

# Reservations and the Politics of Fear

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February 2017

## Abstract

Reserving political office for members of a particular, usually traditionally disadvantaged, group is a common form of political quota in many parts of the world. We first show that if political disfunction is due to “politics of fear” factors (Padro-i-Miquel (2007)) that make individuals support members of their own group for political office (despite their incompetence or venality), then such quotas may improve governance. But this does not occur if the reserved groups are either extremely powerful, or extremely weak. We measure governance outcomes and group strength in rural Indian villages. We show that political office reservations in these villages do indeed improve governance, but only when allocated to groups that are neither too strong or too weak.

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# 1 Introduction

Reserving political office for members of traditionally marginalized groups has sometimes been found to tilt governance in the interests of those groups;<sup>1</sup> as seems a priori reasonable, and as intended by reservation advocates. Though there are fewer reasons to expect reservations to impact the overall quality of governance, the evidence to date suggests either non-discernible effects, or negative ones.<sup>2</sup> This might be because reservations replace seasoned politicians with neophytes, or less well trained leaders, and such leaders lack the skills required to shephard through good policies. Or it may be because reservations tend to replace leaders drawn from groups that are numerous among constituents, with those from groups that are thin on the ground; the latter, it is hypothesized, having less stake in ensuring the provision of the public good that is good governance.<sup>3</sup>

We study the impact of reservations on governance quality here. In contrast to previous studies, our focus in data collection was overall governance quality at the village level. And we accordingly obtained

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<sup>1</sup>Effects have been found on policies, public goods, provision of targeted benefits and on measured poverty. Positive effects on the receipt of targeted benefits have been found for reserved groups in Besley, Pande and Rao (2008). Chattopadhyay and Duflo (2008) find that reserved women leaders seem to spend more on projects that are relatively highly prioritized by female village members. Bardhan, Mookherjee and Torrado (2010) find easier access to credit results after a group based reservation to SC/ST. Pande (2003) finds benefits at the state legislature. Dunning and Nilekani (2013) find small (zero) distributive effects of reservations for Pradhan in Karnataka, Rajasthan and Bihar. This is for SC/ST reservations, which are allocated based on population frequencies. To overcome the confounding identification problem they run an RD and confirm with that there are no effects. This is in contrast to much of the previous literature – well discussed there. Their argument is based on the saliency of political parties that are essential in providing resources for these clientelist structures. The parties allow long term focused politicians to make cross-caste cutting alliances that overcome the quotas and allow the parties to smoothe out the discontinuities that would arise through the allocation of quotas. Hence, there are no effects in terms of receiving targeted benefits due to caste membership with a quota. But, interestingly, there are positive effects to political party membership. Sharing the party of the Pradhan does affect access. Gair and Naresh (2015) argue that the null finding is due to a lack of power in detecting a reasonably sized effect, and cautions against interpreting this as a precise zero. Chin and Prakash (2010) find mixed effects on poverty for reserved seats state assemblies. Zeigfeld and Auerbach (2016) find that quotas reduced electoral competition in Indian contexts – villages and higher levels, (not surprisingly) fewer people contest. Mitra (2015) develops a theoretical model and provides support for considering heterogeneous effects of mandated political representation. The elites of such groups may benefit more than the rank-and-file, who may actually be made worse off. Jensionsius (2015) finds very weak long term effects for SCs. Bhavnani (2016) finds no positive representation effect of SC quotas after the quota expires. It is possible that effects could extend far beyond the period of reservation. Beaman et. al (2009) showed that by exposing constituents to women leaders, negative stereotypes biased against women as leaders could be partially reversed.

<sup>2</sup>Villages with reserved Pradhans are less likely to win a “clean” village award, Lamba and Spears (2013). Leader “quality” usually measured by education, has been found to decline in many contexts – overall for both women and SC reseervations by Chattopadhyay and Duflo (2004) for most observables (wealth, education, experience) see also Deininger et. al. (2013). Also see Banerjee, Duflo, Imbert, Pande (2013) who report that after a female reservation there are more contested elections because the leader is less likely to stand again. But such reservations, by inducing more inexperienced candidates to stand and sometimes win seem to have direct negative effects on employment in public works programs. Gajwani and Zhang (2015) found negative effects of reserved female village presidents on the buidling of schools and roads with supporting evidence suggesting it was due to their poorer connections with higher level officials, and systemic knowledge.

<sup>3</sup>See Munshi and Rosenzweig (2016) for a formal model of this process and evidence supportive of such effects for reservation of representation at the village neighbourhood level.

detailed information about such quality. The data we collected to do this features uniquely detailed measures of governance outcomes in villages in the Indian state of Maharashtra. It was obtained from a three-fold analysis comprising: household surveys, village government surveys, and the official accounts of villages.

We will argue here that in a divided society, like that of village India, where politics is organized along identity lines such as ethnicity, tribe or caste as is the case there, there are reasons to expect that reservations could improve overall governance quality.<sup>4</sup> This depends on the pre-existence of a “politics of fear” problem, as coined by Padro-i-Miquel (2007), which can be ameliorated by political reservations.

Padro-i-Miquel (2007) formally models the politics of fear to explain the pervasiveness of poor governance in the divided societies of Sub-Saharan Africa. Such divisions also apply to the divided politics of Indian villages. We extend and modify this model to allow for the institution of political reservations that restrict the paramount village leadership position to individuals from a particular caste in a way that is randomly allocated across villages, as mandated by Indian law.<sup>5</sup>

This model generates precise predictions as to when political reservations should be expected to improve governance, and when not. It generates an overall pattern of effect (i.e., unconditional) that is consistent with the zero or even mildly negative overall effects reported in the previous literature. It also generates a conditional predicted pattern of effect that is non-monotonic in the size of the group from which the village leader is drawn when leadership is reserved. If the group is small, so small that it ordinarily would not be able to contest for power, then reservations have no effect. If it is large enough to contest power, but not so large as to be guaranteed it, then reserving the leadership position for the group generates a positive impact on overall governance. However, if the group is so large that it is almost certain to provide the leadership position irrespective of reservations, then reserving the position for the group again has no effect on governance quality. Such a non-monotonic pattern of the effects of reservations is an extremely robust aspect of the data.

To our knowledge this is the first paper to demonstrate that “politics of fear” reasoning implies a potentially beneficial (but non-monotonic) pattern of benefits to reservations. This is also the first paper to explore such an effect empirically, and again to our knowledge, the first paper to show any positive impact

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<sup>4</sup>The contrast is with polities where candidate contest is more programmatic in nature, such as over policy, economic interests or even ideology for example.

<sup>5</sup>Though the precise way that such reservations are implemented varies by state.

of political reservations on overall governance quality (and not just distributionally for the targeted group) in Indian villages.<sup>6</sup>

The politics of fear reasoning applies in divided societies – i.e., those where politics is organized along identity lines, and where the distribution of benefits to groups organized along such lines is of paramount interest to constituents. In such settings a type of “incumbency advantage” that a group’s existing leader enjoys vis-a-vis a challenger from within the group, plays a key role. The group’s hold on power is hypothesized to be more likely to persist if their current leader is able to re-contest power, i.e., remains the supported candidate of the group, rather than being replaced by a challenger who will then contest. The larger the chances of the group winning power with the current incumbent relative to a replacement challenger, the greater the incumbent’s hold on power. As Padro-i-Miquel (2007) points out, this creates a type of kleptocratic rent for the incumbent, allowing her to govern poorly, up to a point, while still receiving the support of group members. A similar logic underlies the support of leaders from all other groups, and poor overall governance is the predicted outcome regardless of which groups ascend to power.

We extend this framework to show that political reservations in such a context are able to ameliorate such effects and hence improve governance, but depend on the reserved group’s proportionate size in the village. By reserving the leadership position for a representative of the group, the group no longer fears losing the election to an outsider. The reserved group does not then need to rally behind a poorly governing incumbent leader who will raise their chances of being in power, as power is assured. This allows the leadership to be freely contested and raises – at least temporarily – governance quality.

Proportionate size matters for how reservations work because power depends on size. If a group is so small that it has almost no capacity to retain the leadership, even when retaining an incumbent, then the incumbency advantage is small. Reservations have little effect. However, as the group increases proportion, so too does the incumbency advantage of the leader, and his kleptocratic rent. These are dissipated via the contested leadership race that occurs when the group has the safety of reservations. But since effects of proportionate size on kleptocratic rents are non-monotonic so too are the effects of reservations. A reserved

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<sup>6</sup>As mentioned in the footnote above, many studies find null effects of reservations on the reserved group. We similarly find that for overall governance quality too, not just with respect to effects reported by the reserved group. This changes when we condition in a way that the theory predicts we should. An exception that also finds a positive overall effect is Besley et. al. (2016). They report, in the context of Swedish local politics, that gender quotas can increase the competence of the political class by reducing the share of mediocre men in office.

leader drawn from a group that is larger still, so large as to be essentially guaranteed leadership even absent reservations, will have no positive effect of governance. A group so large that it never fears losing the leadership position in an open contest will not have a leader enjoying kleptocratic rents in the first place. Reservations change nothing then.

This non-monotonicity of the effects of reservations with respect to group size is a not-previously hypothesized, and not previously tested implication of the “politics of fear” reasoning, and it is confirmed in the data. Reservations for groups that are almost guaranteed to provide the leader, and groups that are so small as to rarely be able to attain leadership register no improvement in governance in Maharashtrian villages. Only reservations for groups that are able to contest, but not guaranteed the leadership, raise governance quality. This finding strongly suggests the pertinence of politics of fear reasoning in a setting far afield from its original application.

Two recent papers have analyzed how group size affects leadership quality in the Indian context where caste/jati based voting is the norm. Banerjee and Pande (2009) argue that larger groups (proportionately) end up selecting worse leaders. Even a terrible representative can get elected to power when a group is large; parochialism swamps competence because there are, in all groups, voters who simply prioritize identity over competence, and the larger a group the greater the number of those voters. A small group, in contrast, has to put someone forward of more broad appeal to have any chance of election. The model predicts that the greater the degree of ethnic identification in determining voting, the worse will be governance. However, such increases in ethnicization should have less of an effect when groups are close in size – as competition mitigates the effects of increased parochialism. However when the differences in group size are so large that one group is almost guaranteed to win, then again increasing ethnicization should have no effect. They find support for this non-monotonicity using corruption as a measure of politician quality, for district level representatives in Uttar Pradesh.

Munshi and Rosenzweig (2015) using India wide ward level data use political reservations to estimate the effect on candidate quality of group size in village ward representatives. Similar to the politics of fear model of Padro-i-Miquel (2007) that we will extend, there is a tension between competence and distribution benefits for a group to consider when selecting a representative. They theoretically establish a threshold on sub-caste (jati) size above which (locally) a group is able to discipline and commit their leader to a mix of

policies. They estimate this threshold to be at 50% of the ward population, and they empirically identify this using reservations allocated within wards (over ward representatives) in contrast to Pradhans across the village as we consider here. They use reservations to identify group size effects in a setting where there is no efficiency rationale for reservations to interact with group size otherwise. They find that larger groups do seem to select higher quality candidates.

In contrast, we only focus on Maharashtra and Pradhan reservations. And we consider the effect of reservations per se when interacted with group size. We find marked efficiency (governance quality) gains due to reservations, in a way that is consistent with the politics of fear model. The paper proceeds as follows: Section 2 develops the model and its empirical predictions. Section 3 describes the data. Section 4 tests the predictions of the model. Section 5 concludes.

## 2 The Model

### 2.1 Preliminaries

In terms of political organization in rural villages of Maharashtra the relevant organizing group is the jati or sub-caste. Individual identities in village politics are strongly linked to their sub-caste identity. We will thus use the terms “political group”, “jati” and “sub-caste” interchangeably here, and it will be used analogously to “ethnic group” in the model of Padro-i-Miquel (2007).<sup>7</sup>

There are reasons to expect Pradhan reservations to have effects in our context. Firstly, unlike many other states in India, Pradhans in Maharashtra villages are powerful. They are the only paid members of the Panchayat, they wield considerable influence and autonomy, and villagers in our surveys typically reported the Pradhans to be the de facto as well as de jure village leaders. We collect numerous measures that we will use to pick up the effects of Pradhan reservations in our villages. One set of measures were designed to represent intra-group distributional effects of reservations. Did having a Pradhan reserved to be from your own caste group (jati) affect the allocation of resources to your group vis a vis the others?<sup>8</sup>

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<sup>7</sup>This will create some difficulties when we turn to the empirical estimation as reservations are allocated at a broad caste grouping level that contains many sub-castes. We pay particular attention to this in Section 4 of the paper.

<sup>8</sup>Table A2 in the appendix shows that individuals do indeed report benefiting disproportionately if their own jati member is the Pradhan.

A second set of measures were designed to reflect the overall level of governance quality in the villages. The key governance outcome variables that we use, in line with Anderson, Francois, Kotwal (2015), are described in Section 3.

We first build a variant of Padro-i-Miquel’s (2007) politics of fear model. His model rests on three key assumptions. 1. A ruler needs the support of his ethnic group in an ethnically divided society. 2. Ruler replacement leads to political instability and increases the likelihood of a switch in power between groups. 3. Taxation can only vary by economic activity while transfers can directly target groups.

### 2.1.1 Distinct modeling assumptions for Maharashtra

Though we will utilize similar assumptions in our model here, as they are germane to the Maharashtrian setting, most will be slightly modified.<sup>9</sup> All funds are distributed from higher levels of governance, and jatis tend to live in neighbourhoods that are geographically distinct. So the key form of inter-group discretionary spending is over the allocation of expenditures across the differing groups – for example, the construction and maintenance of local public goods, or the facilitation of own group member access to targeted federal and state benefits. To capture this, we will allow for discretion over the allocation of benefits towards members of a group.

The benefits to leaders from the “politics of fear” in Padro-i-Miquel (2007) are slightly different in our setting too. In his model, a leader extracts resources from his supporter group, but extracts even more from the opposition. In our villages, there is no opportunity for leaders to predate villagers via taxation. Instead, a more likely consequence of leader moral hazard is reduced effort to improve village resource allocations from higher levels of government and fewer programs.<sup>10</sup> So we assume all leaders obtain the same sized office rents, and instead of modeling the differential benefits to the powerful leaders via consumption, we assume this can be taken via leisure. Having a leader who poorly governs implies less effort gets spent working for constituents to obtain benefits, services, grants and public goods to which the village is entitled.

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<sup>9</sup>The taxation part of Assumption 3 is entirely dispensed with. In Maharashtra the Panchayat has essentially no taxation discretion. Taxes levied are house taxes, water taxes and stamp duty, and transfers are not funded out of these but instead centrally provided.

<sup>10</sup>This is consistent with an overall perception on the part of villagers that they are poorly governed. On average, few of the externally mandated and funded programs are available. There is low program participation for villages with them, few funds coming in to the village from higher levels of government, little effort expended by leaders to obtain funds via meeting with higher level officials, and few meetings with villagers themselves.

A key assumption of the politics of fear is that ruler replacement increases the likelihood of a switch in power between groups. We shall maintain this. However, the replacement of a leader in Padro-i-Miquel (2007) leads to a type of chaos, where government activity – taxes and transfers – are shut down for a while. The reason being that, in his setting, leaders can not continue to govern without the support of the group; with this withdrawn, the government essentially stops and the pre-announced policies of the leader are suspended. But in our setting, the village leader is in place due to the outcome of an election, and he will remain in place until the next election when a successor will be formally appointed. Consistent with Padro-i-Miquel, once he loses support of his group, he cannot win reelection. But, the elected leader will still remain in office, and government continues for the remainder of the term. This is true whether the group has withdrawn support for the leader in the next election or not. So we assume here that the removal of support for a leader only affects the probability that the replacement candidate wins office relative to the probability that would have ensued for the incumbent leader to win office had the support for him continued. It does not affect directly affect governance but may affect it through induced responses of leaders.

## 2.2 Model Details

Time is discrete and each period represents a term of office. There are two sub-castes (jatis) – denoted  $A$  and  $B$ , and each jati decides on a leader who will contest elections for office. If the incumbent is from group  $A$ , then if this incumbent receives the “support” of his jati, he is reelected with probability  $\gamma^A$ . However, the jati need not support the current incumbent but may instead put forward an alternative replacement candidate drawn from the group. Doing this weakly increases the likelihood of a switch of power to the other jati. If the incumbent is replaced, the group’s other candidate wins the election with probability  $\gamma^a \leq \gamma^A$ .<sup>11</sup>

Each leader in office receives per period “office rents” measured as  $\pi$  in the utility metric. The leader

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<sup>11</sup>Incumbents often come from ruling families that are prominent within the sub-caste. Thus a change of incumbent means more than a leader stepping aside for his son or brother to have a turn of leadership, or for one of his political clients to do so. In our setting this is more correctly thought of as a continuation of incumbency rule. Such a leadership group maintains the full set of connections and power relations despite the change in leader identity. Leadership changes from a direct challenge are more pronounced than a mere change of leadership. Thus, in our empirical setting we will not attempt to discern the incumbency threatening effects via changes in the identity of the leader. Further, as will be seen, along the equilibrium path, leaders need not change under reservations for these to have large effects. The enhanced threat of leadership change, rather than the leadership change per se., induces improved governance with no necessary change in personnel.



in office decides over two dimensions of policy that affect constituent (and own) welfare. One dimension reflects distributional concerns, and the other governance quality – a public good – which depends on leader effort. Regarding the distributional component, the ruler can choose to allocate a component of spending/resources or services in a way that can be targeted to a single caste/jati group. We denote this as being valued at  $\eta$  per group recipient member in each village. Thus a member of group  $i$  in receipt of such distributional benefit from the leader receives  $\eta$  in utility metric, a member of group  $j \neq i$  receives 0.

The second dimension of leader discretion is the allocation of leader effort towards governance. Governance is a public good that is costly to the leader to provide. We assume a linear production function:  $G$  units of costly effort produces  $G$  units of public good. This is a “net of public good” cost of effort, implying that the leader incurs total disutility of minus  $G$  when producing  $G$  units of public good.<sup>12</sup> As mentioned above, we suppress any possibility of differential citizen or group treatment for taxes. This implies that a leader producing  $G = \pi/2$  level of governance effort has the same per period utility from being in office as a citizen (modulo distributional benefits being equivalent). This will be a useful benchmark in what follows.

Leaders can commit to their constituents the level of effort they will devote to public good creation if elected, and hence can commit to the public good.<sup>13</sup> These commitments hold for the term of office. If they stand for reelection, they again promise the policy that will hold for the term of office if reelected, but cannot promise public goods into future terms of office.<sup>14</sup> Denote a group  $I$  incumbent’s governance level (public good) by  $G^I$ , where  $I = A$  or  $B$ . Let  $G^{IC}$  denote the level of public good promised by a challenger to a group  $I$  incumbent drawn from the same group. Let  $1-\delta$  denote the probability of death (which also acts as discounting).

### 2.2.1 Reservations

With probability  $p$  a reservation occurs for the Pradhan position in a village. Assume that reservations can only go to group  $A$ .<sup>15</sup>

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<sup>12</sup>So, in gross terms, the production function is such that 2 units of effort (valued linearly by the leader) produce 1 unit of linearly valued public good.

<sup>13</sup>They can also commit to distributional transfers to their constituents, but since promised transfers always line up with ex post transfer incentives, there is no need for this commitment.

<sup>14</sup>We describe what would happen with infinite commitment, or no commitment later.

<sup>15</sup>Group  $B$  do not receive them; as in our data there is always an upper caste group (Marathas) who do not receive reservations.

### 2.2.2 Timing

Timing proceeds as follows. There is an incumbent leader in place at time 0. The random allocation of reservations is decided by nature, and the village either has leadership reserved for a member of group  $I$  or unreserved elections. All eligible individuals who choose to contest the election then announce the policies that they would implement were they to be elected to the next term of office. If the incumbent leader's group is eligible, (either because there are no reservations, or reservations apply to his group) the group decides whether to "support" the incumbent or not. If not eligible due to reservations, the support decision is irrelevant. If there are no reservations, the incumbent is reelected with probability  $\gamma^I$  if supported, and probability  $\gamma^i \leq \gamma^I$  if not supported;  $I = A$  or  $B$ , and  $i = a$  or  $b$ . If there are reservations, then a member of the reserved group is appointed leader with probability 1. Whoever is elected undertakes the policies promised to his group members, and becomes the incumbent for the next electoral cycle.

### 2.2.3 Value Functions

As in Padro-i-Miquel (2007) we solve for stationary Markov perfect equilibria of the game. A simplifying feature of our set up is that transfers are allocated within the group so that  $\eta$  goes to a leader's own group members, with the leader similarly receiving  $\eta$ . This is trivially optimal for a candidate to promise to his group members, and he of course delivers this upon attaining power. Leaders thus only have a substantive choice over the  $I = A$  or  $B$ , that they will offer in the production of governance – the village public good. Value functions for leaders are as follows, and explained immediately below:

$$V_L^A = \pi - G^A + \eta + \delta (pV_L^R + (1-p) (\gamma^A V_L^A + (1-\gamma^A)V^{AB})) \quad (1)$$

$$V_L^B = \pi - G^B + \eta + \delta (pV^{BA} + (1-p) (\gamma^B V_L^B + (1-\gamma^B)V^{BA})) \quad (2)$$

$$V_L^R = \pi - G^R + \eta + \delta (pV_L^R + (1-p) (\gamma^A V_L^A + (1-\gamma^A)V^{AB})) \quad (3)$$

Consider a village leader who comes from group  $A$ , with corresponding value function  $V_L^A$ . The value of being leader comprises the per period office rents,  $\pi$ , the disutility of producing the level of effort to produce the promised level of public good,  $-G^A$  (which is net of the utility benefit the leader himself consumes from the good) and the distributional benefit  $\eta$ . With probability  $\delta$  the leader lives for another period, and with probability  $p$  the village is randomly chosen to receive a reservation. In that case, the leader has the continuation value arising from being a leader in a reserved village; the term  $V_L^R$ . This is without loss of generality as it will be seen that in a reserved village a leader has continuation values that are equivalent to those of citizens. With probability  $1 - p$  the village is not randomly chosen for a reservation, and with probability  $\gamma^A$  the leader wins office again, and hence has continuation value  $V_L^A$  again. In the event that he does not win office, with probability  $1 - \gamma^A$ , he reverts back to being a citizen with the corresponding value function  $V^{AB}$ , denoting his being a member of group  $A$  in a village with a  $B$  group leader. Citizens' functions are defined below.

The value function for a  $B$  leader is similar with the exception that, since  $B$ s do not receive reservations, in the event of a reservation being randomly allocated to the village, with probability  $p$ , the leader reverts to being a citizen  $V^{BA}$  for certain, the form of which is again elaborated below.

Value functions for citizens vary depending on whether the village is lead by a member of their group, the other group, or is reserved. If the leader is from their own group, and leadership is unreserved:

$$V^{AA} = G^A + \eta + \delta(pV^{AR} + (1-p)(\gamma^A V^{AA} + (1-\gamma^A)V^{AB})) \quad (4)$$

$$V^{BB} = G^B + \eta + \delta(pV^{BR} + (1-p)(\gamma^B V^{BB} + (1-\gamma^B)V^{BA})) \quad (5)$$

If the leader is from the other group and leadership is unreserved:

$$V^{AB} = G^B + \delta(pV^{AR} + (1-p)(\gamma^B V^{AB} + (1-\gamma^B)V^{AA})) \quad (6)$$

$$V^{BA} = G^A + \delta(pV^{BR} + (1-p)(\gamma^A V^{BA} + (1-\gamma^A)V^{BB})) \quad (7)$$

Let  $G^R$  denote the level of public good produced by a leader in a village under reservations. Value functions for citizens in reserved villages are:

$$V^{AR} = G^R + \eta + \delta(pV^{AR} + (1-p)(\gamma^A V^{AA} + (1-\gamma^A)V^{AB})) \quad (8)$$

$$V^{BR} = G^R + \eta + \delta(pV^{BR} + (1-p)(\gamma^A V^{BA} + (1-\gamma^A)V^{BB})). \quad (9)$$

In each case, value functions are straightforward, the citizen receives the distributional benefit only if sharing group membership with the leader, and receives the level of public good produced by the leader no matter what his group. The continuation values thus vary depending on whether random reservation happens to the village, probability  $p$ , and vary with the continuation winning probability of the current leader  $\gamma^I$ ,  $I = A$  or  $B$ .<sup>16</sup>

#### 2.2.4 Challenger entry

Deposing an incumbent is costly to citizens as a non-incumbent is more likely to cede leadership to the other group. Thus, for citizens to accept a challenger they must be rewarded by a commitment of improved governance by the challenger in the event he wins and becomes leader. That is, the challenger must offer  $G^{AC}$  for an  $A$  group or  $G^{BC}$  for a  $B$  group challenger such that the expected value of supporting the challenger at least weakly exceeds that of continuing to support the incumbent. That is, for an  $A$  group member a successful challenge must ensure:

$$\begin{aligned} \gamma^a (G^{AC} + \eta + \delta(pV^{AR} + (1-p)(\gamma^A V^{AA} + (1-\gamma^A)V^{AB}))) \\ + (1-\gamma^a)V^{AB} \geq \gamma^A V^{AA} + (1-\gamma^A)V^{AB}. \end{aligned} \quad (10)$$

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<sup>16</sup>Since successful challenges to incumbents do not occur along the equilibrium path  $\gamma^i$ ,  $i = a$  or  $b$ , do not feature in the citizen or leader value functions.

And

$$\begin{aligned} \gamma^b (G^{BC} + \eta + \delta (pV^{BR} + (1-p)(\gamma^B V^{BB} + (1-\gamma^B)V^{BA}))) \\ + (1-\gamma^b) V^{BA} \geq \gamma^B V^{BB} + (1-\gamma^B)V^{BA}. \end{aligned} \quad (11)$$

Note that, in each case, the probability of the group winning the leadership is weakly lower under the challenger, for an  $A$  this is due to  $\gamma^a < \gamma^A$ . The amount  $\gamma^A - \gamma^a$  thus corresponds with what Padro-i-Miquel (2007) connotes as due to “personal rule”. It denotes the increased stability in the group’s rule that supporters gain by maintaining the incumbent instead of replacing him with a challenger.

The key feature of reservations is that since they assure that an  $A$  in the next election will win for sure, there is no loss of stability to the group upon deposing an incumbent. In light of this, the level of public good the leader offers his group members must satisfy the following inequality for him to continue to receive support:

$$G^R + \eta + \delta (pV^{AR} + (1-p)(\gamma^A V^{AA} + (1-\gamma^A)V^{AB})) \geq V^{AA}. \quad (12)$$

Note that this condition would apply equivalently to both incumbents and challengers in reserved villages since they are symmetric except for their differences in  $\gamma$ , which become irrelevant under reservations. Condition (12) will generally not bind in equilibrium, implying that citizens in reserved villages have strictly higher continuation values than those who, though having an incumbent leader, do not have a reserved leader.<sup>17</sup>

We finally consider the challenger entry condition. For a challenger to be willing to offer an  $A^c$  or  $B^c$ , he must prefer being a leader producing the respective amount to remaining a regular group member. In doing this, he internalizes the fact that by deposing an incumbent he will lower the group’s overall probability of gaining the leadership position. For such a challenger to enter, necessarily:

$$\begin{aligned} \gamma^a (\pi - G^{AC} + \eta + \delta (pV_L^R + (1-p)(\gamma^A V_L^A + (1-\gamma^A)V^{AB}))) \\ + (1-\gamma^a)V^{AB} \geq \gamma^A V^{AA} + (1-\gamma^A)V^{AB} \end{aligned} \quad (13)$$

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<sup>17</sup>It can be seen from (4) that this holds immediately provided  $G^R \geq G^A$ , which shall be proved.

$$\begin{aligned} \gamma^b (\pi - G^{BC} + \eta + \delta (pV^{BR} + (1-p)(\gamma^B V_L^B + (1-\gamma^B)V^{BA}))) \\ + (1-\gamma^b)V^{BA} \geq \gamma^B V^{BB} + (1-\gamma^B)V^{BA}. \end{aligned} \quad (14)$$

The left hand side of the expressions above are the value to the challenger when contesting for the village leadership position as the representative of group  $A$  or  $B$  respectively. In contrast, when the village is reserved, an  $A$  is assured to win, so the  $A$  challenger's condition is modified accordingly:

$$\pi - G^R + \eta + \delta (pV_L^R + (1-p)(\gamma^A V_L^A + (1-\gamma^A)V^{AB})) \geq V^{AA}. \quad (15)$$

That is, an  $A$  challenger must prefer entering and producing  $G^R$  level of public good, as opposed to remaining a citizen.

For simplicity in notation we have anticipated some of the equilibrium features in restricting the generality of notation above. In the notation used in (15) we allow no distinction between the  $G^R$  denoted there which corresponds to that chosen by a challenger, and the  $G^R$  that would have to be produced by an incumbent in equation (8). This is because once reservations occur in a village the incumbent no longer has kleptocratic rents from personal rule. A challenger is equally likely to become the leader if preferred over the incumbent by the group (with probability 1), so that either one has to offer the same  $G^R$ . In contrast, within non-reserved villages, where the incumbent's advantage from personal rule ( $\gamma^A - \gamma^a$ ) requires a challenger to promise better governance in return for displacing an incumbent  $G^{AC} \geq G^A$ .

### 2.2.5 Solving the model.

Along the equilibrium path challengers in unreserved villages must be defeated for support (weakly) by incumbents so that conditions (10) and (11) bind. This must be the case since incumbents have the advantage of personal rule, and can thus promise a level of public good that will make them at least weakly preferred to a challenger and weakly better off than vacating the leadership, even if the challenger were to receive no net gain to running for office. Free entry of challengers necessitates that equations (13) to (15) also bind. These five conditions, plus equations (1) to (9), yield a system of fourteen equations in the model's fourteen unknowns:  $\{V_L^A, V_L^B, V_L^R, V^{AA}, V^{BB}, V^{AB}, V^{BA}, V^{AR}, V^{BR}, G^A, G^{AC}, G^B, G^{BC}, G^R\}$ .

This system can be solved explicitly, let  $*$  denote the equilibrium values of the endogenous variables.

**Proposition 1.** *If the value of distributional benefits from leadership,  $\eta$ , is sufficiently great relative to the rents from office,  $\pi$ , then there exists a unique stationary Markov perfect equilibrium which corresponds to the solution to equations (1) to (11) and (13) to (15).<sup>18</sup> There thus exists a unique set of equilibrium values  $(G^{A*}, G^{B*}, G^{AC*}, G^{BC*}, G^{R*})$ .*

Proof: See section 7.3 in the Appendix, which provides explicit solutions provided for  $G^{A*}G^{R*}$ .

In such an equilibrium, incumbents are never deposed by challengers from within. Group members always prefer to vote for their own representative than the leader of another group, and as in Padro-i-Miquel (2007), the existence of personal rule ensures that incumbents enjoy kleptocratic rents. Namely, provided that  $\gamma^A - \gamma^a > 0$  (similarly for  $B$  members) the net present value of being an incumbent leader strictly exceeds the net present value of being a citizen. Another way of stating this is that the level of public good rendering a citizen indifferent to the leadership position, which is  $G^A = \pi/2$ , is not achieved by incumbent leaders with kleptocratic rents. That is, for  $\gamma^A - \gamma^a > 0$ ,  $G^{A*} < \pi/2$ .

The reason why existence of such an equilibrium depends on the distributional benefits being sufficiently large is that the persistence of group based voting depends on individuals valuing distributional benefits sufficiently more than promised governance improvements. This stops a profitable deviation from a leader that could attract out-group members by promising superior public good provision. A sufficient condition for this is simply that even if the other group generates governance leaving its citizens indifferent to leadership, i.e.,  $G = \frac{\pi}{2}$ , and a citizen has a group leader providing zero governance,  $G = 0$ , this citizen will still prefer a leader from his own group, that is  $\eta \geq \frac{\pi}{2}$ .<sup>19</sup>

We now compare the level of governance in a reserved village with that in a village returning an incumbent who is not reserved. Since reservations only occur in  $A$  villages, the comparator is a non-reserved  $A$  leader.

**Proposition 2.** *A reserved village has (weakly) improved governance relative to a non-reserved  $A$  village returning an incumbent.*

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<sup>18</sup>A sufficient condition is  $\eta \geq \frac{\pi}{2}$ .

<sup>19</sup>The politics of fear arises precisely because the inter-group distributional factors trump common goals. It is because of this that any disciplining role of inter-group competition on leader public good delivery does not arise.

That is:

$$G^{R*} - G^{A*} = \eta (\gamma^A - \gamma^a) \Theta \Phi \geq 0,$$

where  $\Theta, \Phi > 0$ , and explicitly stated in the appendix.

Governance improves under reservations (weakly) because kleptocratic rents enjoyed by incumbents are destroyed when leadership is guaranteed to the group so that group members can contest the leadership without the group fearing that it will lose leadership of the village. Consequently, as the expression in the proposition shows, the size of the improvement in governance is proportional to the size of “personal rule”  $\gamma^A - \gamma^a$  which is the source of kleptocratic rents. As the corollary below shows, this process of contestation is so great that, under reservations, entrants are willing to offer levels of governance making citizens (statically) better off than the entrants themselves.

**Corollary 1.**

$$G^{R*} > \frac{\pi}{2} \text{ iff } \gamma^A - \gamma^a > 0.$$

Recall that the benchmark level of governance offered by a leader making him indifferent to the leadership position was  $G = \pi/2$ . The corollary shows that the supported candidate under reservations offers strictly more than this when there is personal rule. The leader is thus worse off in his first period (commitment period) of office as he produces a higher level of governance public good. He is willing to do this because he is able to enjoy kleptocratic rents (probabilistically) from then on, and will receive strictly higher flow utility values than citizens as long as he remains in office. We now consider the empirical implications of the model:

**Corollary 2.** • If  $\gamma^A - \gamma^a = 0$ , then reservations have no effect on village governance. That is:

$$G^{R*} - G^{A*} = 0.$$

- If  $\gamma^A - \gamma^a > 0$ , then reservations have more impact on village governance, the greater is the own group distributional benefit to holding the leadership,  $\eta$ . That is:  $G^{R*} - G^{A*}$  is increasing in  $\eta$  for  $\gamma^A - \gamma^a > 0$ .

Incumbents in villages without personal rule,  $\gamma^A - \gamma^a = 0$ , do not enjoy kleptocratic rents. Consequently, reserving political office in such villages does not affect governance outcomes. In villages where such rents



are present,  $\gamma^A - \gamma^a > 0$ , their size also depends on the value the group puts on maintaining its distributional benefits,  $\eta$ . Where this is highly valued, kleptocratic rents are greatest and the improvement in governance under reservations is more pronounced.

## 2.3 Empirical Predictions

Unreserved villages have two types of leaders – a leader that was previously an incumbent and new leaders, who are elected when the incumbent leader loses to the representative of another group. (Recall that, along the equilibrium path, incumbents in unreserved villages are never successfully challenged by own-group members). Only a previous incumbent leader in an unreserved village has the potential for kleptocracy rents and hence for these to be challenged and reduced under reservations. A new leader in an unreserved village does not have such rents and therefore provides governance quality similar to that in a reserved village.

Without observing whether a leader in an unreserved village is an incumbent or not, we can only attribute the expected value of governance to such villages. Since a sub-set of these villages are returning incumbents, from Proposition 2 the predicted effects of reservations (i.e.,  $G^{R*} - G^{A*}$ ) are still positive provided  $\gamma^a < \gamma^A$ . We now discuss how we empirically determine a village’s differential:  $\gamma^A - \gamma^a$ .

**Small groups:** If a jati is such a small proportion of the village’s voters that it almost never wins the Pradhan’s position, i.e., it only obtains the leadership via reservation, or through rare random events, then reservations should have no impact on governance. That is, since  $\gamma^A \rightarrow 0$ , lowering reelection probabilities to  $\gamma^a < \gamma^A$  is not costly to this group. Thus  $\gamma^A - \gamma^a \rightarrow 0$ , from Corollary 2 there should be no impact of reservations on output.<sup>20</sup>

**Large Groups:** If a jati is so large a proportion of the village’s voters that it will almost always win elections in non-reserved villages, then reserving a leadership position for this group will again have no impact on governance. To see this, consider a group so powerful that even when an incumbent leader is deposed by a challenger from within the group, it is likely to win the leadership again anyway. This implies

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<sup>20</sup>An alternative reason for small groups gaining power in unreserved villages may be that their leader has idiosyncratic qualities that make him particularly effective in seizing the leadership position. In Section 7.5 of the appendix we show that allowing for individual leader heterogeneity in this way does not alter the model’s prediction that reservations for small groups have no effect.

that  $\gamma^a \rightarrow 1$ . In that case, the increment to reelection probability gained by maintaining an incumbent leader is small enough to provide only marginal benefits to the group, i.e., this again implies  $\gamma^A - \gamma^a \rightarrow 0$ . Once again, there will be no impact of reservations on output.

**Medium Sized Groups:** Reservations should have an effect on caste groups that are a large enough proportion of the population to contest for the leader's position, but not so large as to be assured to win it. Groups for whom  $\gamma^A - \gamma^a > 0$ . These groups have incumbents enjoying kleptocratic rents from the fact that they are essential (or at least helpful) to the group's maintaining power. Providing a guaranteed reservation of the leadership to the group destroys those kleptocratic rents and improves governance.

We now turn to testing these predictions on the effects of reservations by village Pradhan size.

### 3 Data

From November 2006 to May 2007, we surveyed 9132 households from a sample of 300 villages in the state of Maharashtra, which is located on the west coast of central India. Our data are from three main regions: Western Maharashtra, Marathwada, and Vidarbha (we excluded only the Konkan coastal region whose economic hub is Mumbai). To focus on villages which are primarily agricultural (as opposed to factory based or small market towns), which are large enough to generally have their own Panchayat, and where society is caste based, rather than tribal, our criteria for village selection was a total population of 1500-2500 with a tribal population representing less than 10%.<sup>21</sup> From the universe of such villages within the geographic area (a total of 22 565) 300 were randomly chosen and visited by our enumeration teams. Within the villages, neighbourhoods were identified and their approximate population shares computed. Surveying intensity within a neighbourhood was proportional to its population share and households within neighbourhoods were randomly selected. Our sample ends up extremely poor; 42% are below the state poverty line (household income, less than 4367 Rs/capita/year, i.e., less than \$1.25 ppp/day/capita).

We administered questionnaires at the household level, village level, and to the Gram Panchayats (GPs) directly. Some information, particularly the balance sheets of the GPs, were accessed from higher level state

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<sup>21</sup>Indigenous tribal society exists in a somewhat parallel relationship to the caste system in India. Tribal villages were excluded because their unique mode of social organization made them difficult to directly compare with the majority of traditional caste based villages, where jati is the clear social identifier.

government offices using the “Right to Information Act”.<sup>22</sup> In Maharashtra, a given GP typically covers a population of approximately 2000. As a result, in our data the GPs are generally village specific.

Our key governance outcomes are in line with Anderson, Francois, and Kotwal (2015). GPs implement centrally funded poverty alleviation programs, provide some public goods, represent village interests to higher level administrative units, and obtain resources from centralized funds for village projects. There is substantial variation in all of these performance indicators across our sample of villages.

An important GP activity is pro-poor policy delivery. There are a number of such policies supposed to be available in the full universe of our sample villages. Firstly, there are programs directly targeted to individuals below the poverty line (BPL). There are also non-targeted programs that are still primarily intensively utilized by the poor but nominally available to all village residents. The mean number of programs available in a village is 5.33 out of a possible 15 major programs that we asked about, and when restricted to those directly targeted to BPL individuals it is 1.71 out of a total of 8. Another important pro-poor policy is the state’s Employment Guarantee Scheme (EGS). The EGS is a legal guarantee for 365 days of employment to adult members of rural households willing to do public work-related unskilled manual labour at the statutory minimum wage.<sup>23</sup> To operate in a village, EGS projects must be activated by the GP from a set of possible projects, after petitioning for particular project approval from a higher level authority. The scheme is evident in only 20% of villages. This scheme, like all listed programs, is funded externally and administered by the GP upon request for implementation. The GP draws up lists of eligible recipients, and disburses entitlements to them.

## 4 Estimations

### 4.1 Effect of Reservations

Reservations for the Gram Pradhan position are randomly allocated across villages on a rotational basis. Reservations in India for the SC/ST group are computed proportionally to the population of a particular

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<sup>22</sup>The Panchayat Raj is a system of governance within a state which has three levels: village (*Gram Panchayat*), block (*Panchayat Samiti*), and district (*Zilla Parishad*).

<sup>23</sup>It is a precursor to, and more generous version of, the current nationally administered Mahatma Gandhi National Rural Employment Guarantee Act, MNREGA).

caste group at the district level, so the proportion of positions which are reserved can vary by district. This is the case too in Maharashtra for the SC/ST group. However, for the OBC group, in Maharashtra a fixed percentage 27% of the Gram Pradhans are reserved for a member of the OBC caste, and this number is chosen randomly and administered by the state’s electoral commission.<sup>24</sup>

We run the following as our main estimating equations, which vary depending on whether the dependent variable was measured at the village or household level. The household level regression is represented by the following:

$$Y_{ik} = \beta_0 + \beta_1 RESERVED_k + \psi_k X_{ik} + \gamma_k Z_k + \epsilon_{ik}. \quad (16)$$

$Y_{ik}$  is an outcome of household  $i$ , residing in village  $k$ .  $X_{ik}$  includes household controls (education, land ownership, and caste identity);  $Z_k$  includes village level geographic, demographic, and climate controls (latitude, longitude, elevation, distance to natural water sources, distance to railways and national roads, soil quality measures, rainfall levels, as well as caste population proportions and whether the land ownership is dominated by Marathas).  $RESERVED_k$  is our key variable of interest which is equal to 1 if the Gram Pradhan is reserved for a lower caste (OBC, SC, ST) member in village  $k$  and equal to 0 otherwise.<sup>25</sup> Therefore in these estimations, the comparison group is unreserved Gram Pradhans.<sup>26</sup>  $\epsilon_{ik}$  is a regression disturbance term clustered at the village level.

We also use village level data to explore the impact of reservations on Gram Panchayat performance measures. We estimate the following:

$$Y_k = \beta_0 + \beta_1 RESERVED_k + \phi_k Z_k + \varepsilon_k. \quad (17)$$

$Y_k$  is a village level Gram Panchayat outcome measure in village  $k$ .

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<sup>24</sup>Consequently, testing the model predictions is cleaner for OBC groups in reserved villages since reservations for them are not confounded with any possible effects that could arise from population frequencies at the district level. All results persist when we just focus on reservations for OBCs and exclude the SC reservations from the analysis. Refer to tables A4 and A5 in the appendix.

<sup>25</sup>We also include region fixed effects.

<sup>26</sup>We include as an additional control whether the Gram Pradhan is reserved for a woman.

## 4.2 Baseline Estimations

Recall that the model predicts if the caste group (jati) of an incumbent is very small then he/she will be unlikely to win re-election in an unreserved village,  $\gamma^A \rightarrow 0$ , and hence there is no effect of reservations on governance outcomes since kleptocratic rents are low:  $\gamma^A - \gamma^a \rightarrow 0$ . On the other hand, if an incumbent is from a jati that is very dominant, his group should always be able to win election even with a replacement candidate,  $\gamma^a \rightarrow 1$ , therefore there is again no effect of reservations as kleptocratic rents are similarly low:  $\gamma^A - \gamma^a \rightarrow 0$ . If instead, the candidate is from a jati which is large enough to contest elections, they are more likely to win if persisting with the incumbent, hence generating kleptocratic rents,  $\gamma^A - \gamma^a > 0$ , so that reservations, which allow such rents to be contested, should improve governance. Since these predictions depend on the size of the  $\gamma$ s, which are unobservable, we test these implications using a multitude of different approaches. Our first test is to estimate (16) and (17) for different samples of villages, based on the proportion of the village population that shares the same jati as the Pradhan. The reasoning here is that this proportion corresponds to the electoral power of the jati, and hence its ability to have a candidate win the Pradhan position.

We look to the sample of villages with unreserved Pradhans to inform us of the relevant cut-off populations, i.e., the  $\gamma$ s. Table A1 in the Appendix lists the probability of winning the Pradhan position as a function of the population share of the jati of the Pradhan in unreserved villages. We see that jati groups with less than 25% of the village population are never the largest jati and are unlikely to provide the Pradhan in unreserved villages (approximated 2% of the time); corresponding to our  $\gamma^A \rightarrow 0$  case. Jatis which exceed 50% of the population are very likely to provide the Pradhan position (65%); corresponding to our  $\gamma^a \rightarrow 1$  case.<sup>27</sup> Whereas jatis between 25 and 50% are contesting jatis and provide the Pradhan 30% of the time on average, corresponding to our  $\gamma^A - \gamma^a > 0$  case where we expect reservations should improve governance. We choose these cutoffs for our baseline specification and will explore robustness around these cutoffs subsequently.

Our first estimations bundle the zero estimate groups together. That is, one group where the jati of the

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<sup>27</sup>The problem with using a more stringent upper bound, i.e., an upper bound of say 70% is that this reduces the sample of such villages to a very small number. Since our theory predicts that this is one of the regions where we should find a zero effect, this biases testing of our model strongly in our favour. So to preserve power we have used this relatively lenient cut-off. We attempt numerous robustness tests to relaxing this way of treating the  $\gamma$ s in what follows.

Pradhan makes up between 25% and 50% of the village population - where the theory predicts effects – and another group of villages, where the village population of the jati of the Pradhan is either small, i.e., less than 25%, or very large, i.e., greater than 50%, and the theory does not expect reservations to significantly impact governance. Table 1 reports the estimation results from (17) for these two samples of villages, and Table 2 are from (16).

\*\*\*Insert Table 1.\*\*\*

We see that our key measures of governance are all significantly positively related to whether the Pradhan is reserved only in villages where the jati or the Pradhan forms between 25 and 50% of the village population.

\*\*\*Insert Table 2.\*\*\*

Similarly, for the household level variables, the key measures of governance are also all significantly positively related to whether the Pradhan is reserved only in villages where the jati or the Pradhan forms between 25 and 50% of the village population.

### 4.3 Alternative Specifications

Below we report alternative estimation results from (17) (in Table 3) and from (16) (Table 4). In these we instead separate out the two uncontested categories into one where the jati of the Pradhan is less than 25%, and another greater than 50%.

\*\*\*Insert Table 3.\*\*\*

The estimated effect of reservations in these uncontested villages is very small and statistically insignificant in the lower group (<25%) for all of variables of interest. The same holds true in the upper group (>50%), except for the provision of government programs, where the relationship is negative and significant; as we will see, this is not a particularly robust finding. Similar results are found for our household measured governance variables as seen in Table 4 below.

\*\*\*Insert Table 4.\*\*\*

This statistically significant negative effect of reservations in villages where the jati of the Pradhan makes up more than 50% of the population is not robust to excluding villages where the Pradhan is a Maratha, as seen in the two tables below. Our main reported effects of reservations in line with the model’s predictions, however, are all robust to doing so.<sup>28</sup>

\*\*\*Insert Table 5.\*\*\*

From Table 5 and 6, we see that now, for both uncontested categories, there is no insignificant effect of reservations in these types of villages on our key measures of governance at either the village or household level.

\*\*\*Insert Table 6.\*\*\*

#### 4.4 Robustness Checks

We now explore a series of robustness checks of our baseline estimates which continue to demonstrate that reservations only have a positive and significant impact on governance in contested villages. The first consideration is the determination of the population cutoffs. Below, we report the estimation results for varying cutoffs. In Table 7 the two key dependent variables are the estimated average effect size (AES) of the government program variables in the earlier specifications (Programs, BPL Programs, Income Programs, Employment Guarantee Scheme) and the government finances (Revenue, Taxes, Funds, Expenses). We report the estimated coefficient on Pradhan reservations using varying cut-off measures for the proportion of the village sharing the jati of the Pradhan. The first panel is for the whole sample, the second panel excludes villages with a Maratha Pradhan. We see that reservations have a significant and positive effect on governance only in the middle category. The estimated coefficient is largest in the range between 25 and 45%, but remains significant in all specifications if we go as low as 20% and as high as 60%.

\*\*\*Insert Table 7.\*\*\*

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<sup>28</sup>Marathas are a distinct and powerful upper caste whose effects on village politics can be pronounced. This is especially the case when they comprise the largest landowners in the village. Anderson, Francois and Kotwal (2015) explores this caste’s influence on village politics in detail.

Very similar results hold true in the household level data. In Table 8 below, the key dependent variables are the estimated average effect size of the government program variables in the earlier specifications (Programs, BPL Programs, Employment Guarantee Scheme, Program Participation, Needy get Benefits, Received what Entitled to) and the government performance indicators (Receive more benefits if connected to GP, Paid Taxes, Voted on Promises).

\*\*\*Insert Table 8.\*\*\*

We now consider more carefully how we might define a contested village by considering also the population proportion of the other main jati in the village, i.e. a prominent sub-caste group which does not share the jati of the Pradhan. In this regard, we limit our contested villages to those where the other most prominent jati forms at least 15% or 20% of the village population. It is first important to note, that under this criterion, we are essentially always considering villages with two prominent jatis who do NOT share a larger caste grouping. This is a potentially serious problem as the large caste groupings (OBC, SC) are the ones at which reservations are defined. But since politics is organized around sub-castes or jatis, of which there are multiple within each SC and OBC caste, this can potentially lead to problems with our definition of a contested village. For example a village with a reservation for OBCs featuring two OBC jatis each of which comprises 25-30% of the village's population (and a number of other small non-OBC jatis) would not be one in which either one of these OBC jatis would be guaranteed the leadership position. The reservation excludes competition from a non OBC, but the relevant competing group for each jati in this case is the other OBC group, so that this reservation does not alter competition, and therefore does not destroy the kleptocratic rents of the incumbent ( $\gamma^A - \gamma^a$ ). Since our theory implicitly assumes that reservations do not include two competing jatis within the same caste from competing for the reserved position, such cases are a clear violation of our theory and the predicted effect of reservations would not apply there. It turns out that this particular violation almost never occurs in the data. More precisely, the proportion of villages with two prominent OBC jatis (i.e., with population numbers of at least 15%) form only 5% of the sample villages, and those with two prominent SC castes form only 3% of the sample. It makes no difference to the results that we report if we include or exclude these very few villages from the estimations.<sup>29</sup>

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<sup>29</sup>This violation is so rare probably because of the traditional occupational distribution of villages, its correspondence with



In Table 9 below, we report the estimated coefficient on reservation status on our average effect size dependent variables for governance, taking into consideration the population proportion of the other prominent jati. We see that the positive effect of reservations in our middle category (when the jati of the Pradhan forms 25 to 50% of the population) is robust to considering only villages where the other prominent jati forms at least 15% of the population.

The final set of estimation results considers an alternative characterization of what is a contested village by considering the size of the Pradhan's jati relative to the main competitor jati, rather than just relative to the village population as a whole. Our first definition is that a village is contested when the largest non-Pradhan jati's population falls between a half and twice of the size of the jati of the Pradhan. An uncontested village is one where this is not true. We see that there is evidence of reservations having a positive effect in our contested villages and not in our uncontested villages primarily only for one of our measures of governance (finances). Our second measure widens this spread to a minimum of a third of the population of the Pradhan jati to triple its size, and we see that similar results ensue.

\*\*\*Insert Table 9.\*\*\*

Table 10 below demonstrates that similar results hold for our governance measures from the household level survey.

\*\*\*Insert Table 10.\*\*\*

## 4.5 Quality of the Pradhan

Although reservations are randomly determined, it is conceivable that other variables are systematically correlated with our key source of variation. One particular consideration is the quality of the Pradhan.

Suppose that, for some reason, Pradhans in reserved positions systematically differ in quality from those in

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caste, and the conjoined living decisions of jati members. For example, each village traditionally had a three part occupational breakdown: large land holders, small holding cultivators, and landless workers who undertook mostly menial tasks. The latter two categories make up the OBC and SC categories respectively. People tended to live in villages where their jati members reside, jatis are strongly endogamous, and live proximately for reasons to do with the strong forms of within group cooperation and insurance that such groups provide; see for example Munshi and Rosenzweig (2016) for a recent analysis. So, in a particular village, one jati tends to numerically dominate the OBC group, and one tends to dominate the SC group. After many years of (albeit limited) migration, there is some mixing, but the case of a single village with two large OBC groups or two large SC groups is extremely unusual.

unreserved positions. This could potentially bias our results if the magnitude of the quality differences is correlated with our jati population breakdowns. In the two tables below we demonstrate that results from our baseline specification are robust to including other characteristics of the Pradhan such as education and land ownership measures (second column). They are also robust to controlling for the Pradhan being from the Maratha caste, which can only occur in the control group, (first column).

\*\*\*Insert Table 11.\*\*\*

Table 12 demonstrates that this robustness check also holds for our governance measures at the household level.

\*\*\*Insert Table 12.\*\*\*

Another check to see if the characteristics of the Pradhan could be contributing to our results in some manner is to use the quality of the Pradhan as a dependent variable in an analogous estimation of (17) in contested and uncontested villages. That is, we would like to know if the estimated coefficient of reservation status on the quality of the Pradhan similarly follows an inverted U-shape with regards to the population share of the Pradhan's jati, as do our measures of governance.

Figure 1 below depicts the estimated coefficient of the variable reserved on the education and landholdings of the Pradhan respectively. We see that there is no evidence of an inverted U-shaped relationship for either of these quality measures. Moreover, the estimated coefficient is never significant in the estimations of Pradhan landholdings. The estimated coefficient is a negative determinant of the education of the Pradhan for all population shares of their jati, and only significant if the share exceeds 50%.

\*\*\*Insert Figure 1\*\*\*

## 4.6 Placebo Tests

Our key results could also be biased if the population share of the jati of the Pradhan is systematically correlated with some other variable affecting governance. If this were the case, then our key finding that reservation status has a positive and significant effect on governance outcomes only in so-called contested villages follows because our measure of what is a contested village is in fact correlated with this other

relevant variable. To this end, we consider a series of candidate variables measured at the village level, like caste proportions, polarization and fractionalization measures, as well as village-level education levels and landholdings. To look for evidence of this possibility, we estimate (17), for two outcome measures (government programs and government revenues) in a series of estimations which vary by percentile measures of village types. That is to say, we first consider our village characteristic of interest, the population share of the jati of the Pradhan. We break the population share of the jati of the Pradhan into three percentile groupings (terciles) so that each estimation has a third of the villages; approximately corresponding to the break-down in Tables 3 and 4. The figure below depicts the estimated coefficient on reservation status in each of these terciles. Consistent with our baseline estimates being driven by a data generating process like that of our theory, we see that reservation status is a positive and significant determinant of governance only for the middle category.

\*\*\*Insert Figure 2\*\*\*

We now perform an analogous exercise for different village measures: proportion of the village which is from an OBC caste, proportion which is Maratha; fractionalization index; polarization index; proportion of the village which are large land owners ( $> 5$  acres); proportion of the village adult men which have at least some secondary education. These are all factors which, if exhibiting a pattern of correlation like that predicted by our theory, could spuriously generate the pattern we see in the data. Unlike Figure 2 we never see an inverted U-type relationship with regards to the different terciles of these village-level measures and governance indicators.

\*\*\*Insert Figures 3 and 4\*\*\*

## 4.7 Test of $\eta$ Prediction

Another prediction of the model is that the value of holding the Gram Pradhan position is higher if it is easier for the Pradhan to target his own jati with distributional benefits. To test for this we construct a type of Herfindahl index of jati concentration. As mentioned in section 3, villages were surveyed along neighbourhood lines. Using the jati population numbers in each neighbourhood, we define  $s_j$  to be the number of households who share the same jati as the Gram Pradhan in neighbourhood  $j$  divided by the

number of households who share the same jati as the Gram Pradhan in the entire village. We then construct an index  $H = \sum_{j=1}^n s_j^2$  which is higher the more concentrated is the jati in the village. If all of the Gram Pradhan jati members are in a single neighbourhood, say  $j = 1$ , then  $s_1 = 1$ , and  $s_j = 0$  for all of the other neighbourhoods  $j$  and  $H = 1$ , which is the upper bound on  $H$ . In this case, the members of the Gram Pradhan's jati are very concentrated in a single neighbourhood and our reasoning here is that it will be relatively easy for him to target his group members with local public goods. Alternatively, suppose instead that the members of the Gram Pradhan's jati are spread equally across all neighbourhoods, then  $s_j = \frac{1}{n}$  for all  $j$  and  $H = \frac{1}{n}$ , which is the lower bound on  $H$ . Such a very diluted jati would be more difficult to single out with targeted benefits. In the former case, holding the Pradhan position is more valuable to the group, which corresponds to a high value of  $\eta$ , which Proposition 2 shows yields a larger effect of reservations, ceteris paribus, in the case of contested villages.

Testing this prediction suggests that we estimate the following two equations including an interacted measure of concentration. Specifically we run the household level regression represented by the following:

$$Y_{ik} = \beta_0 + \beta_1 RESERVED_k + \beta_2 RESERVED_k * H_k + \beta_3 H_k + \psi_k X_{ik} + \gamma_k Z_k + \epsilon_{ik}, \quad (18)$$

with  $H_k$  being our index of the degree of concentration of the Gram Pradhan's jati village  $k$ . Our key coefficient of interest is the interaction coefficient,  $\beta_2$ , which the theory predicts to be positive. That is, the impact of reservations (represented by  $RESERVED_k$ ) is larger the easier it is to target the Gram Pradhan's jati members, as captured by a higher  $H_k$ . The analogous village level regression is:

$$Y_k = \beta_0 + \beta_1 RESERVED_k + \beta_2 RESERVED_k * H_k + \beta_3 H_k + \phi_k Z_k + \varepsilon_k. \quad (19)$$

Tables 13 and 14 report the results from estimating (19) and (18) respectively. The point estimates suggest some support for the positive impact of reservations on governance outcomes being larger the easier it is to target members of the jati of the Pradhan, i.e., a higher estimated  $\beta_2$ , for program provision in the village. We restrict our sample to those villages where reservations had an impact, that is, where the members of the jati of the Gram Pradhan make up between 25% and 50% of the village population. Since, when estimating GP level measures, this leaves us with quite a small sample, we see, from Table 13 below,

that though the estimated coefficient  $\beta_2$  is large and positive, it is only significant at about the 20% level for all program outcomes, with the exception of the Employment Guarantee Scheme where significance is found at the 10% level. Significance improves to about the 15% or 10% levels when moving to the household level data with roughly 1800 observations, as seen in Table 14.

\*\*\*Insert Table 13 and 14\*\*\*

## 5 Conclusion

Political reservations for traditionally disadvantaged castes in Indian villages can improve the quality of governance, not just with respect to that caste, but for the village as a whole. This is the first evidence of such an effect to our knowledge. According to the theory proposed here, the reason it can improve governance is due to the sclerotic nature of democracy when identity politics underlies the formation of political groupings. The collectively beneficial activities that a government could be undertaking are sacrificed to the group focused ones in such polities. We think this pertains to the rural Indian villages in our sample. Citizens view their elected representative firstly as an in-group member whose primary job is to provide benefits to the group and primarily assess him on that. Secondly, he is an overall village leader and, *ceteris parabus*, it is better if he can do that well too. The ensuing organization of representatives and electors leads to a situation where a leader doing the former task well will be tolerated by a group even when he does the latter task poorly leading to a type of kleptocratic rent that accrues to a personalist leader. The reasoning underlying such a “politics of fear” scenario has already been well formalized by Padro-i-Miquel (2007) and explains the underlying dysfunction of politics in identity based systems.

By extension of this reasoning here, we show that political reservations – by allowing the incumbent’s kleptocratic rent to be safely contested within the group – is a means via which this type of political dysfunction can be ameliorated. The model we develop demonstrates that when personalistic politician power is greatest – in villages where a group is neither overwhelmingly powerful, nor overwhelmingly weak – reservations should have their greatest effect. And this is exactly what we find in the data. A natural conclusion then is that a politics of fear scenario well describes the setting where our data is collected, and some of its deleterious effects on governance can be offset by reserving political office for members of a

particular caste.

Taken to its logical conclusion, the experiment of caste based reservations suggests a broader message about how government dysfunction can be overcome in identity based electoral systems. If politics of fear factors are indeed the reason that democracy fails to function, and this happens because groups coalesce around identity, an extreme implication would be that apportioning representation by identity, perhaps on a rotational basis, and dispensing with democratic elections altogether may actually destroy political elites' kleptocratic rents and improve governance. In our data, these reservations for traditionally disadvantaged groups seem to have had effects in curtailing such dysfunction. But there is nothing necessary about reservations being limited solely to the traditionally disadvantaged groups. The general message is that since democracy doesn't work well in identity based settings, governance could be improved by dispensing with democratic contests altogether. Simply allowing groups to take leadership positions in turn – perhaps stochastically – might lead to marked improvements.

There are reasons to stop well short of such a suggestion though. As Laitin (1986) and Posner (2004) have argued in an African context, explicitly privileging group identity in the formal political process – here it is caste sub-groups or jatis, but it could be tribes or religions – may further entrench any pre-existing tendencies individuals had to coalesce upon such lines in the first place. The process of political reservations in India has been argued to have done just that (see Osborne (2001) for example), the consequences of which are not modeled or even considered here. Going a step further and reserving leadership for individuals at the group level, on a rotational basis, would go even further.

## 6 References

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## 7 Appendix

*Table A1 - Pradhan Positions - Unreserved Villages - Castes with Reservations*

Population of Jati	Probability win Pradhan Position	Obs.	Probability win Pradhan Position [Excluding Maratha Pradhan Villages]	Obs.
0 to 25%	0.02	942	0.03	465
0 to 20%	0.01	916	0.03	453
0 to 15%	0.01	886	0.03	441
25% to 50%	0.29	45	0.38	34
20% to 50%	0.21	71	0.33	46
25% to 45%	0.29	41	0.39	31
20% to 45%	0.21	67	0.32	43
15% to 50%	0.15	101	0.28	58
25% to 60%	0.36	55	0.49	41
50% to 100%	0.65	20	0.81	16
45% to 100%	0.58	24	0.74	19
60% to 100%	0.60	10	0.67	9
70% to 100%	0.60	5	0.75	4
80% to 100%	0.50	2	0.50	2

Notes: Only considering non-Maratha jatis

### 7.1 Voting by Jati

A key assumption of the model is that voters benefit from Gram Pradhan's of their own jati. To provide support for this assumption we estimate the following equation:

$$Y_{ink} = \beta_0 + \beta_1 SHAREJATI_k + \psi_k X_{ik} + \gamma_k Z_k + \epsilon_{ik}. \quad (20)$$

$Y_{ink}$  is an outcome of household  $i$ , residing in neighbourhood  $n$ , in village  $k$ .  $X_{ik}$  includes household controls (education, land ownership, and caste identity);  $Z_k$  includes village level geographic, demographic, and climate controls (latitude, longitude, elevation, distance to natural water sources, distance to railways and national roads, soil quality measures, rainfall levels, as well as caste population proportions and whether the land ownership is dominated by Marathas).  $SHAREJATI_k$  is our key variable of interest, which is equal to 1 if the household shares the same jati as the Gram Pradhan in a village  $k$ .

Below we present results from estimating (20) on households from the lower castes (OBC, SC, ST) for two key sets of variables. The first pertain to public good provision in a household's neighbourhood. Households report that the two most important public goods that need improvement are access to drinking water and electricity. Below we see that if a household shares the jati of the Gram Pradhan that they are less likely to report problems associated with drinking water and electricity. Neighbourhoods, where the majority of households share the jati of the Gram Pradhan are correspondingly more likely to report higher levels of both of these goods.

The second set of variables pertain to households' perceptions of the Gram Pradhan. Not only do they have a more positive perception of a Gram Pradhan of their own caste but they believe that he is more likely to cater to the particular needs of their own caste.

Table A2 - Public Goods in Caste Neighbourhood - Low Castes

Variable	<i>SHAREJATI<sub>k</sub></i>
<u>Public goods in caste neighbourhood:</u>	
Drinking water problems	-0.08 (0.03)***
Electricity problems	-0.04 (0.02)**
Percent of households with electricity	6.3 (2.2)***
Per capita drinking wells	0.04 (0.01)***
<u>Perceptions of Gram Pradhan:</u>	
Honest	0.08 (0.04)**
Provides public goods	0.08 (0.04)**
Does not discriminate by caste	-0.20 (0.06)***
Caters to my caste	0.09 (0.05)**
Caters to my caste neighbourhood	0.08 (0.05)*
Observations	5008

Table A3 - Estimations - Household Level Data - Unreserved Villages

Variable	$JATIPRADHAN_k$
All programs	2.34 (0.88)***
BPL programs	0.81 (0.31)***
Employment Guarantee Scheme	0.17 (0.07)**
Program participation	0.62 (0.30)**
Needy get benefits	1.57 (0.84)*
Received what entitled to	0.90 (0.41)**
Receive more benefits if connected to GP	-0.26 (0.19)
Voted on promises	0.09 (0.06)
Observations	2991

Note that we do not find any impacts on individual benefits from sharing the jati of the Gram Pradhan for Marathas. We do not report these estimates.

## 7.2 Reservations for OBCs

Tables A4 and A5 report the results from estimating (??) and (??) respectively for three types of villages. Low OBC refers to villages where OBCs form 0 to 40% of the population, Middle OBC refers to villages where OBCs form 40 to 60% of the population. High OBC refers to greater than 60%. We now see that the main results from Tables 1 and 2 mainly hold in villages where OBCs form 40 to 60% of the population.

Table A4 - Estimations of GP Measures by Proportion OBC

	Low OBC	Middle OBC	High OBC
Variable	Coefficient ( $\beta_1$ )	Coefficient ( $\beta_1$ )	Coefficient ( $\beta_1$ )
	<i>RESOBC</i>	<i>RESOBC</i>	<i>RESOBC</i>
All programs	0.80 (0.53)	3.00 (1.20)**	0.51 (1.37)
BPL programs	0.27 (0.19)	0.89 (0.50)*	0.14 (0.50)
Income programs	0.67 (0.49)	2.81 (1.07)***	0.48 (1.32)
Revenue/capita	13.9 (22.9)***	460.3 (273.7)*	343.8 (381.5)
Taxes/capita	24.6 (18.3)	210.3 (117.8)*	298.2 (147.3)*
Funds/capita	-10.7 (12.3)	451.79 (207.9)**	165.3 (111.0)
Expenses/capita	72.6 (42.9)*	436.4 (224.8)*	289.0 (402.3)
Observations	225	40	49

Table A5 - Estimations - Household Level Data by Proportion OBC

	Low OBC	Middle OBC	High OBC
Variable	Coefficient ( $\beta_1$ )	Coefficient ( $\beta_1$ )	Coefficient ( $\beta_1$ )
	<i>RESOBC</i>	<i>RESOBC</i>	<i>RESOBC</i>
All programs	0.64 (0.51)	3.00 (0.83)***	0.52 (1.05)
BPL programs	0.23 (0.18)	0.87 (0.36)**	0.09 (0.37)
Program participation	0.24 (0.17)	0.87 (0.35)**	0.13 (0.36)
Needy get benefits	0.10 (0.29)	1.85 (0.81)**	-0.03 (0.82)
Total problems	-0.09 (0.21)	-0.83 (0.48)*	-0.55 (0.48)
Taxes Paid	48.0 (39.1)	232.7 (123.2)*	-21.2 (82.1)
Program participation (OBC)	0.18 (0.22)	0.94 (0.47)**	0.30 (0.33)
Total problems (OBC)	-0.11 (0.25)	-0.60 (0.37)*	-0.62 (0.60)
Observations	6490	1185	1313

### 7.3 Explicit solutions for Proposition 1

$$G^{A*} = \pi/2 + (2(\gamma^a - \gamma^A)(1 + (-1 + p)\gamma^A\delta)(-\gamma^b + 2\gamma^B + (-1 + p)(\gamma^b(-1 + \gamma^A - \gamma^B) + 2(\gamma^B)^2)\delta)\eta)/((1 + (-1 + p)(-1 + \gamma^a(-\gamma^b(2 + (-2 + p)\delta) + 2\gamma^B(1 + (-1 + p)\gamma^B\delta))))$$

$$G^{R*} = (\pi + 2G^A(-1 + p)\gamma^A\delta)/(2 + 2(-1 + p)\gamma^A\delta)$$

$$\Phi = \frac{2(-\gamma^b + 2\gamma^B + (-1 + p)(\gamma^b(-1 + \gamma^A - \gamma^B) + 2\gamma^B\delta))}{(1 + (-1 + p)(-1 + \gamma^A + \gamma^B)\delta)},$$

$$1/\Theta = \gamma^A\gamma^b(2 - 2\gamma^A\delta + p(-1 + 2\gamma^A)\delta) + \gamma^a(-\gamma^b(2 + (-2 + p)\delta) + 2\gamma^B(1 + (-1 + p)\gamma^B\delta))$$

## 7.4 Proof of Proposition 2

From the solutions stated in the proof of Proposition 1, we obtain the expression:  $G^{R^*} - G^{A^*} = \frac{2(\gamma^a - \gamma^A)(-\gamma^b + 2\gamma^B + (-1+p)(\gamma^b(-1+\gamma^A - \gamma^B) + 2\gamma^{B^2})\delta)\eta}{[(1+(-1+p)(-1+\gamma^A + \gamma^B)\delta)[\gamma^A\gamma^b(2-2\gamma^A\delta+p(-1+2\gamma^A)\delta) + \gamma^a(-\gamma^b(2+(-2+p)\delta) + 2\gamma^B(1+(-1+p)\gamma^B\delta))]}$ . Parameter restrictions are  $(p, \delta, \eta, \gamma^A, \gamma^a, \gamma^B, \gamma^b) \in (0, 1)$ . and  $\gamma^a \leq \gamma^A, \gamma^b \leq \gamma^B$ . We first show that this expression can be signed when setting  $p = 0$ . Under this assumption,  $R^* - A^*$  is given by:

$$\frac{(\gamma^A - \gamma^a)\eta[\gamma^b(1 - \delta(1 - \gamma^A + \gamma^B)) + 2\gamma^B(\gamma^B\delta - 1)]}{[1 + (1 - \gamma^A - \gamma^B)\delta][\gamma^A\gamma^b(\gamma^A\delta - 1) + \gamma^a(\gamma^b(1 - \delta) - \gamma^B(1 - \gamma^B\delta))]}.$$

In the denominator, the term in the first square bracket:  $1 - (1 - \gamma^A - \gamma^B)\delta > 0$  because  $(1 - \gamma^A - \gamma^B)\delta < 1$ . The first term in the second square bracket on the denominator is -ve since  $\gamma^A\delta < 1$ . The second term in the second square bracket is -ve because  $\gamma^b < \gamma^B$  and  $1 - \delta < 1 - \gamma^B\delta$ . Hence the denominator is negative. Consider the square bracketed term in the numerator. Necessarily  $\gamma^b(1 - \delta\gamma^B) + 2\gamma^B(\gamma^B\delta - 1) > \gamma^b(1 - \delta(1 - \gamma^A + \gamma^B)) + 2\gamma^B(\gamma^B\delta - 1)$  since  $1 - \gamma^A > 0$ . And  $\gamma^b(1 - \delta\gamma^B) + 2\gamma^B(\gamma^B\delta - 1) \equiv (1 - \delta\gamma^B)(\gamma^b - 2\gamma^B) < 0$ , so the numerator is also negative implying that  $G^{R^*} - G^{A^*} \geq 0$  when  $p = 0$ .

Now consider  $G^{R^*} - G^{A^*}$  when  $p = 1$ . The expression simplifies to:

$$2(\gamma^A - \gamma^a)\eta[2\gamma^B - \gamma^b].$$

This is clearly non-negative also since  $\gamma^a < \gamma^A, \gamma^b < \gamma^B$ .

For  $G^{R^*} - G^{A^*}$  to be non-negative when  $p = 0$ , and also non-negative when  $p = 1$ , but negative for values of  $p$  between 0 and 1, necessarily  $G^{R^*} - G^{A^*}$  must equal zero at at least two points in the interval  $p \in (0, 1)$ . But explicitly solving for  $p$  such that  $G^{R^*} - G^{A^*} = 0$ , yields:

$$p = 1 - \frac{2\gamma^B - \gamma^b}{\delta(2(\gamma^B)^2 + \gamma^b(\gamma^A - 1 - \gamma^B))}.$$

Since this is a unique point, necessarily  $G^{R^*} - G^{A^*} \geq 0$  for all values of  $p$  in the interval 0 to 1.

## 7.5 Small groups obtaining power due to idiosyncratic leader quality

The reasons a small group winning the leadership may vary. One way of thinking about it is as a random event which makes the group unlikely to win again, and this is how we have interpreted such events in the baseline model. But if the “random event” is that the leader of this group is particularly skilled, and therefore the group wins leadership only because of this leader’s idiosyncratic quality, then providing reservations for this group will not allow the kleptocratic rents (which the current leader holds and benefits from) to be contested in the same way that it would for a group that wins by one off chance. Though a reservation will imply that the group will hold the leadership, if the contesting applicant wins the leadership he will no longer enjoy the incumbency advantage of the original (high quality) incumbent beyond that. Thus the group will lose control (with very high likelihood) after the period of reservation, which they would be much less likely to do if they persist with the current leader.

To calculate the effect of this in our model we modify the value functions so that if a leader is replaced, then group loses leadership in the period after reservations no longer take effect. The assumption is that the replacement is a standard type, as in our baseline model, and does not share the incumbent’s idiosyncratic quality advantage. If such a challenger replaces the incumbent, then assuming she will not hold power again in an uncontested election (and her kleptocratic rents are zero), her entry condition requires her providing an  $G^{AC}$  such that:

$$\pi - G^{AC} + \eta + \delta (pV_L^R + (1-p)V^{AB}) \geq G^A + \eta + \delta (pV^{AR} + (1-p)(\gamma^A V^{AA} + (1-\gamma^A)V^{AB})). \quad (21)$$

Solving for the  $G^{AC*}$ , which binds above, yields the level of effort that the incumbent would have to produce to stave off such a challenge. From the perspective of citizens, it must be the case that citizens would rather have the challenger at the best feasible governance level offered,  $G^{AC*}$  above, instead of persisting with the incumbent under  $G^A$ . Namely:

$$G^{AC*} + \eta + \delta (pV^{AR} + (1-p)V^{AB}) > G^A + \eta + \delta (pV^{AR} + (1-p)(\gamma^A V^{AA} + (1-\gamma^A)V^{AB})) \quad (22)$$



Using the binding  $G^{AC*}$  from (21) and substituting into (22) yields:

$$G^{AC*} + \eta + \delta (pV^{AR} + (1-p)V^{AB}) > \pi - G^{AC*} + \eta + \delta (pV_L^R + (1-p)V^{AB}).$$

But note that  $V^{AR} = V_L^R$ , since this is a group for which  $\gamma^A - \gamma^a \rightarrow 0$ , which implies that  $G^A = \frac{\pi}{2}$  from then on for this challenger (as there is no kleptocratic rent for such a leader). Imposing  $V^{AR} = V_L^R$  in the condition above now reduces the inequality to:

$$G^{AC*} > \frac{\pi}{2}.$$

This inequality implies that for a standard quality challenger under reservations to be preferred to the idiosyncratically high quality incumbent, this entrant must offer governance under the challenge that strictly exceeds that which would leave them indifferent to taking the leadership position. So any feasible entrant would not be chosen to displace an idiosyncratically high quality leader under reservations. Thus reservations have no effect in such cases.

Table 1 - Baseline Estimations of GP Measures

Variable	$25\% \leq \text{Jati Pradhan} \leq 50\%$ <i>RESERVED<sub>k</sub></i>	$\text{Jati Pradhan} < 25\% / \text{Jati Pradhan} > 50\%$ <i>RESERVED<sub>k</sub></i>
All programs	2.01 (0.90)**	-0.55 (0.39)
BPL programs	0.81 (0.30)***	-0.16 (0.14)
Income programs	1.81 (0.82)**	-0.54 (0.36)
Employment Guarantee Scheme	0.13 (0.07)**	-0.02 (0.04)
Revenue/capita	793.9 (246.1)***	51.9 (89.3)
Taxes/capita	459.4 (192.3)**	21.8 (47.7)
Funds/capita	298.5 (128.8)**	30.2 (44.4)
Expenses/capita	706.6 (386.8)**	95.5 (87.9)
Number of Committees	1.56 (0.71)**	-0.05 (0.25)
Observations	65	179

*Table 2 - Baseline Estimations - Household Level Data*

Variable	$25\% \leq \text{Jati Pradhan} \leq 50\%$ <i>RESERVED<sub>k</sub></i>	$\text{Jati Pradhan} < 25\% / \text{Jati Pradhan} > 50\%$ <i>RESERVED<sub>k</sub></i>
All programs	1.69 (0.74)**	-0.50 (0.38)
BPL programs	0.71 (0.26)***	-0.16 (0.13)
Employment Guarantee Scheme	0.11 (0.06)*	-0.02 (0.04)
Program participation	0.50 (0.23)**	-0.08 (0.12)
Needy get benefits	1.37 (0.66)**	-0.13 (0.33)
Received what entitled to	0.68 (0.34)**	-0.05 (0.17)
Receive more benefits if connected to GP	-0.29 (0.12)**	0.02 (0.09)
Paid taxes	0.05 (0.03)*	0.02 (0.02)
Voted on promises	0.08 (0.04)**	0.01 (0.02)
Observations	1869	4990

Table 3 - Estimations of GP Measures - Uncontested Categories

Variable	$RESERVED_k$	$RESERVED_k$	$RESERVED_k$
	[Jati Pradhan < 25%]	[25% ≤ Jati Pradhan ≤ 50%]	[Jati Pradhan > 50%]
All programs	0.12 (0.56)	2.01 (0.90)**	-2.34 (0.94)***
BPL programs	0.06 (0.19)	0.81 (0.30)***	-0.74 (0.37)**
Income programs	0.11 (0.51)	1.81 (0.82)**	-2.13 (0.88)**
Employment Guarantee Scheme	0.03 (0.05)	0.13 (0.07)**	-0.12 (0.09)
Revenue/capita	-38.7 (38.4)	793.9 (246.1)***	71.6 (160.9)
Taxes/capita	-31.6 (35.3)	459.4 (192.3)**	42.2 (81.2)
Funds/capita	-7.1 (13.4)	298.5 (128.8)**	29.3 (82.3)
Expenses/capita	16.2 (22.9)	706.6 (386.8)**	119.3 (166.2)
Number of Committees	-0.07 (0.42)	1.56 (0.71)**	-0.10 (0.34)
Observations	100	65	79

Table 4 - Estimations - Household Level Data - Uncontested Categories

Variable	$RESERVED_k$ [Jati Pradhan < 25%]	$RESERVED_k$ [25% ≤ Jati Pradhan ≤ 50%]	$RESERVED_k$ [Jati Pradhan > 50%]
All programs	0.32 (0.51)	1.69 (0.74)**	-2.37 (0.90)***
BPL programs	0.11 (0.18)	0.71 (0.26)***	-0.74 (0.39)*
Employment Guarantee Scheme	0.05 (0.05)	0.11 (0.06)*	-0.11 (0.08)
Program participation	0.18 (0.18)	0.50 (0.23)**	-0.57 (0.26)**
Needy get benefits	0.40 (0.45)	1.37 (0.66)**	-1.49 (0.77)*
Received what entitled to	0.30 (0.25)	0.68 (0.34)**	-0.80 (0.34)**
Receive more benefits if connected to GP	-0.12 (0.12)	-0.29 (0.12)**	0.01 (0.14)
Paid taxes	-0.01 (0.02)	0.05 (0.03)*	-0.14 (0.04)***
Voted on promises	0.05 (0.03)	0.08 (0.04)**	-0.02 (0.04)
Observations	2744	1869	2246

Table 5 - Estimations of GP Measures - Excluding Villages with a Maratha Pradhan

Variable	$RESERVED_k$	$RESERVED_k$	$RESERVED_k$
	[Jati Pradhan < 25%]	[25% ≤ Jati Pradhan ≤ 50%]	[Jati Pradhan > 50%]
All programs	0.76 (0.77)	2.42 (1.15)**	0.22 (0.58)
BPL programs	0.20 (0.27)	0.88 (0.40)**	0.21 (0.23)
Income programs	0.67 (0.71)	2.18 (1.03)**	0.23 (0.52)
Employment Guarantee Scheme	0.03 (0.06)	0.17 (0.06)***	0.05 (0.05)
Revenue/capita	-50.9 (46.7)	965.8 (324.4)***	667.9 (690.4)
Taxes/capita	-50.8 (43.8)	542.0 (208.9)***	335.1 (349.2)
Funds/capita	-0.07 (12.5)	411.5 (145.5)***	332.8 (341.5)
Expenses/capita	11.3 (27.8)	903.2 (391.1)**	604.5 (752.5)
Number of Committees	-0.27 (0.52)	1.81 (0.86)**	-0.41 (0.94)
Observations	88	43	32

Table 6 - Estimations - Household Level Data - Excluding Villages with a Maratha Pradhan

Variable	$RESERVED_k$ [Jati Pradhan < 25%]	$RESERVED_k$ [25% ≤ Jati Pradhan ≤ 50%]	$RESERVED_k$ [Jati Pradhan > 50%]
All programs	0.87 (0.68)	1.95 (0.83)**	-0.76 (0.73)
BPL programs	0.24 (0.24)	0.72 (0.30)**	-0.22 (0.30)
Employment Guarantee Scheme	0.06 (0.05)	0.13 (0.06)**	-0.07 (0.07)
Program participation	0.33 (0.22)	0.60 (0.28)**	-0.01 (0.23)
Needy get benefits	0.87 (0.59)	1.55 (0.78)**	-0.39 (0.72)
Received what entitled to	0.41 (0.30)	0.85 (0.42)**	-0.11 (0.30)
Receive more benefits if connected to GP	-0.14 (0.14)	-0.34 (0.13)***	0.01 (0.14)
Paid taxes	-0.01 (0.02)	0.10 (0.04)***	-0.19 (0.04)***
Voted on promises	0.04 (0.04)	0.08 (0.03)***	0.05 (0.04)
Observations	2446	1235	765

Table 7 - Estimations of GP Measures - Varying Cutoffs

Sample	Whole Sample:		Excluding Maratha Pradhan Villages:	
	Government Programs (AES) <i>RESERVED<sub>k</sub></i>	Government Finances (AES) <i>RESERVED<sub>k</sub></i>	Government Programs (AES) <i>RESERVED<sub>k</sub></i>	Government Finances (AES) <i>RESERVED<sub>k</sub></i>
<u>Lower Category:</u>				
Jati Pradhan < 25%	0.08 (0.29)	-4.0 (22.7)	0.36 (0.36)	-3.2 (23.1)
Jati Pradhan < 20%	0.26 (0.34)	-2.2 (22.0)	0.52 (0.41)	-0.3 (25.5)
Jati Pradhan < 15%	0.49 (0.45)	-25.8 (31.9)	0.53 (0.44)	15.8 (30.1)
<u>Middle Category:</u>				
25% ≤ Jati Pradhan ≤ 50%	1.19 (0.43)***	518.5 (169.1)***	1.38 (0.48)***	612.9 (190.2)***
20% ≤ Jati Pradhan ≤ 50%	0.82 (0.38)**	281.3 (125.7)**	1.12 (0.42)***	524.5 (133.1)***
15% ≤ Jati Pradhan ≤ 50%	0.45 (0.32)	244.8 (98.4)***	0.77 (0.38)*	501.4 (119.1)***
25% ≤ Jati Pradhan ≤ 45%	1.47 (0.41)***	679.5 (199.3)***	1.57 (0.45)***	624.5 (229.7)***
20% ≤ Jati Pradhan ≤ 45%	0.85 (0.38)**	291.1 (140.6)**	1.33 (0.44)***	525.9 (164.9)***
15% ≤ Jati Pradhan ≤ 45%	0.45 (0.32)	250.8 (106.8)**	0.82 (0.38)**	455.7 (137.5)***
25% ≤ Jati Pradhan ≤ 60%	0.71 (0.37)**	472.4 (140.2)***	1.31 (0.39)***	653.3 (173.3)***
25% ≤ Jati Pradhan ≤ 75%	0.33 (0.31)	312.6 (108.6)***	0.73 (0.34)**	594.5 (163.2)***
25% ≤ Jati Pradhan ≤ 1	0.02 (0.32)	558.3 (165.6)***	0.65 (0.34)**	292.4 (96.0)***
<u>Upper Category:</u>				
Jati Pradhan > 50%	-1.33 (0.44)***	73.4 (130.9)	-0.31 (0.47)	73.4 (130.9)
Jati Pradhan > 45%	-0.91 (0.40)**	110.7 (108.1)	0.30 (0.56)	110.7 (108.1)



Table 8 - Estimations of Household Measures - Varying Cutoffs

Sample	Whole Sample:		Excluding Maratha Pradhan Villages:	
	Government Programs (AES) <i>RESERVED<sub>k</sub></i>	Governance Variables (AES) <i>RESERVED<sub>k</sub></i>	Government Programs (AES) <i>RESERVED<sub>k</sub></i>	Governance Variables (AES) <i>RESERVED<sub>k</sub></i>
<u>Lower Category:</u>				
Jati Pradhan < 25%	0.19 (0.25)	0.06 (0.04)	0.44 (0.33)	0.06 (0.04)
Jati Pradhan < 20%	0.19 (0.28)	0.002 (0.05)	0.52 (0.35)	0.02 (0.06)
Jati Pradhan < 15%	0.57 (0.43)	0.03 (0.06)	0.57 (0.44)	0.03 (0.06)
<u>Middle Category:</u>				
25% ≤ Jati Pradhan ≤ 50%	0.82 (0.37)**	0.13 (0.04)***	0.92 (0.43)**	0.17 (0.04)***
20% ≤ Jati Pradhan ≤ 50%	0.49 (0.29)*	0.15 (0.04)***	0.71 (0.33)**	0.19 (0.04)***
15% ≤ Jati Pradhan ≤ 50%	0.32 (0.22)	0.07 (0.04)**	0.54 (0.29)*	0.11 (0.04)***
25% ≤ Jati Pradhan ≤ 45%	1.13 (0.35)***	0.16 (0.04)***	1.24 (0.39)***	0.19 (0.04)***
20% ≤ Jati Pradhan ≤ 45%	0.56 (0.29)**	0.17 (0.04)***	0.94 (0.35)***	0.20 (0.04)***
15% ≤ Jati Pradhan ≤ 45%	0.29 (0.23)	0.10 (0.04)***	0.62 (0.30)**	0.12 (0.04)***
25% ≤ Jati Pradhan ≤ 60%	0.54 (0.29)*	0.09 (0.04)**	0.99 (0.30)***	0.18 (0.04)***
25% ≤ Jati Pradhan ≤ 75%	0.21 (0.28)	0.06 (0.04)	0.56 (0.32)*	0.10 (0.04)***
25% ≤ Jati Pradhan ≤ 1	-0.02 (0.29)	0.04 (0.04)	0.56 (0.32)*	0.10 (0.04)***
<u>Upper Category:</u>				
Jati Pradhan > 50%	-1.01 (0.43)**	-0.05 (0.05)	-0.26 (0.36)	0.05 (0.05)
Jati Pradhan > 45%	-0.77 (0.38)**	-0.04 (0.05)	0.31 (0.54)	0.09 (0.07)

Table 9 - Estimations of GP Measures - Contesting Castes

Sample	Whole Sample:		Excluding Maratha Pradhan Vill:	
	Government Programs (AES) <i>RESERVED<sub>k</sub></i>	Government Finances (AES) <i>RESERVED<sub>k</sub></i>	Government Programs (AES) <i>RESERVED<sub>k</sub></i>	Government Finances (AES) <i>RESERVED<sub>k</sub></i>
Jati Pradhan < 25% (Other Jati ≥ 15%)	0.08 (0.29)	-4.0 (22.7)	0.36 (0.36)	-3.2 (23.1)
Jati Pradhan < 25% (Other Jati ≥ 20%)	0.08 (0.29)	-4.0 (22.7)	0.36 (0.36)	-3.2 (23.1)
25% ≤ Jati Pradhan ≤ 50% (Other Jati ≥ 15%)	1.19 (0.43)***	518.5 (169.1)***	1.38 (0.48)***	612.9 (190.2)***
25% ≤ Jati Pradhan ≤ 50% (Other Jati ≥ 20%)	1.19 (0.43)***	518.5 (169.1)***	1.38 (0.48)***	612.9 (190.2)***
Jati Pradhan > 50% (Other Jati ≥ 15%)	-1.33 (0.44)***	73.4 (130.9)	-0.31 (0.47)	73.4 (130.9)
Jati Pradhan > 50% (Other Jati ≥ 20%)	-1.33 (0.44)***	73.4 (130.9)	-0.31 (0.47)	73.4 (130.9)
[0.5*Jati Pradhan ≤ Other Jati ≤ 2*Jati Pradhan]=1	0.57 (0.36)	360.9 (115.4)***	0.84 (0.47)*	334.8 (108.6)***
[0.5*Jati Pradhan ≤ Other Jati ≤ 2*Jati Pradhan]=0	-0.05 (0.21)	64.0 (45.3)	0.43 (0.33)	110.8 (70.3)
[0.33*Jati Pradhan ≤ Other Jati ≤ 3*Jati Pradhan]=1	0.22 (0.33)	221.8 (89.5)***	0.72 (0.46)	324.2 (103.7)***
[0.33*Jati Pradhan ≤ Other Jati ≤ 3*Jati Pradhan]=0	-0.09 (0.22)	83.5 (53.7)	0.40 (0.36)	130.5 (83.7)

Table 10 - Estimations of Household Measures - Contesting Castes

Sample	Whole Sample:		Excluding Maratha Pradhan Vill:	
	Government Programs (AES) <i>RESERVED<sub>k</sub></i>	Governance Variables (AES) <i>RESERVED<sub>k</sub></i>	Government Programs (AES) <i>RESERVED<sub>k</sub></i>	Governance Variables (AES) <i>RESERVED<sub>k</sub></i>
Jati Pradhan < 25% (Other Jati ≥ 15%)	-0.16 (0.29)	0.02 (0.04)	0.44 (0.33)	-0.03 (0.04)
Jati Pradhan < 25% (Other Jati ≥ 20%)	-0.16 (0.29)	0.06 (0.05)	0.44 (0.33)	0.05 (0.04)
25% ≤ Jati Pradhan ≤ 50% (Other Jati ≥ 15%)	0.82 (0.37)**	0.13 (0.05)***	0.92 (0.43)**	0.16 (0.06)***
25% ≤ Jati Pradhan ≤ 50% (Other Jati ≥ 20%)	0.82 (0.37)**	0.13 (0.04)***	0.92 (0.43)**	0.16 (0.05)***
Jati Pradhan > 50% (Other Jati ≥ 15%)	0.10 (0.81)	0.07 (0.06)	-0.26 (0.36)	0.05 (0.05)
Jati Pradhan > 50% (Other Jati ≥ 20%)	0.10 (0.81)	0.07 (0.06)	-0.26 (0.36)	0.05 (0.05)
[0.5*Jati Pradhan ≤ Other Jati ≤ 2*Jati Pradhan]=1	0.33 (0.28)	0.09 (0.04)**	0.51 (0.30)*	0.19 (0.04)***
[0.5*Jati Pradhan ≤ Other Jati ≤ 2*Jati Pradhan]=0	-0.003 (0.18)	-0.01 (0.03)	0.28 (0.22)	0.01 (0.03)
[0.33*Jati Pradhan ≤ Other Jati ≤ 3*Jati Pradhan]=1	0.29 (0.24)	0.07 (0.03)**	0.50 (0.26)*	0.11 (0.03)***
[0.33*Jati Pradhan ≤ Other Jati ≤ 3*Jati Pradhan]=0	-0.07 (0.20)	-0.03 (0.03)	0.24 (0.25)	-0.003 (0.04)

Table 11 - Estimations of GP Measures - Villages with  $25\% \leq \text{Jati Pradhan} \leq 50\%$

Variable	<i>RESERVED<sub>k</sub></i>	<i>RESERVED<sub>k</sub></i>
	[Controlling for Maratha Pradhan]	[Controlling for Pradhan Characteristics]
All programs	2.03 (0.88)**	2.10 (0.95)**
BPL programs	0.81 (0.30)***	0.83 (0.32)***
Income programs	1.83 (0.80)**	1.89 (0.86)**
Employment Guarantee Scheme	0.13 (0.06)**	0.13 (0.07)*
Revenue/capita	714.0 (217.8)***	665.4 (250.3)***
Taxes/capita	431.6 (163.7)***	440.9 (175.2)***
Funds/capita	250.1 (115.4)**	222.9 (129.2)*
Expenses/capita	630.0 (300.2)**	605.9 (342.9)*
Number of Committees	1.56 (0.68)**	1.60 (0.66)**
Observations	65	65

Table 12 - Estimations - Household Level Data - Villages with  $25\% \leq \text{Jati Pradhan} \leq 50\%$

Variable	<i>RESERVED<sub>k</sub></i> [Controlling for Maratha Pradhan]	<i>RESERVED<sub>k</sub></i> [Controlling for Pradhan Characteristics]
All programs	1.77 (0.74)**	1.80 (0.84)**
BPL programs	0.73 (0.27)***	0.75 (0.30)***
Employment Guarantee Scheme	0.12 (0.06)**	0.17 (0.06)***
Program participation	0.50 (0.24)**	0.62 (0.25)***
Needy get benefits	1.43 (0.66)**	1.43 (0.74)**
Received what entitled to	0.67 (0.35)**	0.74 (0.34)**
Receive more benefits if connected to GP	-0.28 (0.12)**	-0.44 (0.12)***
Paid taxes	0.05 (0.03)*	0.05 (0.03)*
Voted on promises	0.08 (0.04)**	0.11 (0.04)***
Observations	1869	1869

Table 13 - Estimations of GP Measures - Villages with  $25\% \leq \text{Jati Pradhan} \leq 50\%$

Variable	$RESERVED_k$	$RESERVED_k * H_k$
All programs	0.43 (0.94)	3.3 (2.0)*
BPL programs	0.24 (0.32)	1.2 (0.65)*
Income programs	0.37 (0.88)	2.99 (1.81)*
Employment Guarantee Scheme	0.02 (0.08)	0.26 (0.14)*
Revenue/capita	388.2 (319.9)	826.4 (469.1)*
Taxes/capita	305.7 (199.8)	380.5 (247.1)†
Funds/capita	82.5 (161.5)	445.9 (261.9)*
Expenses/capita	353.1 (300.1)	735.1 (470.4)†
Number of Committees	1.21 (0.91)	0.39 (1.20)
Observations	65	65

Table 14 - Estimations - Household Level Data - Villages with  $25\% \leq \text{Jati Pradhan} \leq 50\%$

Variable	$RESERVED_k$	$RESERVED_k * H_k$
All programs	0.75 (0.77)	2.68 (1.53)*
BPL programs	0.26 (0.34)	1.03 (0.63)*
Employment Guarantee Scheme	0.004 (0.08)	0.26 (0.14)*
Program Participation	0.11 (0.27)	0.84 (0.54) <sup>†</sup>
Needy get benefits	0.40 (0.68)	2.26 (1.38)*
Received what entitled to	0.09 (0.48)	1.26 (0.76)*
Receive more benefits if connected to GP	-0.03 (0.16)	-0.55 (0.25)**
Paid taxes	-0.003 (0.04)	0.11 (0.05)***
Voted on promises	0.05 (0.06)	0.07 (0.07)
Observations	1815	1815

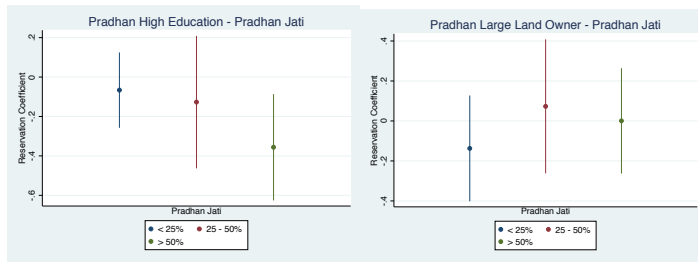


Figure 1 – Pradhan Quality

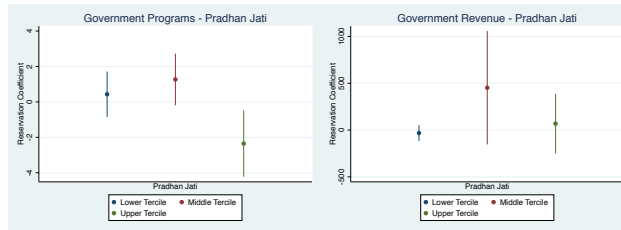


Figure 2 – Governance – Pradhan Jati

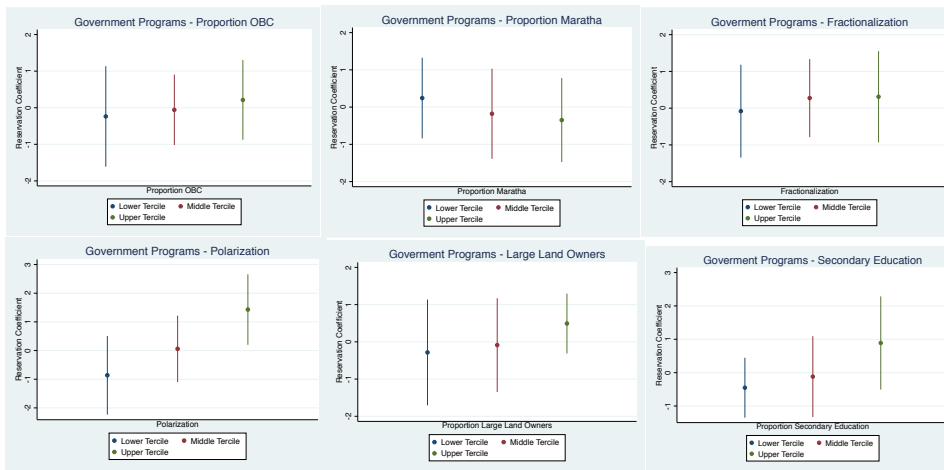


Figure 3 – Government Programs

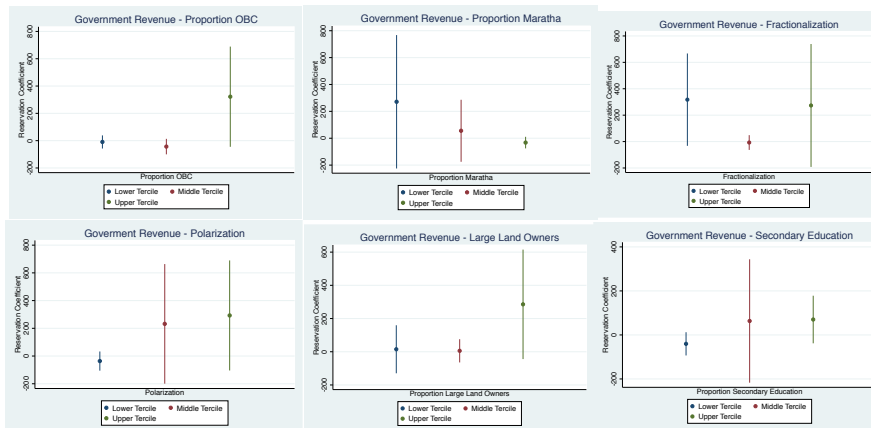


Figure 4 – Government Revenue