages where women have more power perform better.[17] We find that on average women and men do not have different perceptions about the efficiency of female leaders – males and females are equally likely to report that villages where women have more power perform better i.e., they do not have varying perceptions on the ability of female mukhiyas to govern (see results presented in column 1 of Table 7).

We run separate regressions where we interact this variable with the gender of the group leader. We estimate augmented versions of equation (3) to explicitly account for citizens' perceptions regarding women's ability to govern. We create a dummy variable *Women*

[17]They are asked to agree or disagree on a five-point scale. The options were strongly agree, agree, neither agree nor disagree, disagree, strongly disagree.

Power Better = 1 if the citizen agrees or strongly agrees with the statement that Villages where women have more power perform better; 0 otherwise and interact this variable with the gender of the group leader. We run four different regressions: male or female citizen in male or female mukhiya village. The regression results are presented in Panel A of Table 10. Even when males agree that villages where women have more power perform better, they are significantly less likely to engage with female leaders in female mukhiya villages and contribute significantly less to the group account in female-led groups than in male-led groups. The male bias therefore does not appear to be driven by perceived incompetence of female leaders.

This perception may not be an accurate representation of the actual effectiveness of female leaders. So we next investigate leaders' actual performance. Participants were asked to report the GP schemes they (and their household) had benefitted in the last five years. This included schemes such as: PDS, NREGA, Anganwadi program, Indira Gandhi Awaas Yojana, Jawaharlal Nehru Swarojgar Yojana, Antodya Yojana, Mid-day Meal for kids, Mukhyamantri Cycle Yojana, Sarbasiksha Yojna. Using this information we created a dummy variable *GP Service High* = 1 if the citizen or his/her household has benefitted from more than 2 GP schemes (the median number of schemes); 0 otherwise.

On average males and females do not differ in their reporting of actual GP services received (see columns 2 and 3 of Table 7). We estimate augmented versions of equation (3) to explicitly account for actual ability of female mukhiyas by interacting the dummy variable GP service High with the gender of the group leader. Again we run four different regressions (male or female citizen in a male or female mukhiya village) and the regression results are presented in Panel B of Table 10. As with the regressions relating to perceived ineffectiveness of female leaders, even when actual GP performance is good, males contribute significantly less to the group account in female-led groups than in male-led groups.

4.1.2 Tokenism

Independent of actual performance, a leader is considered effective only if he/she has power or influence. Consequently males might resent women leaders because they are perceived as being surrogates of their spouses or of other influential elites within the village implying female leaders are not influential and thus ineffective. To examine whether tokenism drives male bias against female leaders, we asked each participant the position and gender of the three most influential people within the village, in order of influence. Using this data

we create a dummy variable *Most influential Female* = 1 if the most influential person within the village is a female; 0 otherwise. This variable is regressed on a set of individual characteristics and on the female mukhiya dummy (H_k^f). If women mukhiyas are surrogates of influential males within the village, i.e., they are tokens, then in female mukhiya villages, men would be significantly less likely to report that the most influential person in the village is a woman.

The regression results presented in column 1 of Table 11 show that the likelihood of the most influential person in the village being a woman is 14 percentage points higher in a village where the mukhiya is female. Both males and females in a female mukhiya village are significantly more likely to report that the most influential person in the village is a woman, the effect is stronger for males (see column 2 of Table 11). Not surprisingly, while in a female mukhiya village men and women are equally likely to report that the most influential person in the village is a woman, in a male mukhiya village, men are significantly less likely to do so. The results presented in Table 11 support that argument that male bias against female leaders is not driven by tokenism.

4.1.3 Violation of Social Norms

Resentment and bias against female leaders can stem from gender related prejudices and discrimination as women's role as village chief contravenes existing social norms. To examine whether this can explain male bias we asked participants whether they agree with the statement in this village women have too much political influence. We define a dummy variable *Women too much Power* = 1 if the citizen agrees or strongly agrees with the statement in this village women have too much political influence, 0 otherwise.[18] On average males and females in female Mukhiya villages do not differ in their perception of whether or not women in the village have too much influence (see results presented in column 4 of Table 7). Again we estimate augmented versions of equation (3) control for attitudes regarding political influence of women. The difference effects presented in Panel C of Table 10 imply that males, in female mukhiya villages who agree or strongly agree to the statement that females in this village have too much political influence contribute significantly less to female-led groups compared to male-led groups.

In summary, the results presented in suggest that social norms against women in leadership

[18] Again, the participants were asked to respond on a five-point scale. The options were strongly agree, agree, neither agree nor disagree, disagree, strongly disagree.

positions lead to men disengaging with women leaders in the experimental setting. It is not because they are perceived as poor leaders – males and females are equally likely to agree that villages with women leaders are better governed. There is no difference is actual ability of women leaders – males and females are equally likely to report that there is no difference in service provision by GPs with female and male mukhiyas. There does not appear to be a resentment against women on the ground that they are tokens of other influential males in the village – males in female mukhiya villages are as likely to report as females that the most influential person in the village is a woman. So what we are left with is male backlash resulting from violation of social norms.

Our results suggest that negative male behavior is not due to women being ineffective leaders as on average they provide the same number of local services as males. Our results therefore provide robust empirical evidence for the conjectures presented in Pande and Ford (2012) who argue that given the prevailing social norms, female leaders assigned not by merit but mandate may be susceptible to village backlash caused by resentment. Even though voters perceive women to be effective leaders, they resent women in these roles. Resentment may stem from gender prejudices and discrimination as women's new roles as village chiefs contravene accepted social mores.

The results may not be specific to India or locally to Bihar as social norms of traditional female roles in society are common across many countries (WDR, 2012). Using cross country evidence, Ingelhart and Norris (2003) argue that there is significant gender bias in attitudes towards the roles of women in public life. Such attitudes are difficult to change in the short run.

4.2 Does Exposure Affect Behavior?

Our results suggest that quotas at least in the short term perpetuate gender-based discrimination against female leaders. However, quotas can also potentially reduce discrimination against female leaders – increased exposure to female leaders can actually change male perceptions about the effectiveness of female leaders and in a broader sense change the social norms regarding the roles of males and females in public life and policy. Using data from West Bengal (a state that neighbors Bihar), Beaman et al. (2009) find that female leaders are rated significantly lower by male villagers in villages where the leadership position is reserved for the first time. However, this difference disappears with increased exposure to

women leaders. This is also consistent with the argument in Afridi et al. (2013) who use audit reports from the state of Andhra Pradesh in Southern India to argue that governance improves over time as female leaders gain independence.

We re-visit this issue and specifically examine whether an increase in the intensity of exposure to female mukhiyas can actually change males' perceptions about group leaders. Rather than using a dummy variable for at least one female mukhiya in the last three GP elections, we now control for the number of female mukhiyas in the last three elections. We create two dummy variables (i) one female mukhiya (H_k^{1f}) and (ii) two or more female mukhiyas (H_k^{3f}) and estimate the following equation separately for male and female citizens.

$$\begin{aligned} C_{ijk} = \beta_0 + \beta_1 L_{jk}^f + \beta_2 L_{jk}^m + \beta_3 (L_{jk}^f \times H_k^{1f}) + \beta_4 (L_{jk}^f \times H_k^{2f}) \\ + \beta_5 (L_{jk}^m \times H_k^{1f}) + + \beta_6 (L_{jk}^m \times H_k^{2f}) + \gamma \mathbf{X}_{ijk} + \eta_k + \varepsilon_{ijk} \end{aligned} \tag{4}$$

The other variables are as defined in equation (3). The difference effects based on our regression results are presented in Table 12. For female citizens, the number of female mukhiyas does not have a statistically significant effect on their contribution to the group account (column 2). However, the results for males are quite different. The difference estimates in column 1 show that in villages with one female mukhiya, male citizens contribute significantly more to male-led groups than to female-led groups $(\beta_1 + \beta_3) - (\beta_2 + \beta_5) < 0$. This difference in contribution by males to male-led versus female-led groups no longer exists when the village has two or more female mukhiyas. Increased exposure to female leaders reduces male bias against female leaders.

5 Empirical Results: Group leader behavior

All analysis thus far has focused on citizen behavior. It is also important to investigate the behavior of leaders. It is possible that female group leaders act differently when their gender is made salient. If this is the case leader behavior may precipitate citizens backlash towards females. To investigate this, we examine the impact of disclosing the gender of the leader on leader behavior, i.e., compare the leader's behavior in the *own* and *full information* treatments. The first step is to analyze the baseline case, without any interaction effects.

We do that by estimating the following equation.

$$D_{jk} = \alpha_0 + \alpha_1 L^f_{jk} + \alpha_2 Information_k + \delta \mathbf{Z}_{jk} + \nu_k + \epsilon_{jk} \tag{5}$$

The key outcome variable is deception (D_{jk}), which is 1 if the leaders proposal in the first stage is greater than his/her own contribution in the second stage of the public goods game, i.e. $D_{jk} = 1$ (Proposed Contribution > Contribution to the Group Account). Equation (5) models D_{jk} as a function of the leaders gender (L^f_{jk}) and the *full information* treatment session ($Information_k$).We include individual controls (school completion, occupational status, income, age, religion, caste, household size and father's school completion) in the specification, as well as village fixed effects (ν_k) that also account village level unobserved heterogeneity.

The results are presented in columns 1 and 2 of Table 11. Again we present the difference estimates. The results presented in column 1 show that women leaders are, on average, 21 percentage points more likely to deceive (i.e., contribute less than what they proposed to the group account). In column 2, we use a stronger definition of deception (strong deception): $\tilde{D}_{jk} = I$ (Contribution to the Group Account - Proposed Contribution < -10). Female leaders are also significantly more likely to engage in strong deception.

If women leaders deception is driven by the expected reaction of group members rather than any inherent propensity of women to deceive more than men, then deception is more likely in the full information treatment where their gender is revealed. To test this proposition, we add terms that interact L^f_{jk} and $Information_k$ to the formulation in equation (5).

$$\begin{aligned} D_{jk} = \alpha_0 + \alpha_1 L^f_{jk} + \alpha_2 Information_k + \alpha_3 (L^f_{jk} \times Information_k) + \alpha_3 (L^f_{jk} \times H^f_k) \\ + \delta \mathbf{Z}_{jk} + \nu_k + \epsilon_{jk} \end{aligned} \tag{6}$$

This equation also includes an interacted term $L^f_{jk} \times H^f_k$ that captures women leaders' propensity to deceive (compared to men) when the village mukhiya is female. In this specification, $\alpha_1 + \alpha_3$ is the women leaders' propensity to deceive (compared to men) in the full information treatment.[19]

[19]We also estimate this equation with an alternative measure of deception that is percentage deviation (Contribution to the group account Amount Proposed as a percentage of the amount proposed). This is a continuous variable that takes a negative value if the leader contributes less to the group account compared to what he/she proposed and a positive value if the leader contributes more than his/her proposed amount.

Columns 3 and 4 in Table 13 present the results from estimating equation (6). Female leaders are 23 percentage points more likely to deceive when the leaders gender is revealed to the group members. They are equally likely to choose to deceive strongly in the full information treatment. Simultaneously, these results also imply that for female leaders the likelihood of deception (and strong deception) is no different for male and female leaders when the gender of the leaders is private information. Women believe that they will be perceived as being corrupt and ineffective as leaders and see no reason to deviate from this norm. This may explain why female leaders are significantly more likely to deceive when their gender is public knowledge in the group (the full information treatment).[20]

The coefficients presented in columns 5 and 6 of Table 13 also show that female leaders are significantly more likely to deceive (column 5) and deceive strongly (column 6) in a female mukhiya village. The likelihood of the female leader choosing deception is no different from that of the male leader in a male mukhiya village. Clearly, female leaders behave differently in female mukhiya villages.

While the regression results presented in Table 13 use a binary dependent variable (deception or strong deception) as the dependent variable, the results presented in Table 14 use percentage deviation from the proposed amount as the dependent variable. The dependent variable is (< 0) if the leader contributes less than what he/she proposed and 0 otherwise. The female – male difference is positive and statistically significant, indicating that male leaders deviate significantly more from their proposed contribution than female leaders do. However in a female mukhiya village we see that female leaders deviate significantly more than male leaders. These results show that females when assigned the role of leader deceive both more often and in larger amounts in female mukhiya villages compared to males in the same type of village. In particular, the frequency of deception is higher when the leaders gender is revealed. This suggests that leaders anticipate the reactions of other citizens. They may understand that villagers perceive women as bad leaders and therefore expect lower contributions, this encourages a self-fulfilling prophecy whereby female leaders contribute less than proposed.

An alternative explanation is that women might be oppressed, when given power for the first time, they may perceive village chief ship as an opportunity to benefit as others have done in the past. If Female mukhiyas perceive GP offices to be corrupt, after gaining power for the first time they may believe this opportunity is their chance to gain from being a

[20]In the regression results presented in columns 5 and 6 we do not include an interaction of the gender of the group leader with the *full Information* treatment.

chief.

Does repeated (and increased) exposure affect the decisions of the leaders? The results presented in Table 15 are rather surprising. The difference estimates presented in columns 1 and 2 show that once in power, irrespective of exposure female leaders are significantly more likely to deceive (column 1) and strongly deceive (column 2) compared to male leaders. Indeed the magnitude of deception by female leaders is slightly higher for villages with two or more female mukhiyas, though the difference is not statistically significant. So while increased exposure tends to reduce bias against female leaders, female leaders themselves do not become less deceptive with increased exposure.

6 Conclusion

A large number of countries have introduced gender-based quotas either in government/administration or in the corporate/business world. However little is known about how these mandated quotas affect behavior of the leaders and the citizens. In the Indian context where the gender-based quotas have taken the form of reservation of the village chief for women there is contradictory evidence on the effect of these quotas. A better understanding of the behavioral aspects of these quotas can therefore help explain these mixed results.

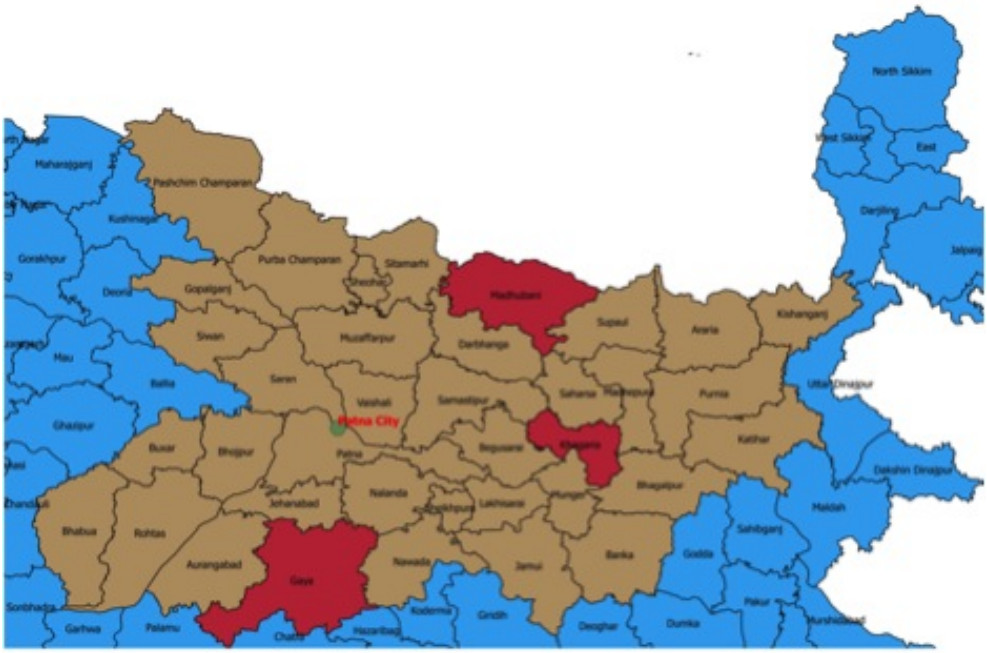
This paper utilizes a novel experimental design that combines survey data with both artefactual and a natural experiment to understand whether women are effective leaders. Specifically we seek to understand the implications of women in leadership roles on the behavior and attitudes of these leaders and also on the behavior of other citizens who are affected by this leadership.

Our results show that men are significantly less likely to contribute towards the public good when women are assigned the role of leader. Women leaders are more likely to deceive her fellow group members and contribute less towards the public good than proposed. Using the random assignment of females to village chief roles we find that in a female mukhiya village male citizens are significantly less likely to contribute towards a public good under a female leader, this suggests male backlash against female leaders. We then examine the mechanisms behind this behavior. Backlash is unlikely to be a result of female mukhiyas being ineffective leaders as they provide the same local services as male mukhiyas. Instead, our results suggest that social norms are particularly important. Males react negatively

towards female leaders in female mukhiya villages as a backlash against a violation of social norms whereby females are encouraged to partake in non-traditional gender roles. Further investigation suggests it takes time for social norms to change. We find that this negative backlash does not exist in villages that have experienced more than one female mukhiya in the last three election cycles. While there are entrenched social norms against women leaders, through continuous affirmative action policies, one can change these social norms. Mandated affirmative action policies, if consistently and systematically maintained over a longer period of time can have significant effects. This in turn can affect well-being in other spheres of life.

The promotion of women in governance and business can potentially improve both gender equality as well as governance and state capacity. We contribute an analysis of how gender quotas affect the behavior of both the leaders and the citizens. Our results therefore have implications for the design of government policies targeting women in leadership. In particular, mandated quotas over consecutive election cycles could reduce negative discrimination towards female leaders. Training and improving skills and capabilities of women may make women leaders more effective. Finally, our results show that changing social norms particularly among men can have overall village benefits that are external to those generally examined. School programs should emphasise positive gender attitudes to change the behaviour of the next generation.

Figure 1: Experimental Districts



Note:
The brown color highlights the state of Bihar. The districts where the surveys and experiments were undertaken are highlighted in red. Finally, Patna city is the capital of the state.

Table 1: Village and individual characteristics. Treatment versus Control Villages

	Pooled Sample (1)	Full Information (2)	Own Information (3)	Difference (4)
Panel A: Village Level Characteristics				
Number of households	566.07	580.55	551.6	28.95
Total population	2923.55	3133.9	2713.2	420.7
Male to female ratio	1.05	1.06	1.04	0.02
Fraction Scheduled Caste	0.33	0.33	0.32	0.01
Fraction Scheduled Tribe	0.0	0.00	0.00	0.00
Fraction literates	0.44	0.44	0.43	0.01
Fraction male literates	0.27	0.27	0.26	0.00
Fraction female literates	0.17	0.17	0.17	-0.00
Fraction workers	0.38	0.38	0.38	0.00
Panel B: Individual Level Characteristics				
Are you currently working	0.39	0.41	0.37	0.04
No income in the past 30 days	0.63	0.60	0.66	-0.06*
Age in years	27.02	27.30	26.74	0.56
Household size	7.77	7.49	8.27	-0.78***
Religion (Hindu)	0.91	0.89	0.93	-0.03**
Caste (Open Category)	0.26	0.24	0.27	-0.03
Caste (Schedule)	0.24	0.22	0.27	-0.05*
Caste (Other Backward)	0.43	0.45	0.40	0.05
Own schooling				
No Schooling	0.05	0.04	0.06	-0.01
Primary schooling	0.30	0.31	0.28	0.03
Secondary School (Year 10)	0.23	0.23	0.23	-0.01
Higher Secondary School (Year 12)	0.28	0.25	0.31	-0.06***
Tertiary Education	0.15	0.17	0.13	0.04***
Fathers schooling				
No schooling	0.38	0.36	0.40	-0.04
Primary Schooling	0.24	0.25	0.22	0.03
F-Test of Joint Significance			0.39	

Notes:
$^{***}p < 0.01;^{**}p < 0.05;^{*}p < 0.1$. The F-test of joint significance is taken from a village fixed effects estimation, in which the dependent variable is the *full information* (=1) or *own information treatment* (=0)

Table 2: Participant Characteristics: Male and Female Mukhiya Village

Panel A: Exposure to Female Mukhiya	Female Mukhiya Village (1)	Male Mukhiya Village (2)	Difference (3)
Are you currently working	0.38	0.38	0.00
No income in the past 30 days	0.63	0.63	0.00
Age in years	26.72	27.44	0.71
Household size	7.84	7.66	0.18
Religion (Hindu)	0.93	0.87	0.06***
Caste (Open Category)	0.22	0.30	0.08***
Caste (Schedule)	0.25	0.23	0.02
Caste (Other Backward)	0.45	0.38	0.07***
Own schooling	0.05	0.05	0.00
No Schooling	0.30	0.28	0.02
Primary schooling	0.27	0.28	0.01
Secondary School (Year 10)	0.15	0.14	0.01
Higher Secondary School (Year 12)	0.39	0.37	0.02
Tertiary Education	0.15	0.14	0.01
Fathers schooling			
No schooling	0.39	0.37	0.02
Primary Schooling	0.22	0.26	0.04
F-Test of Joint Significance		1.38	

Panel B: Intensity of exposure to female Mukhiyas	Zero Female Mukhiya (1)	One Female Mukhiya (2)	Two or More Female Mukhiya (3)	Kruksal Wallis (χ^2) (4)
Are you currently working	0.3887	0.360	0.446	0.2728
No income in the past 30 days	0.628	0.628	0.663	0.1861
Age in years	27.44	27.438	26.435	0.225
Household size	7.663	7.663	7.786	0.6636
Religion (Hindu)	86.63	0.866	0.909	0.0416
Caste (Open Category)	0.302	0.302	0.199	0.0375
Caste (Schedule)	0.225	0.225	0.209	0.0316
Caste (Other Backward)	0.384	0.384	0.500	0.0036
Own schooling				
No Schooling	0.0520	0.0496	0.0416	0.981
Primary schooling	0.285	0.279	0.357	0.3082
Secondary School (Year 10)	0.235	0.235	0.196	0.7336
Higher Secondary School (Year 12)	0.285	0.282	0.250	0.9607
Tertiary Education	0.144	0.154	0.155	0.7922
Fathers schooling				
No schooling	0.366	0.402	0.369	0.6562
Primary Schooling	0.260	0.219	0.226	0.5912
F-Test of Joint Significance				

Notes:
$^{***}p < 0.01;^{**}p < 0.05;^{*}p < 0.1$. Column 2 and 3 of Panel A report various characteristics of female Mukhiya villages and male Mukhiya villages respectively. Column 4 shows the comparison of means using a t-test. The F-test of joint significance is taken from a block level fixed effects estimation, in which the dependent variable is a female Mukhiya village (=1) or male Mukhiya village (=0). Column 1 of Panel B reports characteristics for male Mukhiya villages, while Column 2 and 3 report the characteristics for villages with one or more than one female Mukhiya respectively since 2001. Column 4 reports the chi-squared probability for the Kruskal Wallis test for the equality of population rank test.

Table 3: Participant Characteristics: Male led groups versus Female led groups

	Male Leader (1)	Female Leader (2)	Difference (3)
Are you currently working	0.41	0.37	0.04
No income in the past 30 days	0.61	0.65	-0.04
Age in years	27.26	26.78	0.48
Household size	7.72	7.82	-0.10
Religion (Hindu)	0.90	0.91	-0.01
Caste (Open Category)	0.25	0.27	-0.02
Caste (Schedule)	0.26	0.23	0.03
Caste (Other Backward)	0.42	0.43	-0.01
Own schooling			
No Schooling	0.06	0.04	0.02
Primary schooling	0.30	0.29	0.01
Secondary School (Year 10)	0.23	0.22	0.01
Higher Secondary School (Year 12)	0.29	0.27	0.02
Tertiary Education	0.13	0.17	-0.04**
Fathers schooling			
No schooling	0.40	0.36	0.04
Primary Schooling	0.23	0.25	-0.02
F-Test of Joint Significance		0.75	

Notes:
$^{***}p < 0.01;^{**}p < 0.05;^{*}p < 0.1$. Columns 2 and 3 report the means for the average male led group and the average female led group respectively. The F-test of joint significance is taken from a village fixed effects estimation, in which the dependent variable (=1) if a participant was in a male led group.

Table 4: Participant Characteristics: Leaders versus Citizens

	Leaders (1)	Citizens (2)	Difference (3)
Are you currently working	0.41	0.38	0.03
No income in the past 30 days	0.62	0.63	-0.01
Age	26.73	27.12	-0.39
Household Size	7.49	7.86	-0.37
Hindu	0.92	0.90	0.02
Open Category Caste	0.22	0.27	-0.05
Caste (Schedule)	0.24	0.24	0.00
Caste (Other Backward)	0.47	0.41	0.06*
Own schooling			0.00
No Schooling	0.07	0.04	0.02
Primary schooling	0.28	0.30	-0.02
Secondary School (Year 10)	0.23	0.23	0.01
Higher Secondary School (Year 12)	0.27	0.28	-0.01
Tertiary Education	0.15	0.15	0.00
Fathers schooling			0.00
No schooling	0.39	0.38	0.01
Primary Schooling	0.22	0.24	-0.02
F-Test of Joint Significance		1.04	

Notes:
$^{***}p < 0.01;^{**}p < 0.05;^{*}p < 0.1$. The F-test of joint significance is taken from a village fixed effects estimation, in which the dependent variable is (=1) if a participant was allocated the role of leader or =0 if allocated the role of citizen.

Table 5: Decisions in the Public Goods game. Males versus Females

	Female	Male	Comparison of Means (t-tests)
	(1)	(2)	(3)
Panel A: Leaders Only			
Amount Proposed	118.73	111.70	1.01
Amount Proposed full information	108.41	117.62	0.34
Amount Proposed own information	115	119.87	0.48
Amount Sent to the Group	103.14	108.57	0.77
Deviation Proposed	-8.56	-10.16	0.19
Deception	0.567	0.426	2.20**
Deviation Proposed (where deception=1)	-52.68	-66.63	1.94*
Deception Strong	0.534	0.426	1.67*
Panel B: Citizens Only			
Amount Sent to the Group	94.49	101.16	1.788*
Deviation Proposed	-21.88	-12.98	1.70*
Following (=1 if citizen contributes less than leader)	0.545	0.44	2.28**
Amount Sent to the Group under a Male Leader	90.01	110.18	2.54***
Amount Sent to the Group under a Female Leader	95.61	97.94	0.31
Deviation Proposed under a Male Leader	-24.93	-4.89	1.85*
Deviation Proposed under a Female Leader	-16.61	-12.66	0.37
Amount Sent to the Group (info only)	91.89	102.27	1.98**
Amount Sent to the Group (no info only)	97.02	100.04	0.56
Deviation Proposed (info only)	-22.01	-9.91	1.68*

Notes:
$^{***}p < 0.01;^{**}p < 0.05;^{*}p < 0.1$. Column 2 and 3 shows the average decision made by females and males respectively. Column 4 shows the comparison of means using a t-test.

Table 6: Decisions in the Public Goods game. Male versus Female Mukhiya Villages

	Female Mukhiya Villages (1)	Male Mukhiya Villages (2)	Comparison of Means (t-tests) (3)
Panel A: Leaders Only			
Amount Proposed	112.82	117.05	0.59
Amount Proposed in full information	112.01	114.36	0.24
Amount Proposed in own information	121.6	111	1.01
Deviation Percent	-21.46	-19.64	0.536
Amount Sent to the Group	105.19	106.83	0.231
Deviation Proposed	-11.86	-5.99	0.695
Deception	0.507	0.480	0.410
Deviation Proposed (where deception=1)	-59.5	-57.76	0.237
Deception Strong	0.493	0.461	0.489
Panel B: Citizens Only			
Amount Sent to the Group	95.65	100.83	1.369
Deviation Percent	-27.13	-24.81	1.09
Deviation Proposed	-21.40	-11.98	1.78*
Deception	0.597	0.565	0.84
Amount Sent to the Group by females	94.6	94.36	0.04
Amount Sent to the Group by males	96.70	107.35	2.03**
Amount Sent to the Group under a Male Leader	94.31	100.70	0.82
Amount Sent to the Group under a Female Leader	91.08	104.04	1.84*
Deviation Proposed under a Male Leader	-20.23	-14.85	0.513
Deviation Proposed under a Female Leader	-18.32	-9.16	0.91
Amount Sent to the Group (info only)	92.72	102.40	1.85*
Amount Sent to the Group (no info only)	98.27	98.95	0.12
Deviation Proposed (info only)	-19.29	-11.96	1.01

Notes:
$^{***}p < 0.01;^{**}p < 0.05;^{*}p < 0.1$. Column 2 and 3 shows the average decision made by participants in female Mukhiya villages and male Mukhiya villages respectively. Panel A reports the results for those participants assigned the role of leader while Panel B reports the results for citizens. Column 4 shows the comparison of means using a t-test.

Table 7: Attitudes and Services in Male and Female Mukhiya Villages

	Women Power Better (1)	GP service High (2)	GP Service Total (3)	Women too Much Power (4)
Panel A				
Female	0.048	-0.068	-0.159	0.097***
	(0.030)	(0.042)	(0.125)	(0.030)
Female mukhiya village	-0.041	-0.005	-0.114	0.061
	(0.034)	(0.052)	(0.161)	(0.044)
Sample Size	952	952	952	952
Panel B:				
Female	0.053	-0.012	0.017	0.118**
	(0.049)	(0.058)	(0.163)	(0.053)
Female mukhiya village	-0.036	0.045	0.041	0.079
	(0.044)	(0.061)	(0.194)	(0.057)
Female × Female mukhiya village	-0.009	-0.099	-0.310	-0.037
	(0.062)	(0.062)	(0.197)	(0.066)
Females: Female mukhiya village – Male mukhiya village	-0.045	-0.054	-0.269	0.042
	(0.048)	(0.059)	(0.183)	(0.053)
Sample Size	952	952	952	952

Notes:
Difference estimates from OLS regression presented. Column 1- Dependent variable: Dummy variable =1 if a participant agrees or strongly agrees with the statement that villages where women have more power perform better. Column 2- Dependent variable: Dummy variable =1 if a participant or his/her household benefited from 2 or more government services. Column 3- Dependent variable: The total number of government services received by a household. Column 4- Dependent variable: If a participant agrees or strongly agrees with the statement in this village women have too much political influence. Regressions in Panel A control for gender of the participant and the gender of the Mukhiya. Regressions in Panel B also control for interaction of the gender of the citizen and that of the Mukhiya. Female Mukhiya*Female can be interpreted as the effect of male in female Mukhiya villages vesus males in male Mukhiya villages. All regressions also control for set of individual and household characteristics (age, own educational attainment, current work status, income earned in the last month, caste and religion amount proposed by the leader and for district fixed effects. Robust standard errors in parenthesis. $^{***}p < 0.01;^{**}p < 0.05;^{*}p < 0.1$.

Table 8: Citizen Contribution to the Group Account

	All (1)	All (2)	Male (3)	Female (4)
Group Leader Female - Group Leader Male	-2.863			
	(4.722)			
Males: Group Leader Female - Group Leader Male		-13.342*		
		(8.191)		
Females: Group Leader Female - Group Leader Male		5.557		
		(8.000)		
Male Mukhiya Village: Group Leader Female - Group Leader Male			0.349	0.871
			(12.137)	(11.979)
Female Mukhiya Village: Group Leader Female - Group Leader Male			-24.343**	9.427
			(10.876)	(10.179)
Sample Size	714	714	359	355

Notes:
$^{***}p < 0.01;^{**}p < 0.05;^{*}p < 0.1$. Difference estimates from OLS regression presented. Dependent variable: Contribution to the group account by citizens (in stage 2 of the public goods experiment). Regressions in columns 1 and 2 control for gender of the citizen and gender of the group leader. Regressions in column 2 also control for interaction of the gender of the citizen and that of the group leader. Regressions in columns 3 and 4 control for the interaction of the gender of the group leader and the gender of the village mukhiya. All regressions also control for set of individual and household characteristics (age, own educational attainment, current work status, income earned in the last month, caste and religion, amount proposed by the leader and for village fixed effects. Sample restricted to citizens. Robust standard errors in parenthesis.

Table 9: Citizen Deviation from Leader Proposal

	All (1)	All (2)	Male (3)	Female (4)
Group Leader Female - Group Leader Male	1.456			
	(4.134)			
Males: Group Leader Female - Group Leader Male		-7.334		
		(6.973)		
Females: Group Leader Female - Group Leader Male		7.382		
		(6.230)		
Male Mukhiya Village: Group Leader Female - Group Leader Male			-0.496	2.956
			(8.970)	(9.388)
Female Mukhiya Village: Group Leader Female - Group Leader Male			-13.564	13.393*
			(9.724)	(7.151)
Sample Size	711	711	359	355

Notes: Difference estimates from Tobit regression presented. Dependent variable Percent Deviation = 100 × (Amount contributed to the group account - Amount proposed)/Amount Proposed. Deviation percent < 0, otherwise deviation percent is equal to zero. Regressions in columns 1 and 2 control for gender of the citizen and gender of the group leader while column two also includes an interaction between the gender of the group leader and the gender of the citizen. Regressions in columns 3 and 4 include an interaction between the gender of the group leader and the gender of the village mukhiya. All regressions also control for set of individual and household characteristics (age, own educational attainment, current work status, income earned in the last month, caste and religion, amount proposed by the leader and for village fixed effects. Sample restricted to citizens. Robust standard errors in parenthesis. $^{***}p < 0.01;^{**}p < 0.05;^{*}p < 0.1$.

Table 10: What Explains Male Bias?

	Male in Female Mukhiya Villages (1)	Male in Male Mukhiya Villages (2)	Female in Female Mukhiya Villages (3)	Female in Male Mukhiya Villages (4)
Panel A: Villages with women leaders are better governed				
Women Better Govern: Group Leader Female - Group Leader Male	-30.671**			
	(13.212)			
Women Better Govern: Group Leader Female - Group Leader Male		0.495		
		(15.093)		
Women Better Govern: Group Leader Female - Group Leader Male			12.767	
			(11.930)	
Women Better Govern: Group Leader Female - Group Leader Male				-8.139
				(11.310)
Panel B: Benefitted from more than 2 GP schemes				
GP service High: Group Leader Female - Group Leader Male	-27.559*			
	(16.562)			
GP service High: Group Leader Female - Group Leader Male		-24.995		
		(16.209)		
GP service High: Group Leader Female - Group Leader Male			-12.942	
			(17.605)	
GP service High: Group Leader Female - Group Leader Male				6.662
				(17.411)
Panel C: Women have too much political influence				
Women Too Much Influence: Group Leader Female - Group Leader Male	-58.389***			
	(15.803)			
Women Too Much Influence: Group Leader Female - Group Leader Male		11.217		
		(21.034)		
Women Too Much Influence: Group Leader Female - Group Leader Male			8.726	
			(12.017)	
Women Too Much Influence: Group Leader Female - Group Leader Male				3.025
				(14.096)

Notes:
Difference estimates from OLS regression presented. Dependent variable: Contribution to the group account by citizens (in stage 2 of the public goods experiment).Regressions in Panel A include dummy Women Better Govern and interaction with gender of group leader; those in Panel B include dummy GPservice High and interaction with gender of group leader; and finally those in Panel C include dummy Women Too Much Influence and interaction with gender of group leader. All regressions control for gender of the group leader, set of individual and household characteristics (age, own educational attainment, current work status, income earned in the last month, caste and religion amount proposed by the leader and for village fixed effects. Sample restricted to citizens. Robust standard errors in parenthesis. $^{***}p < 0.01;^{**}p < 0.05;^{*}p < 0.1$.

Table 11: Tokenism

	(1)	(2)
Female	0.030	0.059**
	(0.026)	(0.029)
Female Mukhiya Village	0.136***	0.160***
	(0.043)	(0.040)
Female Mukhiya × Female		-0.052
		(0.044)
Females: Female Mukhiya village – Male Mukhiya village		0.109*
		(0.056)
Sample Size	867	867

Notes:
Difference estimates from OLS regression presented. Dependent variable: Is a dummy variable = 1 if a participant believes the most influential person within their village is female. Column 1 controls for gender of the participant and gender of the Mukhiya. Column 2 also includes an interaction between the gender of the participant and gender of the Mukhiya. All regressions control set of individual and household characteristics (age, own educational attainment, current work status, income earned in the last month, caste and religion and for district fixed effects. Robust standard errors in parenthesis. $^{***}p < 0.01;^{**}p < 0.05;^{*}p < 0.1$.

Table 12: Citizen Behavior. Intensity of Exposure

	Male (1)	Female (2)
Group Leader Female Group Leader Male in No Female Mukhiya Village	-0.073	0.928
	(12.124)	(12.028)
Group Leader Female Group Leader Male in One Female Mukhiya Village	-41.651***	3.162
	(11.845)	(12.040)
Group Leader Female Group Leader Male in Two or more Female Mukhiya Village	21.945	24.566
	(19.702)	(18.074)
Sample Size	359	355

Notes:
Difference estimates from OLS regression presented. Dependent variable: Contribution to the group account. Regressions control gender of the group leader, interaction of the gender of the group leader and the number of female mukhiyas in the last 3 elections and for set of individual and household characteristics (age, own educational attainment, current work status, income earned in the last month, caste and religion, amount proposed by the leader and for village fixed effects. Sample restricted to citizens. Robust standard errors in parenthesis. $^{***}p < 0.01;^{**}p < 0.05;^{*}p < 0.1$.

Table 13: Leader Behavior. Deception

	Deception (1)	Deception Strong (2)	Deception (3)	Deception Strong (4)	Deception (7)	Deception Strong (8)
Female Male	0.1992**	0.184**				
	(0.085)	(0.087)				
Female Male group leaders in Own Information Treatment			0.168	0.141		
			(0.100)	(0.111)		
Female Male group leaders in Full Information Treatment			0.230**	0.226**		
			(0.112)	(0.110)		
Female Male group leaders in Male Mukhiya Village					0.125	0.110
					(0.142)	(0.142)
Female Male group leaders in Female Mukhiya Village					0.2521***	0.236***
					(0.181)	(0.081)
Sample Size	238	238	238	238	238	238

Notes:
Difference estimates from OLS (Linear Probability) regression presented. Deception is a dummy variable that takes the value of 1 if (Amount contributed to the group account - Amount proposed) ¡ 0. Deception Strong is a dummy variable that takes the value of 1 if (Amount contributed to the group account - Amount proposed) ¡ -10. Regressions in columns 1 and 2 include dummies for gender of the leader and for full information treatment; those in columns 3 and 4 also control for the interaction of the gender of the leader with the treatment dummy. Finally regressions in columns 5 and 6 control for the interaction of the gender of the group leader and the gender of the village mukhiya. All regressions control for set of individual and household characteristics (age, own educational attainment, current work status, income earned in the last month, caste and religion, amount proposed by the leader and for village fixed effects. Sample restricted to group leaders. Robust standard errors in parenthesis. $^{***}p < 0.01;^{**}p < 0.05;^{*}p < 0.1$.

Table 14: Percent Deviation from Proposed Contribution by Group Leaders

	(1)	(2)	(3)
Female - Male	18.180**		
	(8.691)		
Female Male in Own Information Treatment		-5.240	
		(6.145)	
Female Male in Full Information Treatment		-6.781	
		(6.3357)	
Female Male in Male Mukhiya Village			-5.112
			(13.883)
Female Male in Female Mukhiya Village			-26.957***
			(7.793)
Sample Size	237	237	237

Notes:
Difference estimates from Tobit regression presented. Dependent variable Percent Deviation = 100 ? (Amount contributed to the group account - Amount proposed)/Amount Proposed. Deviation percent ¡0, otherwise percent deviation is equal to zero. Regressions in columns 1 and 2 include dummies for gender of the leader and for full information treatment; those in columns 3 and 4 also control for the interaction of the gender of the leader with the treatment dummy. Finally regressions in columns 5 and 6 control for the interaction of the gender of the group leader and the gender of the village mukhiya. All regressions control for set of individual and household characteristics (age, own educational attainment, current work status, income earned in the last month, caste and religion, amount proposed by the leader and for village fixed effects. Sample restricted to group leaders. Robust standard errors in parenthesis. $^{***}p < 0.01;^{**}\ p < 0.05;^{*}\ p < 0.1$.

Table 15: Effect of Increased Exposure to Female Mukhiya on Group Leader Behavior

	Deception (1)	Deception Strong (2)	Percent Deviation (3)
Female Male in No Female Mukhiya Village	0.130	0.107	-4.826
	(0.104)	(0.104)	(9.783)
Female Male in One Female Mukhiya Village	0.264**	0.241**	-30.248***
	(0.109)	(0.109)	(9.266)
Female Male in Two or more Female Mukhiya Village	0.225	0.233*	-21.292*
	(0.162)	(0.138)	(12.365)
Sample Size	238	238	237

Notes:
Difference estimates from OLS regression presented in column 1 and 2 while column 3 utilises a Tobit regression. Dependent variables: Deception = 1 if Amount contributed to the group account - Amount proposed ¡ 0. Deception Strong = 1 if Amount contributed to the group account - Amount proposed ¡ -10. Percent Deviation = 100 ? (Amount contributed to the group account - Amount proposed)/Amount Proposed. Deviation percent ¡0, otherwise percent deviation is equal to zero. Regressions control gender of the group leader, interaction of the gender of the group leader and the number of female mukhiyas in the last 3 elections and for set of individual and household characteristics (age, own educational attainment, current work status, income earned in the last month, caste and religion, amount proposed by the leader and for village fixed effects. Sample restricted to group leaders. Robust standard errors in parenthesis. $^{***}p < 0.01;^{**} p < 0.05;^{*} p < 0.1$.

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