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Social Identity and Governance: The Behavioral Response to Female Leaders*

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Abstract:

This paper uses data from artefactual field experiments and surveys conducted in 61 villages in India to examine whether men and women respond differently to women as leaders. We investigate the extent to which behavior towards female leaders is influenced by experience with women in leadership positions. We find evidence of significant male backlash against female leaders, which can be attributed to the transgression of social norms and in particular, a violation of male identity, when women are assigned to positions of leadership through gender based quotas. Increased exposure to female leaders reduces the extent of bias.

Keywords: Gender, Governance, Leaders, Affirmative action, Male backlash, Artefactual field experiment, India.
JEL Classification Numbers: O12, C93, J16.

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1 Introduction

Women in leadership positions often make different policy choices compared to men.[1] Female leaders can potentially alter the nature of governance, resulting in substantial changes to the kinds of public services provided. The opportunities for women to be leaders are however often constrained, both in developed and developing countries.[2] To counter this, gender based quotas have been introduced in leadership positions. Prominent examples of such quotas are in France, Spain, Norway and India.[3]

Despite a substantial literature comparing the policy choices of male and female leaders, relatively little is known about the behavioral response to women as leaders. Do individuals react differently to male and female leaders, and if so, why? Is behaviour towards female leaders influenced by experience with women in leadership positions? Does extended exposure to women leaders change male and female reaction to female leaders?

The behavioral responses of citizens to women in leadership positions are important, since they might enable or hinder the effectiveness of women in these roles. If citizens do not cooperate with female leaders, then long-term economic and social relationships may be destroyed, with adverse consequences for social welfare. Conversely, greater willingness to accept and work cooperatively with female leaders may facilitate their engagement with policy and encourage future female leaders. Our paper contributes to this important debate by focusing on the relationship between gender and political leadership, with particular emphasis on the behavioral reaction to female leaders.

We conduct an artefactual field experiment on leadership in public good provision in villages in the Indian state of Bihar. The experiment is set against the background of a natural policy experiment (the 73^{rd} Constitutional Amendment in India, enacted in 1992) that introduced quotas for women in village headship positions.[4] We invite men and women residing in villages located in three districts of the state to participate in a modified one-shot public goods experiment where one group member is randomly selected as the leader.[5] The other

[1] See, for example, the evidence presented in Lott and Kenny (1999) and Edlund and Pande (2001). Pande and Ford (2012) conclude that female leaders have significant policy influence although there is considerable heterogeneity in the strength and type of this effect.

[2] Women are under represented in the political sphere in both developed and developing countries (as of 2014 women comprise 22% of the members of the UK House of Commons, 18% of the US Congress and 11% of the Lok Sabha or National Parliament of India). The corporate sector and academia also suffer from considerable under representation of women in leadership positions (Bertrand 2009; Ginther and Kahn 2014).

[3] In France the *parity law* required parties to field the same number of male and female candidates in all elections; the *equality law* in Spain mandates a 40% female quota on electoral lists in towns with population above 5000; in Norway 40% of seats on corporate boards of publicly listed companies are reserved for women; and in India quotas for women are imposed in village council headship positions.

[4] Section 2.2 provides more details on reservation for women that are specific to our setting.

[5] Several recent papers have used experimental methods to analyze different aspects of leadership (Güth et al. 2007; Levy et al. 2011; Meidinger and Villeval 2002; Jack and Recalde 2014; Grossman et al. 2015). These typically involve a single centrally observed player sending a signal to (generally) a group of citizens. The leader's

group members are designated as citizens. There are equal number of male and female leaders and each group consists of two men and two women. The leader proposes a non-binding contribution to the public good and all group members are informed of the leader's proposed contribution. Then all group members, including the leader, choose their actual contribution. By revealing the leader's gender in the treatment sessions and not in the control sessions, we are able to identify the impact of women's leadership on citizens' contributions. Additionally, participants might bring their preconceptions and prejudices relating to a female village head into the sessions. To exploit this, we use the random allocation of women to the position of the head of the village council as a second source of exogenous variation in exposure to female leaders.

We find a large and statistically significant behavioral response to women as leaders. Men contribute significantly less to the public good when women, rather than men, are group leaders. We term this behaviour *male backlash*. This behaviour can largely be explained by social norms and social identity. We use a novel method of belief elicitation (Krupka and Weber 2013) to infer social norms relating to the role of men and women as leaders. In general, we find that participants believe that it is more socially appropriate for men to coorperate less with female leaders than with male leaders. Additionally compared to women, men believe that it is more socially inappropriate for women to become village heads. The results on male bias against female group leaders, are considerably stronger in villages that have been exposed to female heads (*mukhiyas*, also known as *pradhan* or *sarpanch*). Our analysis suggests that male backlash is driven by ingrained social norms associated with male identity in these societies, and not because of either the ineffectiveness of women leaders, or the perception that they are ineffective leaders or tokens for powerful elites. The assignment of women as leaders threatens the identity of men who believe these positions of power are directly associated with their masculinity and identity, thereby creating resentment.

An interesting twist to our findings is that male bias disappears with greater exposure to female leaders. This suggests that despite entrenched social norms against women leaders, persistent engagement with female leaders, perhaps via affirmative action policies, can potentially change social norms relating to identity and gender roles within the society. While this paper focuses on an in depth analysis of citizens response to male and female leaders, the experimental approach used can also identify the actions of the leader separate from other confounding factors. As summarised in Gangadharan et al. (2015a), female leaders are more likely to engage in deceptive behavior, perhaps because they anticipate underinvestment by male citizens.[6] Moreover, deception by female group leaders is significantly greater following exposure to female village heads.

effort (contribution) is commonly observed prior to citizens' effort.

[6] *Deception* is defined by the leader contributing less than their own proposal.

An extensive literature examines the effect of gender-based quotas in the context of local governments in India. The policy has increased investment in public goods demanded by women (Chattopadhyay and Duflo 2004), improved educational attainment of children (Clots-Figueras 2012; Beaman et al. 2012), increased reporting of and arrests for crimes against women (Iyer et al. 2012), reduced male subconscious biases about the appropriateness of women being leaders, challenged prevailing social norms (Beaman et al. 2009), and reduced party bias against women candidates and increased the share of female candidates from major political parties in subsequent elections (Bhalotra, Clots-Figueras, and Iyer 2013). However, these results might be different by region or take time to materialize. Using data from South India, Ban and Rao (2008) fail to find evidence that women leaders favour female-preferred goods or significantly impact government services. Bardhan, Mookherjee, and Parra Torrado (2010) and Bardhan and Mookherjee (2012) find no impact of female reservation on public good provision in the villages of West Bengal. Rather, village councils reserved for women perform worse in targeting government programs towards the most disadvantaged households, including female headed households. Afridi, Iversen, and Sharan (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 had only one female reserved leader.[7]

Our paper contributes to this literature by providing novel insights on behavioral challenges to women's leadership. First, the randomized assignment of leadership status in the experiment allows us to avoid selection issues relating to the identity of the leader, and we can therefore interpret the actions of the citizens in response to the gender of the leader as causal.[8] Second, the experimental approach allows us to explicitly observe and separately identify the actions of the citizens from other social and environmental factors, which is difficult to do in an

[7]The effect of gender based quotas in European countries is also mixed. Casas-Arce and Saiz (2015), using the natural experiment provided by the equality law in Spain show that parties that increased the share of women in their electoral lists as a result of the quota witnessed an increase in vote share. However they also find that women were significantly less likely to run at the top of lists that were favoured to win seats. This is consistent with the evidence from France. Murray (2008) shows that since the parity law refers only to the number of women candidates and not the number of elected women candidates, parties reacted to this law by placing women disproportionately in difficult or unwinnable seats. Matsa and Miller (2013) find that the quota on board member positions in Norway did not affect corporate decisions in general, with the exception of employment policies. Firms affected by the female board quota undertook fewer workforce reductions, leading to lower short-term profits. This policy however has also been associated with an exodus of firms listed on Norway's stock exchange, down from 563 firms in 2003 to 179 in 2008 (Economist 2014).

[8] A critical challenge in analyzing the responses of citizens to female leaders is that the actions of the female leaders are rarely observed isolated from other concurrent actions and trends. Additionally, women who self-select as candidates for political office might be systematically different in terms of their preferences, aspirations or taste for competition. Even without self-selection, women might be tokens of other powerful interests in the village if men place them as their surrogates in political office (Ramesh and Ali 2001; Ban and Rao 2008). Therefore, isolating the impact of gender from the influence of other factors can be difficult. With relatively few women competing for leadership positions, this problem becomes particularly acute since citizens have little information about the leadership qualities of the average female candidate.

observational study. By conducting the experiments in a field setting, we can place the experimental findings in the context of participants' actual exposure to female leaders in headship positions of local village councils. Third, combining survey data with participants' actions in the experiment allows us to examine different reasons for resistance to women's leadership. Finally, we use a recently developed unique approach to collect evidence on social norms and identity that can largely explain the behavior of participants in the artefactual field experiment.

2 Research strategy

Our research strategy is designed to address two key questions. First, are there gender differences in the behavioral response to female leaders and if yes, can we identify reasons for this difference? Second, are the responses affected by the intensity and length of exposure to female leaders?

To answer these questions, we conduct two artefactual field experiments, which we call *the leadership experiment* and *the belief elicitation experiment*. The leadership experiment, described in more detail in subsequent sections, is designed to examine the effects of gender on behavior towards leaders in a public goods game. The belief elicitation experiment, described in Section 2.6, identifies the prevailing social norms associated with gender and leadership in this setting, and helps explain the findings from the leadership experiment.

2.1 Experimental design (The leadership experiment)

The task in the leadership experiment is based on the linear voluntary contribution mechanism (VCM) experiment or a public goods experiment. 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 ($\approx$ US$ 3.50; EUR 2.50) and their task is to allocate this endowment between an individual account and a group account. Each rupee placed in the individual account earns Rs. 1 for the subject. Contributions to the group account are aggregated and doubled, then divided equally amongst all group members. Each participant faces the following payoff function

$$\pi_i = e - g_i + \beta \sum_n g_j \tag{1}$$

where g_i is the decision variable (the amount subject i contributes to the group account), e is the endowment common to all participants, β denotes the returns to the amount contributed to the group account, n is the group size and $\sum_n g_j$ is the sum of the n individual contributions to the group account. The dominant strategy Nash equilibrium is for each subject to invest their entire endowment in the individual account and zero in the group account as the private returns

are higher than the individual returns from the public good. However, the socially efficient outcome is to contribute everything to the group account, as the total returns received by the group from any public good allocation exceed the private returns. Given the parameters of our experimental design ($\beta = 0.5; n = 4$) $\beta < 1 < n\beta$, the payoff function given by equation (1) represents a social dilemma.

Of the four members in each group there are two males and two females, and all participants are informed of this group composition. One member of the group is randomly selected to be the leader. Each group therefore consists of one leader and three non-leaders (henceforth, *citizens*). All subjects are informed about their role in the experiment – leader or citizens. All decisions are made in private, and anonymity is maintained at all levels of decision making. More details of the experimental procedure are presented in Section 2.4.

The experimental task is in 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 leader's 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 to the group account.

The experiment consists of a treatment (*Gender of group leader revealed*) and a control (*Gender of group leader not revealed*). In all sessions half the groups have male leaders while the remaining groups have female leaders and subjects are randomly assigned to different groups. In all sessions, participants are given instructions sheets with own gender symbols on the front page making gender prominent. This was done prior to the leader making his or her proposal. In the treatment sessions, in addition, the citizens are informed of the leader's gender before the leader makes his or her proposal.[9] The gender composition of the group and the proportion of male and female led groups is the same across treatment and control sessions, the only difference is that gender of the leader is revealed in the treatment sessions.

The proposed contribution by the leader is non-binding, akin to cheap talk. Standard economic theory therefore suggests that the proposal stage should have no impact on citizens' contribution decision. The leader also knows that the group members may not follow his/her 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 all the treatments.

Recent experimental evidence however suggests that leaders' suggestions, even though non-binding, can help increase group contributions (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 a focal point for contributions. Hence, citizens might be more likely

[9] A number of recent papers show that priming gender, ethnicity or religion can cause changes in the behaviour of participants (Benjamin et al. 2010; Burns 2012; Chen et al. 2014).

to choose higher levels of contribution, and leaders anticipating this, may contribute more as well leading to greater public good provision in both treatments. In such a scenario, the leader's gender could effect citizen's contributions, since beliefs about the leaders' social appropriateness as well as their potential for deception are potentially influenced by perceptions about the effectiveness of male and female leaders.

2.2 Setting and village selection

The leadership experiment was conducted in 40 villages in the districts of Gaya, Madhubani and Khagaria of Bihar. These districts (see Figure 1) are approximately equidistant from the capital city of Patna and they have similar geographic characteristics.[10] Almost 10% of India's population resides in Bihar and it is one of the fastest growing states in India with an average GDP growth of 10% between 2010 and 2014.

Each village within Bihar (and India) is governed by a village council or Gram Panchayat (GP). The village councils are elected through universal adult franchise and are accountable to more than 5,000 people, sometimes across several villages. The councils are responsible for the provision of public services, identifying villagers below the poverty line and resolving local disputes. Each village council consists of a head (mukhiya), a deputy (upmukhiya) and councillors or ward members. Village councils do not enjoy much taxation power and about 95% of their revenue comes from state and national grants. Therefore its principal job is to decide the allocation of its yearly grant across different local public goods and implement the projects. While all the council members play a role in deciding the final allocation of the resources, the head of the village council can exert substantial influence in decision-making. This is because the head of the village council heads the sub-committee of planning and finance within the council and all the proposed projects must have the approval of this subcommittee for them to be implemented. Besley, Pande, and Rao (2012) and Chattopadhyay and Duflo (2004) provide evidence of considerable discretionary power enjoyed by the head of the village council. Hence we view the head of the village council to be the effective policymaker and leader of the council.

The village council members, including the head, are elected every five years in a local election. The 73^{rd} amendment to the Indian Constitution in 1992 reserved one third of all positions of the village head for women, i.e., only women can run as candidates and become heads in the reserved villages. In 2006, the Bihar government increased the quota for women in positions of village head to 50%.[11] As of 2014, Bihar has had three village council elections

[10]For example, the share of land allocated to the cultivation of rice, wheat and maize, the three main crops grown in Bihar, is comparable in these three districts.

[11] The 73^{rd} amendment to the Indian constitution also includes reservations for Scheduled Castes (SC) and Scheduled Tribes (ST), which are official designations given to groups of historically disadvantaged people in the country. The Constitution of India establishes general principles of affirmative action for SCs and STs and the

(in 2001, 2006 and 2011). In Bihar, women are unlikely to be elected as village heads without reservation. For instance, following local elections in 2006, 50.06% of all positions of village head were occupied by women, not different from the mandated 50%, implying that the village head's gender is decided exogenously by the reservation quota.

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 where the experimental sessions were conducted. Only one session was conducted in each village in order to prevent information spillover across sessions, which could result in considerable loss of experimental control and precision. In our sample the match between a village and a village council is unique as we only conducted a single session in one village of the village council. We define a village to be a female headed village if it had at least one female head in the last three village council elections. A male headed village has therefore never had a female head and citizens in male headed villages consequently have very limited experience with women as leaders. Of the 40 villages where we conducted our experimental sessions, 17 (42.5%) villages have had no female head; 16 (40%) have had one female head; five (12.5%) have had two female heads and two (5%) have had all three female heads. As described in footnote 11, in every election, village councils are randomly allocated to one of the three lists – reserved for SC, reserved for ST and unreserved. Within each list, half the village head positions are randomly reserved for women so the head's position can be reserved for women in consecutive elections.

Column 1 in Table 1 presents average village characteristics for the experimental villages. The average village in our sample consist of 566 households with approximately five members per household. Men outnumber women in these villages, a third of the households are SC. Virtually no STs live in the sample villages. The literacy rate is rather low: on average 44% of the individuals in the village are literate, with men more likely to be literate than women.

Columns 2–11 of Table 1 present the results of several randomization tests that examine if the sample villages are matched on different dimensions in terms of observable village level characteristics. First, columns 2 and 3 present the village level averages separately for the treatment (gender revealed) and control (gender not revealed) villages. Column 4 reports the t-test for the difference. There are no statistically significant differences in the village level characteristics between the treatment and control villages.[12] Column 7 shows that the sample is balanced across male and female headed villages on observable characteristics. Finally, column 11 shows the sample is balanced on observable characteristics by the number of female heads over the last three elections: the χ^2 statistic cannot reject the null hypothesis that the

proportion of head of village council seats to be reserved for SCs and STs in a state are given by their population shares in the state. In each local election cycle, village councils are randomly assigned to one of three categories: SC reserved, ST reserved and unreserved.

[12] Recall that only one session was conducted in each village and therefore the villages can be categorized as either a treatment or control village by session.

observable characteristics are similar on average across the different categories of villages.

2.3 Participant recruiting

To recruit participants for the experiment, two members of the research team (one male and one female) visited each village the day before the scheduled session. Each visit included informing villagers of the event and distributing flyers containing information about participation requirements including eligibility (18 or older and literate), remuneration, time and location of the experimental session. Flyers were posted at prominent village landmarks such as community centers, bus stops, tea shops, temples and mosques. See Figure A.1 for the English and Hindi version of the flyers that were circulated.

2.4 Procedure

Each of the 40 sessions had 24 participants, who were divided into groups of four, with each group comprising of two men and two women. We collected experimental data from 239 groups and 956 individuals.[13] One member of each group was randomly selected as the leader. In the control sessions, the gender of the leader was not revealed in any of the six groups. The gender of the leader was revealed to the group members in the treatment sessions. In all sessions, three of the groups had a male leader while the other three had a female leader. To ensure anonymity of the leader, in all sessions, decisions on proposed contributions in the first stage were made after the quiz questions were answered but before collecting the answer sheets. After all leaders made their decision, the sheets (including answers to quiz questions) were collected from all participants and sorted in private. At the beginning of the second stage the leader's proposed contribution was revealed to the other three members of the group. Then the second stage contribution decision was made simultaneously by all participants. In all interactions of the experimenter with the participants, care was taken to not single out any participant, so as to preserve the anonymity of the leader and the group members. Decision sheets were handed out and collected from everyone simultaneously.

Subjects also participated in a separate trust game before the leadership experiment but were not provided any feedback on this task.[14] Subjects were paid for only one task, randomly

[13] Upon arrival, participants were screened for eligibility, and then their names were recorded on a participant list. Once seated, they were given stationary and a number tag representing their identification number. The identification number helped keep all the data for participants together and the matching of this number with each participant was random. The experimenter read aloud instructions to establish common knowledge. To determine whether subjects understood the instructions, each participant answered a set of quiz questions in private before the experiment commenced. The experimenter cross-checked the answers and started the experiment once satisfied that all subjects understood the task. Note that one village had 20 participants. Additionally, the survey data for one participant could not be used, though experimental data is available for this subject. We therefore have experimental and survey data for 955 participants.

[14] The treatment and control scenarios in the trust experiment were similar to the leadership experiment. We

chosen at the end of the experiment. Finally, an incentivized risk task was embedded in the post-experiment survey (Gneezy and Potters 1997). The average earnings of participants was Rs. 420, or approximately two days wage for a semi-skilled laborer. Including the post-experiment surveys, each session lasted on average for four hours. Data was entered twice and subsequently checked and reconciled by two different research assistants. The results were compared against hard copies in case of inconsistencies.

2.5 Survey data

In addition to the experiment, we collected data using three surveys.[15] 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. A community survey collected information from the village head (or another influential person if the village head was unavailable) on characteristics such as population, public programs implemented by the village council, sources of village income etc. Finally, the research team conducted an infrastructure survey to record the coordinates of the key village infrastructure landmarks.

2.6 Belief elicitation experiment

To investigate social norms associated with women in leadership positions, as well as potential barriers to female leadership, we conducted a second artefactual field experiment involving a coordination game and a belief elicitation task.[16] Following Krupka and Weber (2013), we use an incentivized methodology to identify social norms separately from realized behavior, and then use these elicited norms to predict behavior *a priori*. We conducted the belief elicitation experiment in villages *similar* to those where we conducted the leadership experiment.[17]

We collected data from 267 participants in 21 villages, approximately half of whom were females. The recruiting procedure was identical to the leadership experiment. The participants were presented with the leadership experiment and all possible actions were described. The participants did not make any decisions relating to the experiment. Instead, they were informed that villagers, similar to them and residing in villages similar to theirs, had already participated in the experiment. Then the participants completed three sets of tasks. The first two tasks

do not find any gender based differences in trust and trustworthiness. This implies that our results relating to the behavioral response to the gender of the leader are not driven by gender differences in trust and trustworthiness.

[15] The data from the surveys were directly entered into tablets, reducing data entry errors.

[16] The belief elication experiment was conducted on tablets using CORAL (Schaffner 2013).

[17] We conducted the belief elicitation experiment in 21 villages in the same three districts where the original leadership experimental sessions were conducted, approximately seven months after the leadership experiment. Table A.3 shows that the 21 villages where the belief elicitation experiment was conducted are similar to the original 40 villages where the leadership experiment was conducted on various observable characteristics.

described possible decisions made by subjects in the original leadership experiment and then required participants to rate the social appropriateness of these decisions.[18] All tasks were incentivized such that participants aim to match the response of others, similar to that in a coordination game. Those who gave the same response as that most frequently given by other men (Task 1) and other women (Task 2) in a similar baseline village received Rs. 200.[19] Task 1 can be interpreted as what people think men believe is socially appropriate, while Task 2 is what people think women believe is socially appropriate. Task 3 elicits general measures of social norms and identity in their village context. This task gathered information about social norms regarding female leaders, in a simple and relate-able context for villagers. Participants were given different vignettes on topics ranging from female leaders to identity. This task was also incentivized with participants being paid in accordance with the modal response of villagers in the baseline village (as defined in footnote 19).

3 Data

3.1 Baseline balance

Column 1 in Table 2 presents the means for the explanatory variables included in our regressions. Participants in the leadership experiment are on average 27 years old, from an average household size of 7.7 and predominantly Hindu (91%), with a mix of upper caste (26%), SC (24%) and Other Backward Castes (42.5%). Close to half the sample has completed high school, with evidence of significant intergenerational mobility in educational attainment. 39% percent of participants report being in paid employment, though a large proportion (63%) of participants did not earn any income in the month before the experimental session.

To examine whether the random assignment of participants to treatments was effectively implemented, column 4 of Table 2 reports differences in participant characteristics in sessions where the gender of the group leader was revealed and where it was not. Individuals assigned to the treatment and the control exhibit only minor differences on most characteristics and the overall F-statistic (0.42) cannot reject the joint hypothesis that the observable characteristics are similar on average across the two groups. Further, within the treatment (gender revealed) sessions, individuals were randomly assigned to male and female-led groups. Column 7 of

[18] Participants were asked to rate the appropriateness of a x citizen that contributes 0, 50, 100, 150 and 200 towards a x leader (where x is either male or female) as either *very socially inappropriate*, *somewhat socially inappropriate*, *somewhat socially appropriate* or *very socially appropriate*. We convert responses to numeric scores with *very socially inappropriate* = 1 and *very socially appropriate* = 4. So higher scores imply that people believe men (women) view a particular action as more socially appropriate.

[19] The session in the baseline village was conducted at the start of the belief elicitation experiment and this baseline village is in addition to the 21 villages we collected data from. In this village, participants were paid based on decisions made by others in the same session.

Table 2 shows no difference in terms of observable characteristics between subjects assigned to male and female-led groups, with an F-test (F-statistic = 0.65) failing to reject the null hypothesis that the observable characteristics are similar on average across the two groups. Column 10 of Table 2 reports no observable differences between individuals assigned to be leaders and those assigned to be citizens. Finally, the t-statistics in column 13 and the Kruskal-Wallis (K-W) statistics in column 17 do not offer evidence that participant characteristics were systematically different either across male and female headed villages or by the intensity of exposure to female village heads. These results suggest that we can interpret our findings as causal effects of having male and female leaders on contributions to group account.

3.2 Decisions in the leadership experiment

Table 3 presents the decisions made in the leadership experiment by male and female citizens.[20] Panel A focuses on overall decisions made in the experiment. Three findings emerge from this table. First, men contribute significantly more to the group account than women (column 3, row 1). Second, men contribute significantly more to the group account compared to women when the group leader is male (column 3, row 2), but there is no gender difference in contribution to the group account in female led groups (row 3). Third, men contribute significantly less to the group account when the group leader is female (column 2, row 4), while the contribution of women is not statistically different by group leader's gender (column 1, row 4). Figure 2 presents the distribution of the contribution to the group account by male and female citizens in male and female led groups. Using a two-sided Kolmogorov-Smirnov test, the null hypothesis of equality of distributons is rejected for male citizens ($p - value = 0.045$). The mass of the distribution of contributions to the group account for male citizens when the group leader is female lies to the left of that when the group leader is male. For female citizens, the null hypothesis of equality of the distributions cannot be rejected ($p - value = 0.985$)

Panels B and C report citizens' decisions conditional on residence in female and male headed villages. Men contribute significantly more to the group account than women in male headed villages (column 3, row 5). Men contribute significantly less to the group account in female headed villages than in male headed villages (see column 2, row 7). The contribution level of women however does not vary by the gender of the village head (column 1, row 7).

Column 2, row 13 shows that men contribute significantly less to female led groups in female headed villages, compared to male headed villages. On the other hand, column 2, row 12 shows no evidence of differential contribution by men in male headed groups across male

[20]The discussion in this section restricts the sample to the gender revealed sessions. In the control (gender of leader not revealed) sessions, male citizens contribute on average Rs 100.04 and female citizens contribute Rs 97.02 to the group account. This difference is not statistically significant ($p - value = 0.57$). In the analysis conducted in Section 4, we include data from all sessions.

and female headed villages. Finally, column 1, rows 12 and 13 shows no evidence of differential contribution by women across male and female headed villages, irrespective of the gender of the group leader. Figure 3 presents the distribution of the contribution to the group account by male and female citizens in male and female led groups, conditional on the gender of the village head. For female citizens (see Panel B of Figure 3) the null hypothesis of equality of distributions can never be rejected. For male citizens however the null hypothesis of equality of distributions is rejected for female headed villages ($p - value = 0.017$).

One striking feature consistent in all three Panels of Tables 3 is that men contribute differently to male versus female led groups and in male versus female headed villages. This behavior on the part of male citizens is suggestive of male backlash against female leaders. We examine these results in more detail in Section 4, where we use regression analysis to examine the behavior of female and male citizens in the leadership experiment. The multivariate regression approach controls for village fixed effects and helps avoid potentially confounding implications of heterogeneity across villages.

4 Empirical analysis

4.1 Effect of gender of the group leader

We examine gender differences in citizens' contribution to the group account by estimating the following regression:

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

where C_{ijk} is the contribution to the group account of citizen i belonging to group j in village k; $female_{ijk}$ is a dummy variable that denotes that the citizen is female; L^f_{jk} and L^m_{jk} are dummy variables that indicate if the group leader is female and male, respectively. Since the group leader's gender could have differential effects on the decisions made by male and female citizens, we add variables ($female_{ijk} \times L^f_{jk}$ and $female_{ijk} \times L^m_{jk}$) that interact the gender of the leader and that of the citizen. Thus, 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, $\beta_2 - \beta_3 < 0$ implies lower contributions by males in groups where the group leader is female compared to groups where the group leader is male. Correspondingly, $(\beta_2 + \beta_4) - (\beta_3 + \beta_5) < 0$ implies that female citizens contribute less in groups where the group leader is female compared to groups where the group leader is male. Note that in all regressions,

the reference category is the contribution of male citizens in a control session (where the gender of the group leader is not revealed). So β_1 captures the difference between the contributions of female and male citizens when the gender of the group leader is not revealed.[21]

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 results from estimating equation (2) are presented in Table 4. Column 1 shows that men contribute Rs. 13.34 ($\approx 7\%$ of their endowment) less to the group account when the group leader is female, compared to when the group leader is male, a difference that is statistically significant. In contrast, the gender of the group leader does not have a significant effect on the contributions of women. The regression results presented in column 1 of Table 4 therefore corroborate those presented in Table 3 and in Figure 2. This leads to the first result in our paper, which can be summarized as follows:

Result 1 *Men contribute significantly less to the group account when the group leader is female as compared to male. This can be interpreted as evidence of male backlash against female leaders.*

4.2 Effect of gender of the village head

Next, we examine whether the behavior of the citizens might depend on their perception of female leaders and norms relating to women as leaders. The main experience with female leaders for most participants in our experiment comes from women elected to positions in village councils, including the position of the village head. Thus, we investigate the extent that participant behavior is influenced by perceptions of or experience with female village heads. We modify equation (2) to control for exposure to female village heads by defining H_k^f as 1 if the village is female headed and 0 otherwise. The interaction of H_k^f with L_{jk}^f and L_{jk}^m determines the effect of the female village head on citizens' perceptions of female and male leaders.

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

[21] As a robustness check we conduct and report the results where citizens' deviation from leader's proposed amount is the dependent variable. See Table A.1 and the discussion in Section 4.3. These results are consistent with our main reported results.

In this specification, β_6 and β_7 capture the effect of a female and male group leader in a female headed village.[22] Hence, $(\beta_2 + \beta_6) - (\beta_3 + \beta_7) < 0$ implies that in a female headed village the citizen's contributions to the group account in female led groups are lower than those in male led groups. We estimate equation (3) separately for men and women and compute the difference estimates $\beta_6 - \beta_7$ and $(\beta_2 + \beta_6) - (\beta_3 + \beta_7)$ in the two cases.[23] Columns 3 and 4 of Table 4 present estimates for these difference effects for men and women, respectively.

The key finding is that men in female headed villages contribute Rs. 24.34 (or about 12% of their endowment) less to the group account when the group leader is female than when the group leader is male and this difference is statistically significant. In contrast, contributions to the group account by citizens of either gender are not significantly affected by the group leader's gender in male headed villages. Contributions by female citizens are unaffected by the gender of the group leader in either male or female headed villages. Result 2 can therefore be stated as follows:

Result 2 *Men in female headed villages contribute significantly less to the group account when the group leader is female as compared to male.*

4.3 Robustness to alternate dependent variables and additional issues

The main reported regressions use citizen's contribution towards the group rather than deviation from the leaders proposed contribution as the dependent variable. We do this for three reasons. First, approximately 30% of citizens contribute more than the amount proposed by their leader, while over 50% contribute less than proposed. Subjects who contribute more than the leader's proposal exhibit very different behavioral patterns than those who contribute less. The considerable heterogeneity in how citizens react to the leader's proposal makes deviation measures difficult to interpret. Second, regressions in which contribution to the group account is the dependent variable control for the amount proposed by the leader. Since groups are randomly allocated and we control for the amount proposed by the leader, if differences exist between group contributions, this can be attributed to the leader's gender. Third, villagers sampled here commonly work in communities and small teams in both their daily life and in performing other civic duties. The design of this experiment primes subjects both by assigning subjects to groups and by informing subjects that their group is assigned a random leader (and the leader's gender). Therefore, contribution to the group account could be interpreted as a measure of effort or attitude about the suitability of this leader.

That said, we examine the robustness of the results to using deviation from the leader's proposal as the dependent variable. This variable is 0 if the contribution to the group account

[22] The separate effects of female village head are included in village fixed-effects.

[23] Regression on the pooled data taking into account triple differences give very similar results, both qualitatively and quantitatively. These results are available on request.

is equal to or greater than the leader's proposal. The results in the bottom row of column 3 of Table A.1 show that in female headed villages, male citizens deviate more from the proposed contribution of the group leader when the group leader is female than when the group leader is male. While the sign of the estimate is in the right direction, the effect is not statistically significant.[24]

Next, the current specification includes village fixed effects to control for observed and unobserved sources of heterogeneity across villages. To explicitly examine the role of differences across villages, we estimate equations (2) and (3) with block fixed effects. These results are similar and available on request.

Further, one might question whether this backlash against female leaders is a manifestation of backlash against *any* form of affirmative action policies. For example, positions of village heads are also reserved based on caste. If backlash is based solely on the policy of reservation rather than gender of the village head then backlash towards village heads should also exist in villages with a caste reservation system. To examine this, we ask a number of different questions as a part of post experiment survey in the belief elicitation experiment. First, we asked the following question: *Do you agree with the following statement: "Villages where the chief position must be reserved for a female perform better than villages where the chief position is unreserved"?* We find that 56% of villagers in female headed villages at least agree with this statement compared to 66% of villagers in male headed villages and the difference is statistically significant ($p - value = 0.097$, using a two sided sign-rank test). This implies that experience with a female village head reduces the likelihood that villagers agree with the statement. We then ask *Do you agree with the following statement "Villages where the head position must be reserved for either ST/SC caste perform better than villages where the head position is unreserved"?* We find that villagers in caste reserved and unreserved villages do not have different perceptions about the effectiveness of the village head under the caste reservation policy ($p - value$ of difference = 0.51, using a two sided sign-rank test). This result suggests that backlash is not a result of resentment against affirmative action policies *per se*.

Finally, while not the focus of this paper, our findings are consistent with the actions of the leaders. We find that female group leaders are significantly more deceptive than male group leaders (deception as defined in footnote 6) and this behavior is driven by the choices made by the female group leaders in female headed villages. One possible reason for this deceptive behavior is that female leaders expect to be treated poorly (females in female headed villages may observe this around them), which leads to a self-fulfilling prophecy where female leaders behave in a negative manner contributing less than proposed. Alternatively, in environments where there are few opportunities for women to be leaders, they act myopically and take one-

[24] Interestingly, we find that female citizens deviate significantly more from the leader's proposed contribution if the group leader is a woman in female headed villages.

off decisions as they do not expect to be re-elected. A third explanation is that women usually observe leaders to be men and believe that by engaging in deceptive behavior they are emulating the male leaders around them. Gangadharan et al. (2015a) report these results in detail.

4.4 Understanding backlash

We combine the data from the belief elicitation experiment with post-experiment survey data on gender attitudes, opinions on leadership and governance, and services provided by the village council to understand male backlash against female leaders. We start with the analysis of the data from the incentivised belief elicitation experiment. Since the respondents in this experiment did not participate in the leadership experiment, we can identify the effect of social norms separately from realized behavior. Table 5 presents differences in participants' perceptions of mens' and womens' beliefs on whether specific contributions by male citizens to the group account are socially appropriate or not when the group leaders are female versus male.

The means presented in Panel A of Table 5 show that participants think men believe that contributing 50% or less of the endowment to the group account in the leadership experiment is more socially appropriate, when the group leader is a woman compared to a man. This pattern is not evident in Panel B that relates to perceptions about womens' beliefs.[25]

These beliefs are consistent with Result 1 in that male citizens contribute significantly less to the group account in a female led group; men incur lower social costs when they contribute less to female led groups compared to male led groups as they are deviating less from what is considered socially appropriate.

Panels C and D of Table 5 report differences in participants perceptions about men's contributions being socially appropriate depending on whether they resided in male headed villages or female headed villages. Our earlier result largely holds: we find that it is less socially costly for males to contribute 50% or less of their endowment towards female leaders compared to male leaders and this holds in both female and male headed villages.

Task 3 in the belief elicitation experiment allows us to examine beliefs associated with women as leaders by examining the response to the following two questions.[26]

1. Do you think men believe it is socially appropriate for women to become head of the village?

2. Do you think women believe it is socially appropriate for women to become head of the village?

[25] More than 50% of all subjects in both male and female led groups think that males contributing less than 50% to the group is at least somewhat socially inappropriate, indicating that a majority consider this behaviour to be socially inappropriate.

[26] We retain the earlier scale: very socially inappropriate (1), somewhat socially inappropriate (2), somewhat socially appropriate (3) and very socially appropriate (4).

The responses are very striking. Table 6 reports that all respondents uniformly think that men consider it is less socially appropriate for women to become the village head. For example, female respondents think that men give an average appropriateness score of 2.97 to this question as compared to a significantly higher score of 3.48 given by women. Male respondents also believe that men regard female village heads as significantly less appropriate as compared to how women regard them (scores of 3.16 versus 3.61). These results hold in both female and male headed villages. More generally, the results suggest that social norms against women in leadership positions lead men to cooperate less with female group leaders in the leadership experiment.[27]

Social norms that govern behaviour are however harmful towards female leaders even when the village head is a female. Since these negative perceptions are observed in both male and female headed villages, social norms by themselves are not sufficient to explain Result 2. This implies that while they can explain overall male backlash against female leaders, they have less power in explaining the differential backlash that is observed depending on the gender of the village head.

Barriers to female leadership might originate from gender related prejudice if assigning women in the position of village head impinges upon male identity. Since backlash found in the leadership experiment is only perpetuated by men and in female headed villages, a violation of male identity and as such social norms that govern male identity may further explain backlash behaviour. More generally, identity and social norms are intrinsically related because groups often develop their own norms that govern group behaviour. Identity and more specifically social identity refers to an individuals' own perception of self, based on his or her group membership (Tajfel 1973). Individuals' gender is a particularly strong identity. Being male or female in developing countries is often associated with group specific norms that govern behaviour such as the appropriate dress code and role within a village. These norms build group characteristics and enforce behavioural standards within the group. Conforming to these norms validate individuals' identity as group members. Perceived lack of conformity to group norms could be interpreted as a threat to group legitimacy. So when group identity is threatened, identity becomes more salient leading to stronger enforcement of group norms and antipathy to those seen as a threat (see Bisin and Verdier (2011) and references cited therein).

In our context, in both male and female headed villages, men are more likely to be the family decision makers and the main earning members, and therefore associate their identity with positions of leadership and power. Women selected as leaders may threaten the identity of

[27] Subjects completed a fourth task designed to elicit descriptive norms about female leaders by asking participants to estimate the decisions made by individuals who had participated in the original leadership experiment. This is a measure of perceptions or beliefs about the behavior that is expected in this situation. Participants were paid Rs. 200 if their decisions were within Rs. 10 of the average in the original experiment. Gangadharan et al. (2015b) discuss these results in more detail.

men. Male group identity becomes more salient as a result of this threat in female headed villages. Men respond to this identity threat by taking action against women leaders (contributing less to groups led by females).

We empirically examine the saliency of identity using two questions from Task 3 in the belief elicitation experiment.

1. Do you think other people believe it is socially appropriate for men to work as a home maker?

2. Do you think other people believe it is socially appropriate for men to work as a nurse?

If men perceive threats to their identity in female headed villages, they may seek to strengthen their identity. As a consequence, people may believe that a man working in predominately female occupations (like nursing or being a home maker) is less socially acceptable. In female headed villages 68% of respondents believe that men acting as home maker is socially inappropriate compared to 52% in male headed villages and this difference is statistically significant ($p - value = 0.02$, using a two sided sign-rank test). On the other hand, 72% of participants in female headed villages and 68% of participants in male headed villages believe that a man working as a nurse is socially inappropriate. While the effects are in the right direction i.e., more villagers in female headed villages believe that this occupation is socially inappropriate for men, the difference is not statistically significant ($p - value = 0.63$, using a two sided sign-rank test).

The above discussion suggests male identity is more pronounced in female headed villages. These results might not be specific to Bihar or India as social norms of traditional female roles in society are common across many countries (Ingelhart and Norris 2003). In 19 developing countries studied by the World Bank a wife with a higher income was generally seen as a threat to male identity rather then a boost to household income (WDR 2012). Such attitudes might be difficult to change in the short run.

We can examine these results in a framework where citizens care not only for their pecuniary payoffs, but also "identity"-based payoffs in the spirit of Akerlof and Kranton (2000).

$$u_i = \pi_i + I_i(.) \tag{4}$$

In this modified payoff function, π_i represents standard pecuniary payoffs and $I(.)$ represents identity payoffs from when social norms are maintained. Then, the citizen's optimization problem can be written as follows by augmenting equation (1).

$$\max_{g_i} u_i = e - g_i + \beta \sum_n g_{-i} + I_i(\tilde{g} - g_i, L, H) \tag{5}$$

where, as before, e is the endowment, n is the group size and β represents the returns to the

amount contributed to group account ($\beta < 1 < n\beta$). The decision variable for player i is $g_i \geq 0$, which is the amount contributed to the group account. The decision also increases a citizen's identity payoffs if g_i is less than the leader's proposal $\tilde{g}$, i.e., contributing less than the leader's proposed amount may restore a sense of identity. The leader's gender is represented by $L \in \{m, f\}$, whereas the village head's gender is $H \in \{m, f\}$.

Suppose in the absence of identity payoffs, there are two potential equilibria – the Nash equilibrium strategy $g_i = 0 \forall i$ and the cooperative strategy $g_i = \tilde{g} > 0 \forall i$. The introduction of identity incentives changes the likelihood of participants playing Nash equilibrium, based on L and H,

1. If $H = m$, neither men's or women's social identity is threatened. So, $g_i = g_{-i} = \tilde{g}$ is likely to be sustained as an equilibrium.

2. If $L = m, H = f$, men's social identity is threatened. However, since the leader is male, men are less likely to take corrective action in the experiment, and $g_i^m = \tilde{g}$. Women are also likely to contribute $g_i^f = \tilde{g}$ since women's identity is (presumably) not threatened, and men are less likely to deviate from the cooperative equilibrium. Hence, $g_i = g_{-i} = \tilde{g}$ is more likely to be sustained as an equilibrium.

3. If $L = f, H = f$, men's social identity is significantly threatened and they can take corrective action by reducing their contributions to the group account when the leader is revealed as female. By setting $g_i^m = 0$, men increase utility from $I_i(.)$, simultaneously leading to lower group contributions. Thus, for women, equilibrium contribution is also $g_i^f = 0$, leading to lower overall investment when the leader is female in a female headed village.

Thus, an identity-based explanation is consistent with our empirical findings. Men who believe their gender identity is violated when women are leaders may act out to bolster a sense of self or to salve a diminished self image.

To further examine the strength of the identity-based explanation we use the post-experiment survey data, that was collected after the leadership experiment. We asked participants their agreement with the statement *in this village women have too much political influence*. From responses to this question, we create a variable, *Women Too Much Power* = 1 if the respondent agreed or strongly agreed with the statement, and 0 otherwise. A situation where women have too much power could be viewed as transgressing male identity. Column 4 of Table A.2, shows that men and women in female headed villages do not differ in their perception of whether or not women in the village have too much power.

To explicitly account for citizens' perceptions about women and power, we estimate equa-

tion (6)

$$\begin{aligned} C_{ijk} &= \beta_0 + \beta_1 L^f_{jk} + \beta_2 L^m_{jk} + \beta_3 (\textit{Women Too Much Power})_{ijk} \\ &+ \beta_4 ((\textit{Women Too Much Power})_{ijk} \times L^f_{jk}) + \beta_5 ((\textit{Women Too Much Power})_{ijk} \times L^m_{jk}) \\ &+ \gamma X_{ijk} + \eta_k + \varepsilon_{ijk} \end{aligned} \tag{6}$$

The difference effects, $(\beta_1 + \beta_4) - (\beta_2 + \beta_5)$, presented in Panel A of Table 7 imply that men in female headed villages who agree that women have too much power contribute Rs. 58.39 (almost 30% of their endowment) less to female-led groups compared to male-led groups. This finding supports the argument that the experimental behavior corresponds to a backlash against women having too much power.

4.5 Alternative Explanations for male backlash in female headed villages?

In this section we examine other potentail channels for male backlash in female headed villages. First, women may be or are perceived to be ineffective leaders (*ineffective leaders*). Second, women may be viewed as tokens for their spouses or other powerful elites within the village, and thus have no influence as leaders (*tokenism*).

We first investigate if male backlash is due to participants perceiving women to be ineffective as leaders or due to actual performance inadequacies of female leaders. To address potential gender differences related to perceptions of female leaders, we examine responses from the following survey question: *Do you agree with the following statement: "Villages where women have more power perform better"?* Column 1 of Table A.2 shows that women and men do not have different perceptions about the effectiveness of female leaders; both 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 village heads to govern.

To explicitly account for citizens' perceptions regarding women's ability to govern, we re-estimate (6) replacing *Women Too Much Power* with the variable WPB, which takes the value of 1 if the participants agree with the statement "villages where women have more power perform better" and 0 otherwise. Panel B of Table 7 reports results from four different regressions: contributions by men and women in male or female headed villages. We compute and present the estimated value of $(\beta_1 + \beta_4) - (\beta_2 + \beta_5)$ for each of the four sub-samples. Even when they agree that villages where women have more power perform better, men are significantly less likely to cooperate with female leaders in female headed villages – men contribute Rs 30.67 less to female led groups in female headed villages. The gender of the group leader has no effect on women's contribution (irrespective of being in a female or a male headed village) or on men's behavior in male headed villages. The observed male bias therefore does not appear

to be driven by perceived incompetence of female leaders.

This perception may however not be an accurate representation of the actual effectiveness of female leaders. So we next examine the effect of the actual performance of the village head. Participants were asked to report the schemes their household benefited from in the last five years.[28] Using this information, *Village Council Service High* = 1 if the citizen reported benefiting from more than two schemes, and 0 otherwise. Columns 2 and 3 of Table A.2 show that males and females do not differ in their reporting of actual service delivery, which we interpret as absence of evidence for differences in actual service provision by male and female village heads. We re-estimate equation (6) replacing *Women Too Much Power* with *Village Council Service High* to explicitly account for actual ability of female village heads and then interact this variable with the gender of the group leader. Again, we are interested in the estimated value of $(\beta_1+\beta_4)-(\beta_2+\beta_5)$. Results for four different cases (male or female citizen in a male or female headed village) are presented in Panel C of Table 7. The main finding is that even in the absence of gender-based differences in the performance of the village head, men contribute Rs. 27.56 less to the group account in female-led groups than in male-led groups in female headed villages (column 1). Hence performance, actual or perceived cannot explain backlash.

We next investigate if participants regard female leaders as having less power or influence, which can be an important consideration in assessing their effectiveness. This impression is often independent of their actual performance. Men might resent female leaders if they are perceived to be surrogates, or tokens, for their spouses or other influential elites within the village. To examine whether tokenism drives male resistance to female leaders, the survey asked participants the position and gender of the three most influential people within the village, ranked by influence. Using this data, we define *Most Influential Female* = 1 if the most influential person within the village is female, and 0 otherwise. If female village heads are merely surrogates for influential men within the village, then in female headed villages both men and women should be less likely to report that the most influential person in the village is a woman.

To examine male–female difference in perceptions about the gender of the most influential person in the village in male and female headed villages, we consider the following regression:

$$I_{ik} = \alpha_0 + \alpha_1 \text{female}_{ik} + \alpha_2 H_k^f + \alpha_3 (\text{female}_{ik} \times H_k^f) + \delta \mathbf{Z}_{ik} + \eta_k + \epsilon_{ik} \tag{7}$$

The dependent variable I_{ik} is 1 if individual i in village k reports that the most influential person

[28]The list of schemes included Public Distribution System, MNREGA, Anganwadi program, Indira Gandhi Awaas Yojana, Jawaharlal Nehru Swarojgar Yojana, Antodya Yojana, Mid-day meal for school children, Mukhyamantri Cycle Yojana and Sarvasiksha Yojna.

in the village is a woman. The estimated coefficient α_1 gives the additional probability that a female citizen in a male headed village (compared to a male citizen in a male headed village) reports that the most influential person in the village is a female. The estimated coefficient α_2 gives the difference in the likelihood a male citizen reports that the most influential person in the village is a female in a female compared to a male headed village. Finally $\alpha_2 + \alpha_3$ gives the difference in the likelihood a female citizen reports that the most influential person in the village is a female in a female compared to a male headed village.

Table 8 shows that both male and female citizens are significantly more likely to report that the most influential person in the village is a female in a female headed compared to a male headed village. While the likelihood of a male citizen doing so is lower in a female headed village than in a male headed village, the effect is positive and statistically significant. These results jointly imply that male bias against female leaders is unlikely to be driven by tokenism.

4.6 Does increased exposure affect behavior?

The empirical analysis indicates strong behavioral resistance to women in leadership positions. However, increased exposure might change attitudes towards female leaders and change social norms regarding the role of women in public life. We examine whether an increase in the intensity of exposure to female village heads can change men's perceptions about group leaders. We substitute the binary variable for (at least one) female village head in the last three village council elections, with $H_k^{1f} = 1$ if the village had one female head and $H_k^{2f} = 1$ if the village had two or more female heads, and estimate equation (8) separately for men and women. The reference category is that the village has never been exposed to a female head (i.e., is always a male headed village).

$$\begin{aligned} C_{ijk} &= \beta_0 + \beta_1 L_{jk}^f + \beta_2 L_{jk}^m + \beta_3 (L_{jk}^f \times H_k^{1f}) + \beta_4 (L_{jk}^f \times H_k^{2f}) \\ &+ \beta_5 (L_{jk}^m \times H_k^{1f}) + \beta_6 (L_{jk}^m \times H_k^{2f}) + \gamma \mathbf{X}_{ijk} + \eta_k + \varepsilon_{ijk} \end{aligned} \tag{8}$$

Column 1 of Table 9 shows that in villages which have had a female village head only once, men contribute Rs. 41.65 more to male led groups, than to female-led groups. However, this difference ceases to be statistically significant in villages that have had two or more female village heads. For women, the number of female village heads has no statistically significant effect on their contribution to the group account.

The above findings suggest that increased exposure reduces male bias against female leaders. This result is similar to that obtained by (Beaman et al. 2009) and (Afridi et al. 2013) from other parts of India. Thus, to be effective and to increase acceptance of women's leadership, affirmative action needs to persist over time. We also examine whether social norms

change as a result of extended exposure to female heads. Consistent with the results reported in this section, results from the belief elicitation experiment suggest that citizens in villages with greater exposure to a female head *do not* believe that it is more socially appropriate for males to contribute less to female led groups compared to male led groups.

5 Conclusion

To counter the scarcity of women in leadership positions, policy makers have introduced gender-based quotas both in the public and the private sector. With little known about the behavioral response to mandated quotas for women, this paper breaks new ground by combining novel artefactual field experiments with survey data and a natural policy experiment to explore barriers to the effectiveness of and behavioral response to female leaders.

We find that men are significantly less likely to contribute towards public goods when women are assigned the role of a group leader. We use a unique method of eliciting data on social appropriateness of decisions made by participants in the experiment and our results suggest that individuals face lower social costs when acting negatively towards female leaders compared to male leaders. In villages with female heads, men are significantly less likely to contribute towards public goods under female group leaders, suggesting male backlash against female leaders. We find that this behaviour is not a result of the real or perceived ineffectiveness of women leaders or their being thought of as tokens for powerful elites. Rather, male backlash in female headed villages is inextricably linked to norms of male identity. Social norms and, in particular, identity is an important driver of perceptions and behaviour towards female leaders. Increased exposure to women in leadership positions helps mitigate this backlash suggesting that persistent affirmative action policies may reduce behavioral barriers to women's leadership.

Increased representation of women in governance and business can potentially improve both gender equality as well as the quality of governance and state capacity. Challenging the status quo requires voices that speak in favour of gender equality. This involves continued involvement by women in the decision making process and quotas provide an instrument to achieve this. Indeed quotas are viewed as being successful in increasing women's participation in policy making. The UN argues that *29 countries around the world have reached the 30 percent mark in women's representation in parliament; at least 24 of those 29 have used quotas*.[29] However, our results suggest that simply mandating female leadership positions may not necessarily lead to better outcomes, and that to be effective, affirmative action policies should persist over a longer period of time and importantly social norms regarding women's appropriate roles must change. Changing social norms is often a slow and complex process but policies such as gender quotas can influence the cost of complying with pre exiting norms, and this can

[29] See http://www.learningpartnership.org/resources/facts/leadership

eventually lead to a change.

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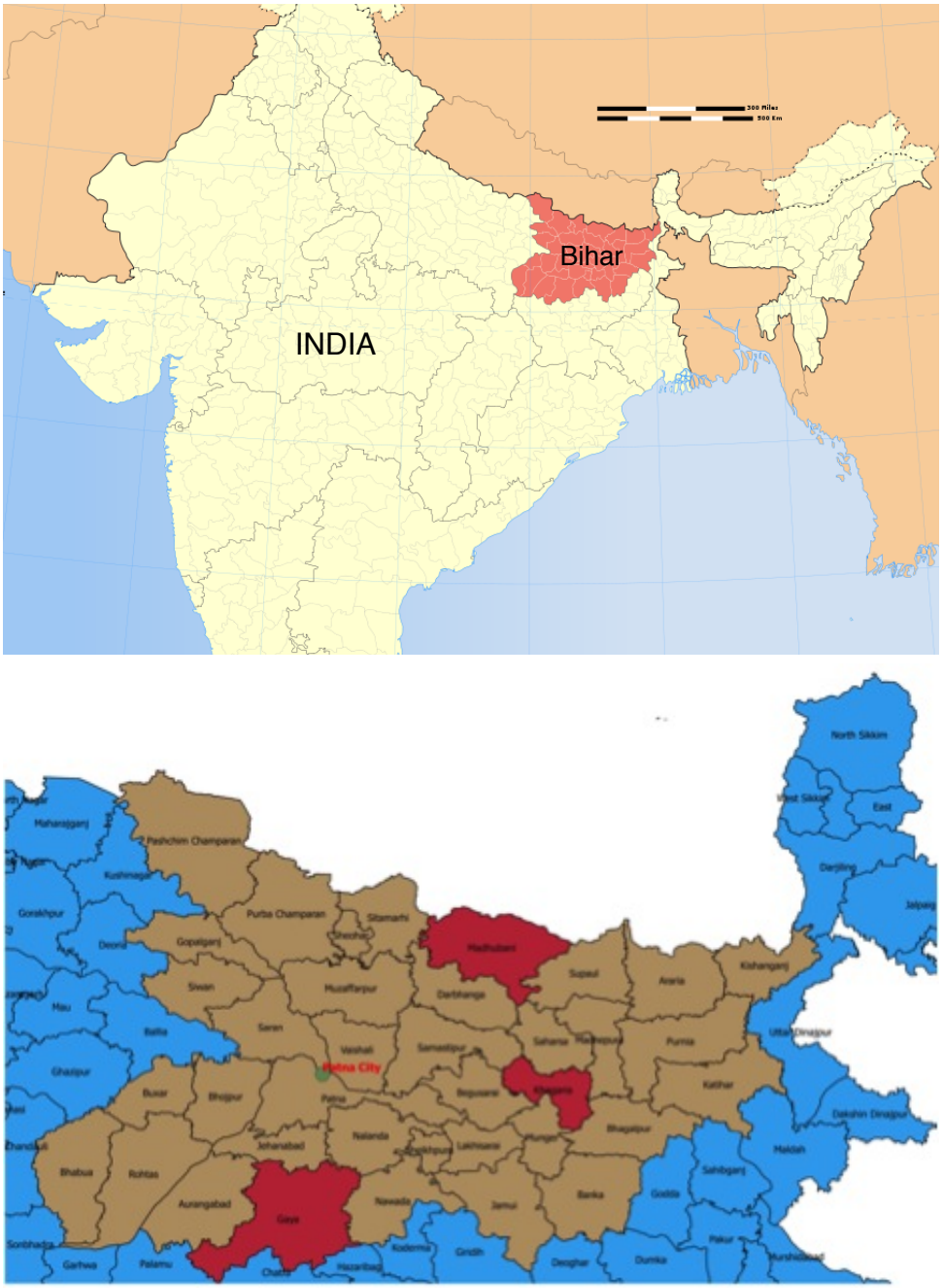
Figure 1: Experimental districts



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

Table 1: Randomization at the village level

	Pooled Sample	Treatment/Control			Gender of Village Head			Number of Female Head			
		Gender Revealed	Gender Not Revealed	Difference	Male	Female	Difference	0	1	2	K-W Statistic[†]
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Number of households	566.07	580.55	551.6	28.95	614.13	501.06	113.07	501.05	629.06	580	0.125
Total population	2923.55	3133.9	2713.2	420.7	3250	2481.30	769.14	3250	3332.44	3063	0.154
Male to female ratio	1.05	1.06	1.04	0.02	1.05	1.06	-0.015	1.06	1.04	1.06	0.535
Fraction Scheduled Caste	0.33	0.33	0.32	0.01	0.36	0.29	0.07	0.29	0.36	0.34	1.412
Fraction Scheduled Tribe	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.141
Fraction literates	0.44	0.44	0.43	0.01	0.44	0.43	0.01	0.43	0.46	0.39	1.642
Fraction male literate	0.52	0.49	0.55	0.06	0.50	0.52	-0.02	0.51	0.54	0.48	1.00
Fraction female literate	0.35	0.32	0.38	0.06**	0.35	0.35	0.00	0.35	0.37	0.30	3.228
Fraction workers	0.38	0.38	0.38	0.00	0.40	0.35	0.05*	0.35	0.40	0.40	3.722

Notes: This table shows the *ex ante* balance in the characteristics of villages chosen for experiments. [†]: Kruskal-Wallis (K-W) Statistic is distributed as χ^2 with 2 degrees of freedom. Gender of village head is female if the village has had at least one female head following the last three village council elections. Gender of village head is male if the village has never been exposed to a female head. Data source: Census of India, 2011. $^{***}p < 0.01$,** $p < 0.05$,* $p < 0.10$.

Table 2: Randomization at the individual level

	Full Sample	Gender of group leader			Gender of Group leader‡			Role in Experiment		
		Revealed	Not Revealed	Difference	Male	Female	Difference	Citizen	Leader	Difference
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
No Schooling	0.295	0.309	0.282	0.027	0.310	0.308	0.001	0.300	0.280	0.020
	(0.456)	(0.463)	(0.450)		(0.463)	(0.463)		(0.459)	(0.450)	
Primary Schooling	0.228	0.228	0.229	-0.001	0.247	0.208	0.039	0.226	0.234	-0.008
	(0.420)	(0.420)	(0.421)		(0.432)	(0.407)		(0.419)	(0.424)	
Secondary Schooling	0.150	0.173	0.126	0.047**	0.184	0.163	0.022	0.149	0.151	-0.001
	(0.357)	(0.379)	(0.332)		(0.388)	(0.370)		(0.357)	(0.358)	
Higher Secondary Schooling	0.277	0.246	0.309	-0.062**	0.226	0.267	-0.041	0.281	0.268	0.013
	(0.448)	(0.431)	(0.462)		(0.419)	(0.443)		(0.450)	(0.444)	
Father: No Schooling	0.381	0.361	0.401	-0.040	0.351	0.371	-0.019	0.378	0.389	-0.011
	(0.486)	(0.481)	(0.491)		(0.478)	(0.484)		(0.485)	(0.489)	
Father: Primary Schooling	0.238	0.255	0.221	0.034	0.268	0.242	0.026	0.243	0.222	0.021
	(0.426)	(0.436)	(0.415		(0.444)	(0.429)		(0.429)	(0.416)	
Age	27.024	27.303	26.743	0.560	27.272	27.333	-0.061	27.122	26.732	0.389
	(10.812)	(10.771)	(10.857)		(10.676)	(10.887)		(10.807)	(10.844)	
Household Size	7.770	7.263	8.279	-1.016***	7.126	7.400	-0.274	7.862	7.494	0.368
	(3.661)	(3.038)	(4.138)		(2.898)	(3.171)		(3.714)	(3.493)	
Hindu	0.907	0.887	0.926	-0.039**	0.900	0.875	0.025	0.904	0.916	-0.013
	(0.291)	(0.317)	(0.261)		(0.301)	(0.331)		(0.295)	(0.277)	
General Caste	0.257	0.241	0.273	-0.033	0.261	0.221	0.040	0.268	0.223	0.045
	(0.437)	(0.428)	(0.446)		(0.440)	(0.416)		(0.443)	(0.417)	
Scheduled Caste	0.240	0.215	0.265	-0.049*	0.210	0.221	-0.011	0.240	0.239	0.001
	(0.427)	(0.412)	(0.442)		(0.408)	(0.416)		(0.428)	(0.428)	
Other Backward Caste	0.425	0.448	0.401	0.046	0.441	0.454	-0.013	0.409	0.471	-0.061*
	(0.495)	(0.498)	(0.491)		(0.498)	(0.499)		(0.492)	(0.500)	
Currently Working	0.387	0.407	0.368	0.039	0.389	0.425	-0.036	0.378	0.414	-0.036
	(0.487)	(0.492)	(0.483)		(0.489)	(0.495)		(0.485)	(0.494)	
No income in past 30 years	0.631	0.603	0.660	-0.057*	0.618	0.588	0.030	0.634	0.623	0.010
	(0.483)	(0.490)	(0.474)		(0.487)	(0.493)		(0.482)	(0.486)	
F-Test of Joint Significance				0.42			0.65			1.11

Continued . . .

Table 2 (Continued): Randomization at the individual level

	Village Head			Number of Female Village Head			
	Male	Female	Diff.	0	1	2 or more	K-W Statistic†
	(11)	(12)	(13)	(14)	(15)	(16)	(17)
No Schooling	0.285	0.303	-0.018	0.285	0.279	0.357	2.354
	(0.452)	(0.460)		(0.452)	(0.449)	(0.481)	
Primary Schooling	0.235	0.223	0.012	0.235	0.235	0.196	0.620
	(0.425)	(0.417)		(0.425)	(0.425)	(0.398)	
Secondary Schooling	0.144	0.154	-0.011	0.144	0.154	0.155	0.080
	(0.351)	(0.362)		(0.351)	(0.361)	(0.363)	
Higher Secondary Schooling	0.285	0.272	0.012	0.285	0.282	0.250	0.466
	(0.452)	(0.446)		(0.452)	(0.451)	(0.434)	
Father: No Schooling	0.366	0.392	-0.026	0.366	0.402	0.369	0.843
	(0.482)	(0.489)		(0.482)	(0.491)	(0.484)	
Father: Primary Schooling	0.260	0.221	0.038	0.260	0.219	0.226	1.051
	(0.439)	(0.416)		(0.439)	(0.414)	(0.420)	
Age	27.438	26.720	0.718	27.438	26.435	27.369	3.006
	(11.527)	(10.255)		(11.527)	(10.207)	(10.365)	
Household Size	7.663	7.848	-0.184	7.663	7.786	7.988	0.820
	(3.562)	(3.734)		(3.562)	(3.726)	(3.759)	
Hindu	0.866	0.936	-0.070***	0.866	0.909	1.000	6.359***
	(0.341)	(0.244)		(0.341)	(0.289)	(0.000)	
General Caste	0.302	0.224	0.078***	0.302	0.199	0.280	6.568**
	(0.460)	(0.417)		(0.460)	(0.400)	(0.450)	
Scheduled Caste	0.225	0.251	-0.026	0.225	0.209	0.345	6.910***
	(0.418)	(0.434)		(0.418)	(0.407)	(0.477)	
Other Backward Caste	0.384	0.455	-0.071**	0.384	0.500	0.351	11.250***
	(0.487)	(0.498)		(0.487)	(0.501)	(0.479)	
Currently Working	0.389	0.387	0.002	0.389	0.360	0.446	2.598
	(0.488)	(0.487)		(0.488)	(0.481)	(0.499)	
No income in past 30 years	0.628	0.633	-0.006	0.628	0.663	0.565	3.363
	(0.484)	(0.482)		(0.484)	(0.473)	(0.497)	
F-Test of Joint Significance			1.38				

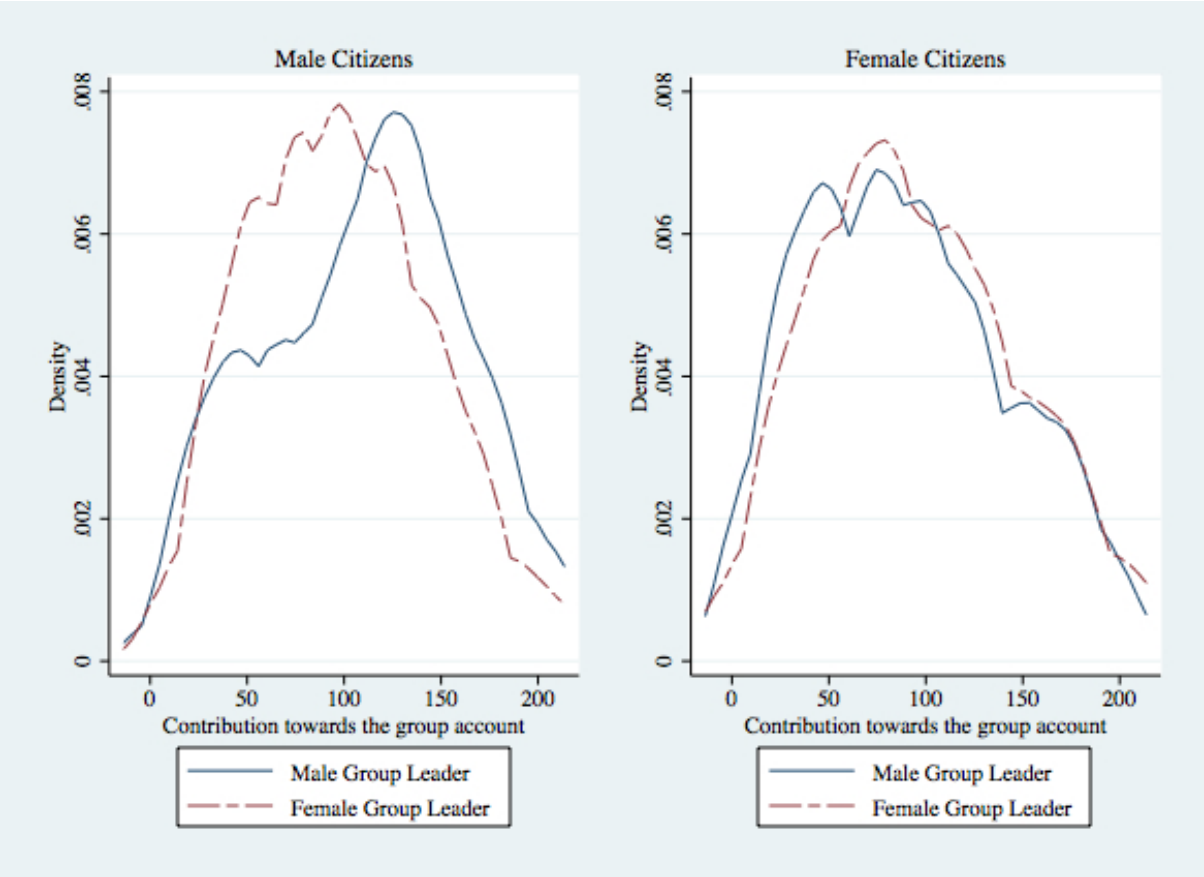
Notes: This table shows the *ex post* balance in the characteristics of participants in the experiments. $^{***}p < 0.01$,$^{**}p < 0.05$,$^{*}p < 0.10$. ‡: sample restricted to Gender Revealed Sessions. †: Kruskal-Wallis (K-W) Statistic is distributed as χ^2 with 2 degrees of freedom. Gender of village head is female if the village has had at least one female head following the last three village council elections. Gender of village head is male if the village has never been exposed to a female head.

Table 3: Amount sent to the group account by citizens in leadership experiment

		Female (1)	Male (2)	Diff. (3)
Panel A.				
1.	All groups	91.99	102.28	-10.29**
2.	Male led groups	90.01	110.19	-20.16*
3.	Female led groups	95.61	97.95	-2.32
4.	Diff.: Female led groups – Male led groups (3–2)	5.60	-12.24*	
Panel B.				
5.	Male headed village	94.82	109.90	-15.09**
6.	Female headed village	89.60	95.82	-6.22
7.	Diff.: Female headed village – Male headed village (6–5)	-5.22	-14.09**	
Panel C.				
8.	Male led group, Female headed village	86.26	109.71	-23.44**
9.	Male led group, Male headed village	94.80	110.73	-15.93
10.	Female led group, Female headed village	96.38	88.44	7.94
11.	Female led group, Male headed village	94.84	109.43	-14.60
12.	Male headed village: Diff.: Female led groups – Male led groups (11–9)	-0.03	-1.30	
13.	Female headed village: Diff.: Female led groups – Male led groups (10–8)	-10.11	-21.27**	

Notes: Sample restricted to treatment (gender revealed) sessions only. Columns 1 and 2 show the average contribution to the group account by men and women, respectively. Column 3 shows the difference in means (3 = 1–2) using a t-test. Gender of village head is female if the village has had at least one female head following the last three village council elections. Gender of village head is male if the village has never been exposed to a female head. $^{***}p < 0.01$,$^{**}p < 0.05$,$^{*}p < 0.1$.

Figure 2: Distribution of contribution to the group account by citizens in male and female led groups

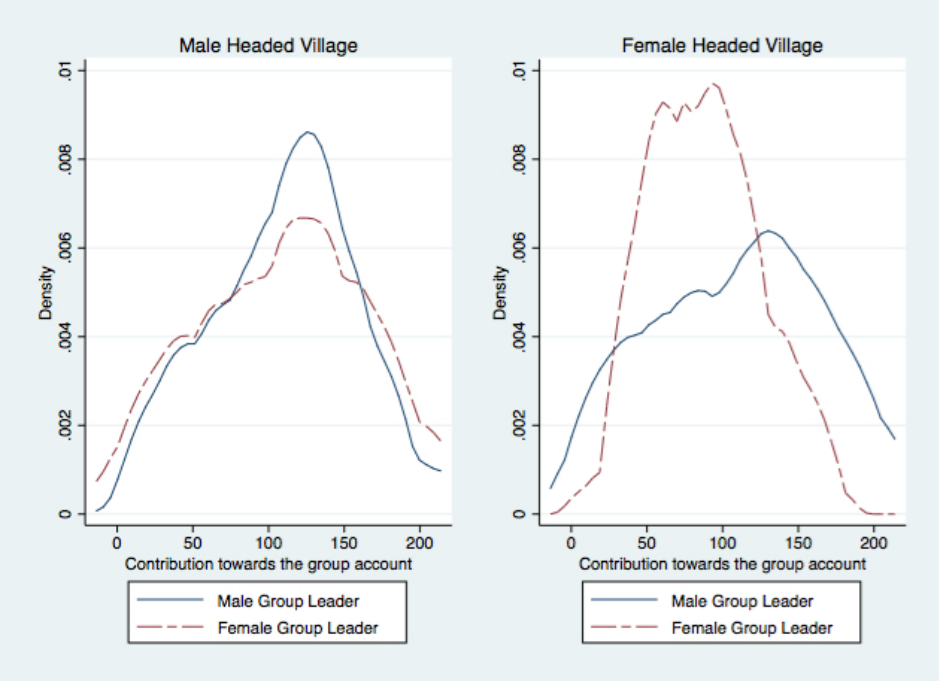


Notes:

Sample restricted to treatment (gender revealed) sessions only. For male citizens, the null hypothesis of equality of distribution of contributions to the group account is rejected using a two-sample Kolmogorov-Smirnov test of equality of distributions ($p - value = 0.045$). For female citizens, the null hypothesis of equality of distribution of contributions to the group account cannot be rejected ($p - value = 0.985$).

Figure 3: Distribution of contribution to the group account by citizens in male and female led groups, in male and female headed villages

Panel A: Male Citizens



Panel B: Female Citizens

Notes:
Sample restricted to treatment (gender revealed) sessions only. **Panel A:** The null hypothesis of equality of distribution of contributions to the group account is rejected in the case of using a two-sample Kolmogorov-Smirnov test of equality of distributions ($p - value$ = 0.017) in female headed villages. The null hypothesis of equality of distribution of contributions to the group account cannot be rejected ($p-value$ = 0.985) in male headed villages ($p-value$ = 0.999). **Panel B:** The null hypothesis of equality of distribution of contributions to the group account can never be rejected using a two-sample Kolmogorov-Smirnov test of equality of distributions ($p - value$ = 0.964 in female headed villages and 0.821 in male headed villages). Gender of village head is female if the village has had at least one female head following the last three village council elections. Gender of village head is male if the village has never been exposed to a female head.

Table 4: Citizen contribution to group account

	All (1)	Male (2)	Female (3)
Males: Female led groups – male led groups[†]	-13.342*		
	(8.191)		
Females: Female led groups – male led groups[††]	5.557		
	(8.000)		
Male headed village: Female led groups – male led groups[‡]		0.349	0.871
		(12.137)	(11.979)
Female headed village: Female led groups – male led groups[‡‡]		-24.343**	9.427
		(10.876)	(10.179)
Sample Size	714	359	355

Notes: Difference estimates from OLS regression presented. Dependent variable: Contribution to the group account by citizens (in stage 2 of the leadership experiment). Regression in column 1 includes gender of the citizen, gender of the group leader and the interaction of the gender of the citizen and that of the group leader. Regressions in columns 2 and 3 include the interaction of the gender of the group leader and the gender of the village head. All regressions also control for set of individual and household characteristics (age, own educational attainment, father's educational attainment, current work status, income earned in the last month, caste and religion, household size), amount proposed by the leader and for village fixed effects. Sample restricted to citizens. Gender of village head is female if the village has had at least one female head following the last three village council elections. Gender of village head is male if the village has never been exposed to a female head. Standard errors clustered at the group level in parenthesis. $^{***}p < 0.01$,$^{**}p < 0.05$,$^{*}p < 0.1$. † is estimated value of $\beta_2 - \beta_3$ from equation (2). †† is estimated value of $(\beta_2 + \beta_4) - (\beta_3 + \beta_5)$ from equation (2). ‡ is estimated value of $\beta_6 - \beta_7$ from equation (3). ‡‡ is estimated value of $(\beta_2 + \beta_6) - (\beta_3 + \beta_7)$ from equation (3).

Table 5: Social appropriateness of contributions by male citizens when group leader is male or female

	Female Leaders (1)	Male Leaders (2)	Difference‡ (3)
Panel A. Male beliefs			
Male citizens contribution=0	1.23	1.15	0.08**
Male citizens contribution=50	2.47	2.33	0.14***
Male citizens contribution=100	3.10	2.97	0.13***
Male citizens contribution=150	3.54	3.49	0.05
Male citizen contribution=200	3.72	3.76	-0.04
Panel B. Female beliefs			
Male citizens contribution=0	1.22	1.17	0.05
Male citizens contribution=50	2.43	2.31	0.12***
Male citizens contribution=100	3.04	3.08	-0.04
Male citizens contribution=150	3.58	3.56	0.02
Male citizen contribution=200	3.76	3.77	-0.01
Panel C. Male beliefs in Female Headed Villages			
Male citizens contribution=0	1.27	1.20	0.07
Male citizens contribution=50	2.54	2.36	0.18***
Male citizens contribution=100	3.14	2.98	0.16***
Male citizens contribution=150	3.55	3.52	0.03
Male citizen contribution=200	3.67	3.65	0.02
Panel D. Male beliefs in Male Headed Villages			
Male citizens contribution=0	1.22	1.09	0.13**
Male citizens contribution=50	2.47	2.25	0.22***
Male citizens contribution=100	3.14	2.94	0.20***
Male citizens contribution=150	3.55	3.50	0.05
Male citizen contribution=200	3.73	3.75	-0.02

Notes: Statistical significance of difference computed using a Wilcoxon sign rank test. $^{***}p < 0.01$,$^{**}p < 0.05$,$^{*}p < 0.1$.

Table 6: Beliefs about social appropriateness of women as village heads

	Male Belief (1)	Female Belief (2)	Difference (3)
All	3.06	3.55	-0.49***
Female respondents	2.97	3.48	-0.51***
Males respondents	3.16	3.61	-0.45***
All respondents in Female headed village	3.10	3.52	-0.42***
All respondents in Male headed village	3.00	3.60	-0.60***
Female Respondents in Female headed village	3.04	3.51	-0.47***
Male Respondents in Female headed village	3.17	3.53	-0.36***
Female Respondents in Male headed village	2.86	3.45	-0.58***
Male Respondents in Male headed village	3.14	3.75	-0.60***

Notes: Statistical significance of difference computed using a Wilcoxon sign rank test. $^{***}p < 0.01$,$^{**}p < 0.05$,$^{*}p < 0.1$.

Table 7: Potential explanations for male bias

	Men in female headed villages (1)	Men in male headed villages (2)	Women in female headed villages (3)	Women in female headed villages (4)
Panel A. Women have too much political influence				
Female led groups – male led groups	-58.389***	11.217	8.726	3.025
	(15.803)	(21.034)	(12.017)	(14.096)
Panel B. Villages with women leaders are better governed				
Female led groups – male led groups	-30.671**	0.495	12.767	-8.139
	(13.212)	(15.093)	(11.930)	(11.310)
Panel C. Benefitted from two or more village council schemes				
Female led groups – male led groups	-27.559*	-24.995	-12.942	6.662
	(16.562)	(16.209)	(17.605)	(17.411)

Notes: Difference estimates $((\beta_1 + \beta_4) - (\beta_2 + \beta_5))$ from OLS regression of equation (6) for each sub-sample presented. Dependent variable: Contribution to the group account by citizens (in stage 2 of the leadership experiment). Regressions in Panel A include dummy Women Too Much Influence and interaction with gender of group leader. Regressions in Panel B include dummy Women Better Govern and interaction with gender of group leader; finally those in Panel C include dummy Village Council service High 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, father's educational attainment, current work status, income earned in the last month, caste and religion, household size), amount proposed by the leader and for village fixed effects. Sample restricted to citizens. Gender of village head is female if the village has had at least one female head following the last three village council elections. Gender of village head is male if the village has never been exposed to a female head. Standard errors clustered at the group level in parenthesis. $^{***}p < 0.01, ^{**}p < 0.05, ^{*}p < 0.1$.

Table 8: Tokenism as an explanation for male bias

	(1)
Male headed Village: Female – Male (α_1)	0.059**
	(0.029)
Males: Female headed village – Male headed village (α_2)	0.160***
	(0.040)
Females: Female headed village – Male headed village ($\alpha_2 + \alpha_3$)	0.109*
	(0.056)
Sample Size	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. α_i's are estimated coefficients from equation (7). All regressions control set of individual and household characteristics (age, own educational attainment, father's educational attainment, current work status, income earned in the last month, caste and religion, household size) and for village fixed effects. Gender of village head is female if the village has had at least one female head following the last three village council elections. Gender of village head is male if the village has never been exposed to a female head. Standard errors clustered at the session (village) level in parenthesis. $^{***}p < 0.01$,$^{**}p < 0.05$,$^{*}p < 0.1$.

Table 9: Citizen behavior with intensity of exposure

	Male (1)	Female (2)
Female led groups – male led groups: Number of Female village heads = 0†	-0.073	0.928
	(12.124)	(12.028)
Female led groups – male led groups: Number of Female village heads = 1††	-41.651***	3.162
	(11.845)	(12.040)
Female led groups – male led groups: Number of Female village heads $\geq$ 2 ‡	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 by citizens (in stage 2 of the leadership experiment). Regressions include gender of the group leader, interaction of the gender of the group leader and the number of female village heads in the last 3 elections and for set of individual and household characteristics (age, own educational attainment, father's educational attainment, current work status, income earned in the last month, caste and religion, household size), amount proposed by the leader and for village fixed effects. Gender of village head is female if the village has had at least one female head following the last three village council elections. Gender of village head is male if the village has never been exposed to a female head. Standard errors clustered at the group level in parenthesis. $^{***}p < 0.01$,$^{**}p < 0.05$,$^{*}p < 0.1$. † is estimated value of $\beta_1 - \beta_2$ from equation (8). †† is estimated value of $(\beta_1 + \beta_3) - (\beta_2 + \beta_5)$ from equation (8). ‡ is estimated value of $(\beta_1 + \beta_4) - (\beta_2 + \beta_6)$ from equation (8).

Table A.1: Citizen deviation from leader proposal

	All (1)	All (2)	Male (3)	Female (4)
Female led groups – male led groups	1.456			
	(4.134)			
Males: Female led groups – male led groups		-7.334		
		(6.973)		
Females: Female led groups – male led groups		7.382		
		(6.230)		
Male headed village: Female led groups – male led groups			-0.496	2.956
			(8.970)	(9.388)
Female headed village: Female led groups – male led groups			-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 head. All regressions also control for set of individual and household characteristics (age, own educational attainment, father's educational attainment, current work status, income earned in the last month, caste and religion, household size), amount proposed by the leader and for village fixed effects. Sample restricted to citizens. Gender of village head is female if the village has had at least one female head following the last three village council elections. Gender of village head is male if the village has never been exposed to a female head. Standard errors clustered at the group level in parenthesis. $^{***}p < 0.01$,** $p < 0.05$,* $p < 0.1$.

Table A.2: Attitudes and services in villages with male and female heads

	Women Power Better (1)	Village Council Service High (2)	Village Council Service Total (3)	Women Too Much Power (4)
Male headed village: Female – Male	0.053	-0.012	0.017	0.118**
	(0.049)	(0.058)	(0.163)	(0.053)
Males: Female headed village – Male headed village	-0.036	0.045	0.041	0.079
	(0.044)	(0.061)	(0.194)	(0.057)
Females: Female headed village – Male headed 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. In Column 1, the dependent variable is 1 if a participant agrees or strongly agrees with the statement that "villages where women have more power perform better", and 0 otherwise. In Column 2, the dependent variable is 1 if a participant or his/her household benefited from two or more government services. In Column 3, the dependent variable is the total number of government services received by a household. In Column 4, the dependent variable is 1 if a participant agrees or strongly agrees with the statement "in this village, women have too much political influence". Regressions include gender of the participant, the gender of the the head of the village and the interaction of the gender of the citizen and that of the village head. All regressions also control for set of individual and household characteristics (age, own educational attainment, fathers educational attainment, current work status, income earned in the last month, caste and religion, household size), and for district fixed effects. Gender of village head is female if the village has had at least one female head following the last three village council elections. Gender of village head is male if the village has never been exposed to a female head. Standard errors clustered at the session (village) level in parenthesis. $^{***}p < 0.01$,$^{**}p < 0.05$,$^{*}p < 0.1$.

Table A.3: Village level balance between leadership and belief elicitation experiment villages

	Pooled			Village Head Gender					
	Belief Elicitation Experiment	Leadership Experiment	Diff.	Female			Male		
	(1)	(2)	(3)	Belief Elicit. Exp. (4)	Leadership Exp. (5)	Diff. (6)	Belief Elicit. Exp. (7)	Leadership Exp. (8)	Diff. (9)
Number of Households	836.71	566.07	270.6	919.64	614.13	305.4	702.12	501.05	201.06
Total Population	4405.5	2923.5	1482	4749.2	3250.4	1498.79	3847.12	2481.29	1365.83
Male to female ratio	1.06	1.05	0.006	1.07	1.04	0.02	1.04	1.06	0.02
Fraction Scheduled Caste	0.248	0.328	0.08	0.261	0.356	0.095	0.226	0.29	0.064
Fraction literates	0.481	0.435	0.046*	0.472	0.438	0.035	0.497	0.431	0.066
Fraction male literates	0.566	0.517	0.049	0.553	0.523	0.029	0.588	0.509	0.079
Fraction female literates	0.392	0.349	0.043	0.385	0.349	0.036	0.403	0.349	0.054
Fraction workers	0.365	0.38	0.01	0.372	0.404	0.031	0.353	0.347	0.006

Notes: This table shows the *ex ante* balance in the characteristics of villages chosen for the different sets of experiments. Gender of village head is female if the village has had at least one female head following the last three village council elections. Gender of village head is male if the village has never been exposed to a female head. Data source: Census of India, 2011. $^{***}p < 0.01$,$^{**}p < 0.05$,$^{*}p < 0.10$.

Figure A.1: Recruitment Flyer

EARN CASH

AS A RESEARCH PARTICIPANT

We invite you to participate in a research project conducted at

_____ _____

You will definitely earn **Rs 100** and you can earn more money according to your decisions (between Rs 100- 600). The research project will take 180 minutes. The experimental sessions will be conducted during the period:

Date:

Location:

Time:

To participate in the project, you must be able to read and write in Hindi.

If you have any questions, please contact:

Dr Tarun Jain (Indian School of Business) on +91.40.2318.7267

रिसर्च में भाग ले और

पैसे कमाएँ!

आपको निश्चित रूप से 100 रुपेये मिलेंगे इसके अलावा आपके निर्णयों के आधार पर आप और भी पैसे (100-600) रुपेये के बीच) कमा सकते हैं| रिसर्च प्रॉजेक्ट में 180 मिनिट लगेंगे| एक्सपेरिमेंटल सेशन इस समय के भीतर होंगे :

तिथि:

स्थान:

समय:

इस प्रॉजेक्ट में भाग लेने के लिए आपको हिन्दी लिखनी व पढ़नी आनी ज़रूरी हैं| अगर आप समय पर नही हैं तो आप भाग नही ले सकते|

अगर आपको कोई भी सवाल हैं तो संपर्क करें : डॉ. तरुण जैन - 91.40.2318.7267