Political Quotas and Governance

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Abstract

Reserving political office for members of a particular, usually disadvantaged, group is a common form of political quota in many parts of the world. This has been shown to improve distributional access in favour of reserved groups, but often conjectured (and shown) to come at the cost of governance quality. We develop the first theoretical model to demonstrate the opposite possibility; a reduction in political competition - due to office being restricted to members of a pre-designated group - can improve governance. The model establishes a tight set of predictions regarding when improvements should be expected to occur, and when not. Such predictions are not yielded by alternative theories of political competition, are a priori unlikely to occur by chance, and have never been investigated in the large empirical literature on the effects of political reservations. We first show, in a Maharashtrian sample of rural villages, that governance outcomes dramatically increase under reservations. This is the first such effect documented in the literature. We then demonstrate a non-uniform pattern of improvement that lines up precisely with the predictions of the theory developed here.

"Let us never forget that government is ourselves and not an alien power over us. The ultimate rulers of our democracy are not a President and senators and congressmen and government officials, but the voters of this country."

Franklin D. Roosevelt

1 Introduction

As this quote suggests, a major advantage, and what many see as THE point of democracy, is that citizens choose their leaders. Candidates who stand before voters to ask for that mandate must defend their records, and plans for the future, against rivals competing for their jobs. If this process of political competition works well, it should align the career interests of political leaders with the policy interests of voters. Though shortcomings, in practice, can lead the actions of elected leaders to diverge from the interests of their populace, it remains agreed that competition for office, adjudicated by citizens, is the hallmark of the democratic process.[1] Yet despite the universally agreed upon necessity of political competition, many polities have implemented rules that would reduce it. Reservations that restrict the set of candidates who can stand for office are one such rule.[2] Typically, this is intended to address the problem that traditionally disadvantaged individuals may face barriers to participation in the political process, either as candidates or in some cases as voters, that limit their representation amongst the elected, and/or their impact on the policy making process.

So, there is seen to be a tradeoff. Fairness and distributional concerns favour political reservations, but by reducing competition, reservations could damage both political competence and governance quality. In the present paper, we develop a theory that shows, under some conditions, there is no tradeoff. It is possible for reserved groups to be both distributionally advantaged, and for overall governance quality to increase.

We will explore our theory in India, a country where political reservations have long been part of the political landscape. There, political reservations have been successful in redistributing public goods towards reserved groups[3],

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[1]The literature has explored a number of ways that divergence between the interests of citizens and their representatives may arise, for example: if leaders care about policies directly, and there is less than full commitment – Osborne and Slivinski (1996), Besley and Coate (1997), if votes can be bought – Finan and Schechter (2012), if the franchise is restricted – Llavador and Oxoby (2005), to name a few. But these features notwithstanding, the ideal of democratic competition remains a sound one.

[2]At latest count, at least half of the countries in the world use some type of electoral quota based on gender (see https://www.idea.int/data-tools/data/gender-quotas) and at least twenty eight countries implement minimal quotas for ethnic groups, see Bird (2014). This includes all states of India, the world's largest democracy.

[3]In India, positive effects on the receipt of targeted benefits have been found for reserved groups in Besley, Pande and Rao (2008). Chattopadhyay and Duflo (2004) 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 representative level, though this is not the level of governance we study. It should be noted that not all studies find effects. Dunning and Nilekani (2013), for example, find small (zero) distributive effects of political reservations in Karnataka, Rajasthan and Bihar. The authors conjecture that the saliency of political parties is essential for providing resources in the clientelist structures found in rural India which may undo direct effects. Chin and Prakash (2011) find mixed effects on poverty for reserved seats in state assemblies. Jensensius (2015) finds very weak long term effects for SCs and Bhavnani (2016)

but the anticipated quality tradeoff, via a number of mechanisms, has been thought to occur.[4] The theory we develop alternatively predicts positive effects on governance quality. Since this is surprising and goes in an opposite direction to much of the literature, we first elaborate the intuition for it here, before developing the formalization in the body of the paper, and extracting the predictions more rigorously.

The reasoning follows from the logic of the "Politics-of-Fear", which has been elegantly elaborated by Padro-i-Miquel (2007). Politics-of-fear 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. As Padro-i-Miquel (2007) shows, in such settings a group's existing representative enjoys a type of "incumbency advantage" vis-a-vis a challenger from within the group. If the group's hold on power is more likely to persist when their current leader re-contests for power, the leader gets a kleptocratic rent. The leader can be venal, corrupt and/or lazy and still receive the group's support (up to a point), because replacing him or her increases the chances that another group will seize the leadership position. So the leader can openly exert less than first best levels of effort, and be widely believed to continue to do so, yet still receive the support of group members because they fear that without him they will lose hold on the leadership. With all groups subject to similar internal concerns, the fear of another group coming to power is heightened since they too will be represented by a venal or corrupt leader. The equilibrium ends up featuring poor leaders ascending to power no matter which group they represent.

Political reservations break this equilibrium by loosening the lock on group level support held by incumbents.[5] Reservations, by ensuring for the group that one of their own will hold the leader's position no matter what, allow contests from within the group to be entertained without fear of losing power to another group. The reserved group can either replace their leader with a new representative who promises to do better, or extract a commitment from their leader to do so (if short-term commitments are possible). When this happens, we expect to see an increase in

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finds no positive representation effect of SC quotas after the quota expires. However, Beaman et. al (2009) showed that by exposing constituents to women leaders, negative stereotypes biased against women as leaders could be partially reversed.

[4]One effect arises from restricting voter choice to a limited set of candidates. Auerbach and Zeigfeld (2016) find that quotas reduced electoral competition in Indian contexts – villages and higher levels – with fewer candidates contesting. Mitra (2018) 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. Another effect arises because reservations displace career politicians and hence introduce leaders likely to be inexperienced, poorer, and hence less well educated. Decision making and effectiveness may be compromised. Chattopadhyay and Duflo (2004) found that caste based reservations in West Bengal did indeed lead to less educated, poorer and less politically-experienced Pradhans. Though notably without adverse effects on governance there. Lamba and Spears (2013) find that villages with reserved Pradhans are less likely to win a "clean" village award. This seems relatively unimportant, but may indicate deeper problems that are not reflected in official data. Gajwani and Zhang (2015) found negative effects of reserved female village leaders on the building of schools and roads, with supporting evidence suggesting it was due to their poorer connections with higher level officials, and systemic knowledge. Reservations also create the possibility of "lame duck" incumbents, unable to stand for re-election after reservations are announced – typically two to three months before elections in our villages. Though reservations do not systematically rotate across election cycles in Maharashtra, a reserved leader from a very small caste group in a village is unlikely to be re-elected in an open contest, so there is also the very real likelihood that many reserved leaders will become lame-ducks when themselves in office. Chattopadhyay and Duflo (2004) found no effect of lame-duck incumbency in their sample. But this is at least in part due to the fact that such incumbents did not seem to understand that they could not stand again. One imagines this lack of understanding to abate through time.

[5]Or similarly by a group's traditional representative who may not currently be in power, if this is also a source of competitive advantage over within group rivals – an extension of the basic model demonstrates this in what follows.

overall governance quality in addition to the usual distributional benefits towards the reserved group.

But the circumstances under which governance improves according to the theory are special, and so restrict where we should look. Though reservations reduce political competition *across* groups – members of some groups are excluded from leadership – they may actually serve to increase competition for leadership positions from *within* groups, thereby improving electoral discipline on leaders. So, according to the theory, improvements can happen only when reservations are allocated to groups who usually organize politically anyway.

As noted already, India has long practiced reservations, and it has done so at multiple levels of government and for multiple different groups. One of India's largest states (Maharshtra) provides an opportunity to test the theory's predictions at the most local level —- the principal leadership position (Pradhan) of village governments (Gram Panchayats). Two distinct types of reservation operate there. One is for gender – a third of all leadership positions are reserved for women[6], and allocated randomly via the electoral commission. A second is for traditionally disadvantaged groups (lower castes), also allocated via a randomization process.[7] Since political organization is not, to our knowledge (nor in our Maharashtrian sample), ever organized around gender, gender based reservations can not positively affect governance according to our theory.

However, village leadership contests *are* organized around caste groupings. This is, in fact, the typical form of electoral alignment in Indian village politics. Consequently caste based reservations are where the theory first predicts such improvements could occur. But there are further restrictions. If a group is so small that it has almost no capacity to retain the leadership, even were it to retain its incumbent, then the leader has little incumbency advantage to start with. Reservations should have little effect here. However, as the group increases relative size, so too does the incumbency advantage of its leader, and his/her kleptocratic rent. These are dissipated via the contested leadership race that occurs when the group has the safety of reservations – so governance should measurably improve under reservations. But a group that is larger still, so large as to be essentially guaranteed leadership even absent reservations, will not experience a change in governance upon receiving a reservation. 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 because he can be replaced without the group fearing loss. In such cases, reservations again change nothing. Since the effects of group size on kleptocratic rents are non-monotonic, so too are the effects of reservations, and we will see that this is a distinct prediction of the theory developed here vis-a-vis alternative theories that have been proposed and could be applied to model the effects of reservations in such settings.

The main implication tested is the one described in the paragraph above; the non-monotonic pattern of gov-

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[6]Most recently, the state of Maharahstra increased this proportion to 50%. At the time of our data collection it was still at 33%.

[7]In Maharahstra this involves reservations for Scheduled Castes and Tribes (SC and STs) which are allocated randomly to villages at a frequency reflecting state population levels, and to "Other Backward Castes" (OBCs) for whom the leadership position in a village Panchayat is randomly reserved in 27% of villages statewide at each election.

ernance improvements in village leader group size when leadership is reserved.[8] The model additionally predicts two other factors that should impact the size of governance improvements under reservations. The first is the importance to the group of holding the leadership position, and the second is the magnitude of kleptocratic rents enjoyed by leaders from other (non-reserved) groups. Our theory predicts that both of these factors, which we will proxy with observables, should interact positively with the effects of reservation on governance outcomes.

All three of these theoretical implications are unique to the theory here. They are neither immediate, nor obviously likely for extraneous reasons, nor have they been examined before. This makes investigation of these implications a good test of this theory.

To undertake such scrutiny we use data collected across a sample of villages in the state of Maharashtra, India. Since 1993, Gram Panchayats in Maharashtra have been responsible for program implementation, local public good provision, implementation of pro-poor policies, and subject to a regular electoral process. Reservation quotas for the Pradhan position have been randomly applied and scrupulously implemented throughout the state by its electoral commission. We collected data on several key governance outcomes relating directly to program provision and finances.

We find a pattern of effects due to reservations that are remarkably consistent with the predictions generated by the theory. Reservations applied to both small and large groups yield no improvement in quality of governance by any of the measures listed above, relative to the governance in villages with unreserved leaders drawn from the same sized group. However, when a group is middling in size (measured in numerous ways), holding the leader's position via a reservation coincides with a marked improvement in governance outcomes on all dimensions, relative to a similar sized group winning the leadership position after an open election. Additionally, in villages where holding the leadership position is more valued, or where non-reserved groups are more likely to enjoy kleptocratic rents, reservations have larger positive effects on governance; again as the model predicts.

Improved governance quality under reservations generates an accompanying pattern of data consistent with our theory that reservations are weakening politics-of-fear type interactions in villages. This would also explain why reservations that have been studied in other Indian states have not found similar positive effects. In most of these studies, the groups to which reservations apply rarely fall in to the "middling" size category that our theory identifies as important for showing positive effects. In most states, reservations are limited to Scheduled Castes or

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[8]Our focus on the politics-of-fear underpinning for misgovernance does not preclude any of the other well known, and well studied, reasons that could explain misgovernance in this context. It may well be that the divisions that arise from ethnic or caste based tensions themselves directly affect good governance (see survey in Alesina and La Ferrara (2005)) or that weak institutions heighten collective action problems making it more difficult to ensure political accountability (as in Acemoglu, Robinson and Verdier (2004)). It may also be that lack of commitment locks polities into inefficiencies (as in Acemoglu and Robinson (2001)), perhaps even in the form of clientelism, as modeled in Robinson and Verdier (2013). Indeed, we have argued earlier that clientelism is important in the Indian villages of our sample – see Anderson et. al. (2015). These, and other mechanism could all be part of the backdrop to the effect that we study. While recognizing this, we ignore these (and other) factors in our modeling here because, as will be seen, the pattern of correlations in misgovernance, and how these interact with political reservations generated by the politics-of-fear problems are extremely peculiar, and would not arise from these other explanations.

Scheduled Tribes who typically make up a small proportion of a village population, and whose chances of holding power without a reservation are close to zero.[9] A significant aspect of Maharashtra's OBCs (Other Backward Castes) reservations, as will be seen, is that such groups are quite often a significant contesting political power even without reservations. As the paper's theoretical section demonstrates, this is key to finding positive effects of reservations on governance if politics-of-fear factors are at play.

In our discussion of relevant literature we will argue that existing models generally would not predict any improvements from reservations. For the few that do, there is never a non-monotonic pattern that could explain the observed patterns in our data. We attempt to construct extensions of existing frameworks that would do so, but these are awkward. And this, coupled with the fact that the politics-of-fear ingredients of strong group (jati) level identification, and the organization of political support around such identification, are present in rural Maharashtra, together with the empirical support for the additional model predictions, makes us conclude that reservations seem to be improving governance because they are favourably undermining politics-of-fear type equilibria. We discuss possible implications of this outside our context in the conclusions.

The paper proceeds as follows: Section 2 develops a model that generates empirical predictions for when reservations will affect governance. Section 3 discusses plausible alternative explanations for the observed patterns in the data using other theoretical frameworks. Section 4 describes the data. Section 5 tests the predictions of the model. Section 6 concludes.

2   The Model

2.1   Preliminaries

In rural Maharahstra, as in much of India, the relevant organizing group for village politics is the jati or sub-caste. We will thus use the terms "political group", "jati" and "sub-caste" interchangeably here, and it will be used analogously to "ethnic group" as in the model of Padro-i-Miquel (2007).[10]

Reservations applied to the Pradhan (i.e. the elected leader of the village government) are the most consequential in our village context. In Maharashtra, the Pradhan is the only paid member of the Panchayat (village government), he or she wields considerable influence and autonomy, and villagers in our surveys typically reported the Pradhans to be the de facto, as well as the de jure, village leaders. Our model is geared around the effects of reservations on

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[9]An exception is in some tribal villages, where almost all members are part of a scheduled tribe, and hence outside the formal caste hierarchy. Again, here our theory predicts no effects of reservations. There are also reservations for women, who are of course not proportionately small subsets of the population. But, as mentioned above, since individuals do not organize politically by gender in Indian villages, politics-of-fear reasoning does not predict similar positive governance effects in the case of gender reservations. The non-effect of gender reservations on quality is also borne out in our data.

[10]This requires particular attention in the empirical estimation as reservations are allocated at a broad caste grouping level that contains many sub-castes. We discuss this fully in Section 4 of the paper.

Pradhan actions and hence village outcomes. To that end, we collect numerous measures that could potentially be affected by reservations. These can be broken up into two broad categories: One set of measures represent intra-group distributional effects of reservations. [11] A second set of measures 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 4. The present section constructs a model inspired by Padro-i-Miquel's (2007) politics-of-fear framework, but extended to explore the effects that reservations of political office have on governance outcomes. We first elaborate on features of the Maharashtrian context that inform our modeling choices.

2.1.1 Maharashtrian context

Some elements of the relatively formalized Maharashtrian village setting, which is electoral, lead us to depart from the modelling choices made in Padro-i-Miquel's (2007) canonical politics-of-fear setting which imagines a more weakly formalized political setting. First, almost all funds utilized by village governments are in the form of transfers from higher levels of government – with almost no direct capacity to raise revenue via taxes on constituents within the village. This limits a leader's predation. However targetting of expenditures is possible, as jatis (sub-caste groups) tend to live in neighbourhoods that are geographically distinct. The allocation of discretionary spending across groups in our villages – for example, the construction and maintenance of local public goods, is a key form of group based discretionary advantage. Additionally, the Pradhan can facilitate own group member access to targeted federal and state benefits. We thus model leader discretion over the allocation of benefits towards members of groups.

A leader's morally hazardous behavior also takes a different form here. Since rapacious behavior in the form of taxing and extraction is not an option for leaders here, leader moral hazard is more likely to involve shirking. The most prevalent form of this is insufficient effort devoted to securing village resource allocations from higher levels of government, and consequently fewer poverty-reduction programs entering the village. There is a consistent perception on the part of villagers that such programs are inadequately available. On average, less than half of the externally mandated and funded poverty alleviation programs are available in villages, there is little effort expended by leaders to obtain funds via meeting with higher level officials, and few meetings with villagers themselves. There is also low program participation when programs are in place, suggesting limited availability.[12] So we model leader morally hazardous behavior as shirking on the effort required to obtain benefits for constituents in the form of services, grants, programs and public goods to which the village is entitled.

A crucial component of the politics-of-fear is that ruler replacement, due to loss of own group support, increases

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[11] For example, "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?" As in most other studies of reservations, Table A5 in the Appendix confirms that individuals do indeed report benefiting disproportionately if their own jati member is the Pradhan.

[12] For a more complete discussion of governance failures in this setting see Anderson, Francois, and Kotwal (2015) and Anderson, Francois, Kotwal and Kulkarni (2015).

the likelihood of a switch in power between groups. Additionally Padro-i-Miquel's framework assumes that loss of support precipitates a governance breakdown. In Maharashtra, even were a group to retract support for their own Pradhan, he or she would still remain in office until the next election, after which a successor would be formally appointed. However, a group's replacing an incumbent does plausibly reduce the chances the replacement candidate wins office; so we persist with that assumption. And we further assume, as happens in reality, that deposed leaders return back to being citizens of the village and remain members of the same group after office.

Finally, there is a slight difference in timing within our model, again reflecting the more formalized context of governance here. Padro-i-Miquel imagines a leader already in place, committing to his current policies, and then his group deciding whether to support him and receive the policies promised, or not support him, with a type of chaos and governance breaking down ensuing. Our Maharashtrian village setting, in contrast, is electoral. In a forthcoming election, the incumbent can commit to his group members the effort he will implement, and their distributional benefits, if returned to office. Against the incumbent are potential challengers who have identical commitment power with their own group members; so we assume all groups are equal in their freedom to choose a leader to contest elections, and in the commitment capacity those leaders can provide them.[13] The only asymmetries that arise are those generated by the political reservation process itself. Political reservations are announced well in advance of elections, so some groups, by fiat, will simply not be able to field a candidate in such cases.

2.2   Model details

Time is discrete and each period represents a term of office. Consider a single village which is divided into two groups (jatis) – denoted A and B, and each group decides on a leader who will contest elections for office. In every period, if the incumbent is from group A, and if this incumbent receives the "support" of his group, $s_t = 1$, he is re-elected with probability γ^A. The group may instead coalesce behind a challenger candidate who is voluntarily drawn from the group.[14] Doing this weakly increases the likelihood of a switch of power to the other group. If the incumbent is "not supported", $s_t = 0$, the group's challenger candidate wins the election with probability $\gamma^a \leq \gamma^A$.

The leader receives per period "office rents" measured as π in the utility metric. In office, 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 η per group member in each village. Thus a member of group i in receipt of such distributional benefits from the leader receives η in utility metric, a member of group $j \neq i$ receives 0.[15]

Leader effort determines the quality of village governance, and governance is a public good. Governance is

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[13]The consequences of relaxing the commitment assumption are discussed after the main results.

[14]As in Padro-i-Miquel (2007) we assume coordination within the group over the support decision. Each member is small, but all act in the collective best interest of the group when deciding on the support decision. As in his framework, without such coordination the chances of, and benefits to, the leader from kleptocratic rule are even greater than will be established in equilibrium.

[15]This shuts down the richer part of Padro-i-Miquel's (2007) model concerning taxation and group specific activities, but allows us to focus on competition over the public good aspects of leadership, which our data addresses.

personally costly; two units of effort are required to produce a single unit of public good. All utility functions are linear. The leader thus incurs total disutility of minus G when producing G units of public good, and all other citizens experience a benefit of G. 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.[16] Commitments hold for the term of office; thus a promise made by a candidate in an election held at $t-1$ for office at t, holds for the term t. If the leader stands for re-election at t, they can promise policy that will hold for $t+1$ if reelected, but cannot promise anything into future terms beyond that.[17] They cannot commit today to what they will promise in some future election beyond the upcoming one. Thus, at time t, G_t^I is the level of governance quality promised by the time t leader when he was standing for office at time $t-1$, for $I = A, B$, or in a reserved election: $I = R$.

Any citizen can challenge an incumbent at any election, and the challenger has the same commitment power the leader has. If the challenger is selected by the group over the incumbent, $s_t = 0$, the challenger contests the election and the previous leader reverts back to becoming a citizen. Let $1 - \delta$ denote the probability of death (which also acts as discounting).[18]

2.2.1 Reservations

With probability p a reservation occurs for the Pradhan position in a village for the upcoming election. This is drawn independently across time and villages. Assume that reservations can only go to group A.[19] Denote a reserved election at time t by $RES_t = 1$. With reciprocal probability, $1 - p$, the village is not reserved; $RES_t = 0$. Reservations are known before the election, also in advance of when candidates commit to policies, and in advance of when groups decide on their representative.

2.2.2 States and Transitions

The leader at time t decides G_{t+1}^I, the level of governance to run on if re-elected to office. The level of G_t he is producing now is the level he promised when he ran for office in period $t-1$. For notational simplicity, and due

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[16]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.

[17]We describe what would happen with infinite commitment, or no commitment later.

[18]If a leader elected at the time t election for office at $t+1$ dies in the interim, we assume that he is replaced by a randomly selected member of his own group who undertakes to provide the level of governance that the leader promised in his campaign. Groups are large so that the probability of any one individual being randomly selected is assumed to be negligible.

[19]Group B do not receive reservations. As in reality, there is always at least one "group" who do not receive reservations. In India it would be upper castes.

to the symmetry of agents in the model, we distinguish only between promises made by incumbents from a group, G_{t+1}^I, and challengers to an incumbent G_{t+1}^{IC}.

The world is in one of three states: $S_t \in \{A, B, R\}$ referring to the current incumbent's leadership position and how it was arrived at. Respectively, the state is one in which either the leadership position is held by an A after an unreserved election, a B after an unreserved election, or an A from a reserved election (state R). The leader's group's strategy is denoted σ^I. The choice is binary, the group either decides $s_t = 1$ or $s_t = 0$, after seeing the leader's promised G^I and that of any challengers, G^{IC}.

The probability of the leader's group winning again is γ^I if $s_t = 1$, and probability $\gamma^i \leq \gamma^I$ if $s_t = 0$ and he is replaced by a challenger; with $I = A$ or B, and $i = a$ or b. Let $T(\sigma^I, S, RES)$ denote the state transition function. Its arguments are the support choice of the group in power, σ^I, the state, and the reservation status of the upcoming election, respectively. For example with the group choosing to "support" an A leader in an unreserved election, $T(1, A, 0) = \gamma^A$, and without support the function is $T(0, A, 0) = \gamma^a$. If the state is reserved then $T(1, A, 1) = T(0, A, 1) = 1$.

2.2.3 Timing

Timing within a period, t, is as follows.

0. The state is determined by the outcome of the election/reservation draw that was held the previous period: $S_t \in \{A, B, R\}$. Nature then draws $RES_t = 1$ with probability p and $RES_t = 0$ with reciprocal probability.

1. The incumbent leader chooses the level of governance to campaign on. If $S_t = A$, or R, the A incumbent chooses the G_{t+1} that he will produce if re-elected. If $S_t = B$ and $RES_t = 0$, the B leader announces his G_{t+1}. If $S_t = B$ and $RES_t = 1$, a B leader cannot run again.

2. Citizens choose whether to stand to represent their group as a challenger. If $RES_t = 1$ then only an A can stand and propose a policy G_{t+1}. If $RES_t = 0$ then any A or B citizen can stand and propose a G_{t+1}.

3. If $S_t = A$ then the A group members decide whether to support, $s_t = 1$, the incumbent or not, $s_t = 0$, after observing the incumbent's promise and that of a challenger from the A group. If $S_t = B$ and $RES_t = 0$, then B group members decide whether to support their incumbent or not, again after observing their incumbent and challengers' promised governance levels. If $S_t = B$ and $RES_t = 1$, the B group does not have a support decision.

4. If $RES_t = 0$, the incumbent is returned to office with probability γ^I under $s_t = 1$, and probability $\gamma^i \leq \gamma^I$ if $s_t = 0$; with $I = A$ or B, and $i = a$ or b. If $RES_t = 1$, then the member of group A that is supported by the group ascends to the leadership with probability 1.

5. The winner of the election at t becomes the incumbent at $t + 1$ and undertakes the G_{t+1} promised at t.

2.2.4 Markov Strategies

We solve for stationary Markov Perfect Equilibria (MPE) of the game. The incumbent leader moves first after observing the state, and after nature draws reservations. The leader's strategy maps from the pair (S_t, RES_t) to a policy level $G_{t+1} \geq 0$. Note again that RES_t refers to reservations drawn by nature in period t that will apply to the subsequent election, $t+1$. For notational simplicity, denote an incumbent leader of type $I's$ choice G_{t+1}^I, $I = A, B$, when $RES_t = 0$. When $RES_t = 1$, only incumbent A leaders can stand again. Denote their choice in that case by G_{t+1}^R.

The challenger's strategy maps from the state, nature's reservation draw, and the incumbent leader's choice of promised governance, (S_t, RES_t, G_{t+1}^I) to the challenger's promised level of governance G_{t+1}^{IC}. The strategy of group I is denoted σ^I and its arguments are the state, nature's reservation draw, their leader's announced policy promise, and the policy proposals of challengers. These map to a support decision. Formally for group I: $\sigma^I \left(S_t, RES_t, G_{t+1}^I, G_{t+1}^{IC} \right) \to s_t \in \{0,1\}$.

Leader Value Functions

Let $V_{t,L}^A(A)$ denote the value function for an A leader in period t if the state is unreserved and $V_{t,L}^A(R)$, if reserved. The notation in the bracket refers to the state applying when the leader was elected, not the draw of nature that will apply to the election they are about to contest. By the time an incumbent leader makes his policy decision for the upcoming election, the reservation status applying to that election will be realized, i.e., nature will play. For an A incumbent holding power from a previously unreserved election, the value function is computed under the optimal choices conditional upon nature's play in the period. We will impose stationarity in what follows, but for now we explicitly note the time dependence in the value functions and the G choices by preserving the t notation. So, for a current A leader who won election without reservation, his level of governance is G_t^A. He will choose his G_{t+1}^A promise if his position ends up not being reserved after nature's play, or he will decide his G_{t+1}^R if it is reserved. That is:

$$
\begin{aligned}
V_{t,L}^A(A) = \pi - G_t^A + \eta + \delta \Bigg[&(1-p) \max_{G_{t+1}^A} \big\{ \sigma^A . \left(T(1,A,0)V_{t+1,L}^A(A) + T(1,B,0)V_{t+1}^A(B) \right) \\
&+ \left(1 - \sigma^A \right) . \left(T(0,A,0) \left(G_{t+1}^{AC} - G_{t+1}^A + V_{t+1}^A(A) \right) + T(0,B,0)V_{t+1}^A(B) \right) \big\} \\
&+ p \max_{G_{t+1}^R} \big\{ \sigma^A . \left(V_{t+1,L}^A(R) \right) + \left(1 - \sigma^A \right) . \left(G_{t+1}^{RC} - G_{t+1}^R + V_{t+1}^A(R) \right) \big\} \Bigg]. \quad (1)
\end{aligned}
$$

Note that the leader's choices anticipate the support decision of his group, $\sigma^A \left(S_t, RES_t, G_{t+1}^A, G_{t+1}^{AC}, G_{t+1}^B, S \right)$, which will have to be consistent as an equilibrium requirement (below). Note also that we have omitted the arguments of σ

above and in what follows. If he is not supported by his group $\left(1 - \sigma^A\right)$, he will revert to being a citizen, where his utility is evaluated using a citizen's value function. The value functions for citizens, $V_{t+1}^A(I)$, $where\ I = A, B, R$, are defined below, and therefore play an important role in leaders' decisions, in contrast with Padro-i-Miquel (2007). As discussed earlier, unlike the setting he studied, in the villages of our sample, whether an incumbent is supported in the upcoming election, or not, governments continue to function. A leader not supported, though not able to return as Pradhan, still remains in the village and remains a member of the same group. As an equilibrium requirement, G_{t+1}^A must be a best response to the level of governance promised by challengers from his own group, G_{t+1}^{AC}, and from the other group, G_{t+1}^B.

Similarly for a B leader:

$$V_{t,L}^B(B) = \pi - G_t^B + \eta + \delta \Bigg[(1 - p) \max_{G_{t+1}^B} \left\{ \sigma^B . \left(T(1, B, 0) V_{t+1,L}^B(B) + T(1, A, 0) V_{t+1}^B(A) \right) \right.$$
$$\left. + \left(1 - \sigma^B \right) \left(T(0, B, 0) \left(G_{t+1}^{BC} - G_{t+1}^B V_{t+1}^B(B) \right) + T(0, A, 0) V_{t+1}^B(A) \right) \right\} + p V_{t+1}^B(R) \Bigg]. \quad (2)$$

Finally, an A leader elected in a village where reservations applied, i.e., under which he was elected in a reserved contest, has a value function: $V_{t,L}^A(R)$:

$$V_{t,L}^A(R) = \pi - G_t^R + \eta + \delta \Bigg[(1 - p) \max_{G_{t+1}^A} \left\{ \sigma^A . \left(T(1, A, 0) V_{t+1,L}^A(A) + T(1, B, 0) V_{t+1}^A(B) \right) \right.$$
$$+ \left(1 - \sigma^A \right) \left(T(0, A, 0) \left(G_{t+1}^{AC} - G_{t+1}^A + V_{t+1}^A(A) \right) + T(0, B, 0) V_{t+1}^A(B) \right\}$$
$$+ p \max_{G_{t+1}^R} \left\{ \sigma^A . \left(V_{t+1,L}^A(R) \right) + \left(1 - \sigma^A \right) \left(G_{t+1}^{RC} - G_{t+1}^R + V_{t+1}^A(R) \right) \right\} \Bigg]. \quad (3)$$

And clearly a B leader cannot be in power in a village that was subject to reservation, i.e., $V_{t,L}^B(R)$ can never arise.

Citizen Value Functions

The value function for a citizen who is in group A depends on both whether his own group holds the leadership, which is necessary for a support decision for A to be relevant, and whether the village election was reserved. This depends on the group's optimal support decision, σ^A, determined after reservations are drawn for the subsequent

election, and both the incumbent and challengers have stated their policy positions for it. So the value function:

$$V_t^A(A) = G_t^A + \eta + \delta \Bigg[(1-p) \max_{\sigma^A} \big\{ \sigma^A. \big(T(1,A,0)V_{t+1}^A(A) + T(1,B,0)V_{t+1}^A(B) \big) + \big(1 - \sigma^A \big) \big(T(0,A,0) \big(G_{t+1}^{AC} - G_{t+1}^A + V_{t+1}^A(A) \big)$$

$$+ p \max_{\sigma^A} \big\{ \sigma^A. \big(V_{t+1}^A(R) \big) + \big(1 - \sigma^A \big) \big(G_{t+1}^{RC} - G_{t+1}^R + V_{t+1}^A(A) \big) \big\} \Bigg]. \quad (4)$$

Note that in the second maximization above, $T() = 1$ since, in the event of a reservation, the A group's representative is necessarily elected. Similarly for an A citizen when a B is in power:

$$V_t^A(B) = G_t^B + \delta \Bigg[(1-p) \big(\sigma^B. \big(T(1,B,0)V_{t+1}^A(B) + T(1,A,0)V_{t+1}^A(A) \big)$$

$$+ \big(1 - \sigma^B \big) \big(T(0,B,0) \big(G_{t+1}^{BC} - G_{t+1}^B + \delta V_{t+1}^A(B) \big) + T(0,A,0)V_{t+1}^A(A) \big) \big) + p V_{t+1}^A(R) \Bigg].$$

Note that, in this case, there are no choices for the A group since they do not have incumbency in the next election. Reciprocally when an A is in power, B citizens have no upcoming choices and obtain:

$$V_t^B(A) = G_t^A + \delta \Bigg[(1-p) \big(\sigma^A. \big(T(1,A,0)V_{t+1}^B(A) + T(1,B,0)V_{t+1}^B(B) \big)$$

$$+ \big(1 - \sigma^A \big) \big(T(0,A,0) \big(G_{t+1}^{AC} - G_t^A + V_{t+1}^B(A) \big) + T(0,B,0)V_{t+1}^B(B) \big) \big) + p V_{t+1}^B(R) \Bigg].$$

Similarly, for a B citizen when the B group holds power we have:

$$V_t^B(B) = G_t^B + \eta + \delta \Bigg[(1-p) \max_{\sigma^B} \big\{ \sigma^B. \big(T(1,B,0)V_{t+1}^B(B) + T(1,A,0)V_{t+1}^B(A) \big)$$

$$+ \big(1 - \sigma^B \big) \big(T(0,B,0) \big(G_{t+1}^{BC} - G_{t+1}^B + V_{t+1}^B(B) \big) + T(0,A,0)V_{t+1}^B(A) \big) \big\} + p V_{t+1}^B(R) \Bigg]. \quad (5)$$

We finally define $V_t^B(R)$ and $V_t^A(R)$, the value functions pertaining to citizens in already reserved villages. These are the same as for citizens in an A controlled village except for the current period governance, G_t^R which need not,

and generally will not, equal G_t^A.

$$V_t^A(R) = G_t^R + \eta + \delta \left[(1-p) \max_{\sigma^A} \left\{ \sigma^A \cdot \left(T(1,A,0)V_{t+1}^A(A) + T(1,B,0)V_{t+1}^A(B) \right) + \left(1 - \sigma^A\right) \left(T(0,A,0) \left(G_{t+1}^{AC} - G_{t+1}^A + V_{t+1}^A(A) \right) \right. \right. \right.$$

$$+ p \max_{\sigma^A} \left\{ \sigma^A \cdot \left(V_{t+1}^A(R) \right) + \left(1 - \sigma^A\right) \left(G_{t+1}^{RC} - G_{t+1}^R + V_{t+1}^A(A) \right) \right\} \right]. \quad (6)$$

$$V_t^B(R) = G_t^R + \delta \left[(1-p) \left(\sigma^A \cdot \left(T(1,A,0)V_{t+1}^B(A) + T(1,B,0)V_{t+1}^B(B) \right) \right. \right.$$

$$+ \left(1 - \sigma^A\right) \left(T(0,A,0) \left(G_{t+1}^{AC} - G_{t+1}^A + V_{t+1}^B(A) \right) + T(0,B,0)V_{t+1}^B(B) \right) \right) + pV_{t+1}^B(R) \right].$$

Challenger Value Functions

An A challenger in a village that is unreserved for the upcoming election in $t+1$ chooses G_{t+1}^{AC} to maximize:

$$V_{t+1,C}^A(A) = \max_{G_{t+1}^{AC}} \left\{ \sigma^A \cdot \left(T(1,A,0)V_{t+1}^A(A) + T(1,B,0)V_{t+1}^A(B) \right) \right.$$

$$+ \left(1 - \sigma^A\right) \left(T(0,A,0) \left(G_{t+1}^A - G_{t+1}^{AC} + V_{t+1,L}^A(A) \right) + T(0,B,0) \left(V_{t+1}^A(B) \right) \right) \right\}. \quad (7)$$

In a village that is reserved in the next election he chooses G_{t+1}^{RC}:

$$V_{t+1,C}^A(R) = \max_{G_{t+1}^{RC}} \left\{ \sigma^A V_{t+1}^A(A) + \left(1 - \sigma^A\right) \left(G_{t+1}^A - G_{t+1}^{RC} + V_{t+1,L}^A(A) \right) \right\}. \quad (8)$$

Similarly for a B challenger in the situation when the subsequent election is not reserved (i.e., the only case in which his group can field a candidate):

$$V_{t+1,C}^B(B) = \max_{G_{t+1}^{BC}} \left\{ \sigma^B \cdot \left(T(1,B,0)V_{t+1}^B(B) + T(1,A,0)V_{t+1}^B(A) \right) \right.$$

$$+ \left(1 - \sigma^B\right) \left(T(0,B,0) \left(G_{t+1}^B - G_{t+1}^{BC} + V_{t+1,L}^B(B) \right) + T(0,A,0) \left(V_{t+1}^B(A) \right) \right) \cdot \right\} \quad (9)$$

Value functions for challengers are undefined if the group does not hold the leadership; i.e. $V_{t+1,C}^B(A)$ and $V_{t+1,C}^A(B)$ are not defined. In a model extension that we consider in section 7.9, we also define incumbency advantages for representatives who are presently not in office, but are the group's *usual* leader. Under such an extension these latter two value functions would also be defined, but for simplicity we do not consider that case any further; as will

be seen it generates no additional predictions that can be analyzed with existing data.

2.2.5 Value Functions in Equilibrium

A stationary pure strategy MPE for this game is a combination of strategies, $\left(G^{A*}, G^{R*}, G^{B*}, \sigma^{A*}, \sigma^{B*}, G^{AC*}, G^{BC*}, G^{RC*}\right)$ where G^{A*}, G^{R*} solve (1) and (3), G^{B*} solves (2), σ^{A*} solves (4), σ^{B*} solves (5), G^{AC*} solves (7), G^{BC*} solves (9), and G^{RC*} solves (8).

2.2.6 Challenger entry

Deposing an incumbent is costly to citizens since a non-incumbent is more likely to cede leadership to the other group. So a challenger must offer improved governance vis a vis an incumbent to be considered. That is, a challenger must offer G_{t+1}^{AC} such that for an A group :

$$
\gamma^a \left(G_{t+1}^{AC*} + \eta + \delta \left(p V_{t+2}^A(R) + (1-p)(\gamma^A V_{t+2}^A(A) + (1-\gamma^A) V_{t+2}^A(B)) \right) \right) \tag{10}
$$
$$
+ (1 - \gamma^a) V_{t+1}^A(B) \geq \gamma^A V_{t+1}^A(A) + (1 - \gamma^A) V_{t+1}^A(B).
$$

Note that in the above, and subsequent specifications of the models' conditions, we substitute from section 2.2.2 the corresponding values of γ that apply for the $T()$ function. Similarly G^{BC} for a B group:

$$
\gamma^b \left(G_{t+1}^{BC*} + \eta + \delta \left(p V_{t+2}^B(R) + (1-p)(\gamma^B V_{t+2}^B(B) + (1-\gamma^B) V_{t+2}^B(A)) \right) \right) \tag{11}
$$
$$
+ \left(1 - \gamma^b\right) V_{t+1}^B(A) \geq \gamma^B V_{t+1}^B(B) + (1 - \gamma^B) V_{t+1}^B(A).
$$

In each case, the probability of the group winning the leadership is weakly lower under the challenger: for an A, due to $\gamma^a \leq \gamma^A$. The term $\gamma^A - \gamma^a$ thus corresponds with what Padro-i-Miquel (2007) connotes as due to "personal rule"; the increased stability of the group's rule due to maintaining the incumbent.[20]

Next, consider the entry condition from a challenger's perspective. For a challenger to be willing to offer a G_{t+1}^{AC}, or G_{t+1}^{BC}, he must weakly prefer being a leader producing the respective amount to remaining a citizen. 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, and thus jeopardize his own consumption of η. For such a challenger to enter in an

---

[20]Note that in Padro-i-Miquel (2007) a challenger's incentives to enter are never explicitly considered. This is because he assumes that, in the event a leader is deposed, all individuals in the group receive payoffs of zero for a period. Individuals, as citizens, thus (weakly) prefer supporting a leader over not-supporting one. Here, in contrast, a leader's promised level of governance is compared to the best that is offered from a challenger in the group were he to win. This is true to the context of villages in India. Challenger's must thus also (weakly) prefer to not enter at any promised level of governance at which they would be (weakly) preferred by their group.

unreserved election, necessarily:

$$\gamma^a \left(\pi - G_{t+1}^{AC*} + \eta + \delta \left(pV_{t+2,L}^A(R) + (1-p)\left(\gamma^A V_{t+2,L}^A(A) + (1-\gamma^A)V_{t+2}^A(B)\right)\right)\right) \tag{12}$$

$$+(1-\gamma^a)V_{t+1}^A(B) \;\geq\; \gamma^A V_{t+1}^A(A) + (1-\gamma^A)V_{t+1}^A(B)$$

$$\gamma^b \left(\pi - G_{t+1}^{BC*} + \eta + \delta \left(pV_{t+2}^B(R) + (1-p)\left(\gamma^B V_{t+2,L}^B(B) + (1-\gamma^B)V_{t+2}^B(A)\right)\right)\right) \tag{13}$$

$$+(1-\gamma^b)V_{t+1}^B(A) \;\geq\; \gamma^B V_{t+1}^B(B) + (1-\gamma^B)V_{t+1}^B(A).$$

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:

$$\pi - G_{t+1}^{RC*} + \eta + \delta \left(pV_{t+2,L}^A(R) + (1-p)\left(\gamma^A V_{t+2,L}^A(A) + (1-\gamma^A)V_{t+2}^A(B)\right)\right) \;\geq\; V_{t+1}^A(A). \tag{14}$$

2.2.7 Solving the Model

A key effect of reservations is that necessarily $G^{RC*} = G^{R*}$. To see this immediately, note that if the group supports the incumbent they get: $G_{t+1}^R + \eta + \delta \left(pV_{t+2}^A(R) + (1-p)(\gamma^A V_{t+2}^A(A) + (1-\gamma^A)V_{t+2}^A(B)\right)$ if not supporting they get $G_{t+1}^{RC} + \eta + \delta \left(pV_{t+2}^A(R) + (1-p)(\gamma^A V_{t+2}^A(A) + (1-\gamma^A)V_{t+2}^A(B)\right)$. So no MPE can feature a distinction between the governance level offered by a challenger, and the level that would have to be produced by an incumbent when reservations apply.

In contrast, within non-reserved villages, the incumbent's advantage from personal rule $(\gamma^A - \gamma^a)$ requires a challenger to promise better governance in return for displacing the incumbent $G^{AC*} \geq G^{A*}$. Since incumbents in non-reserved villages are strictly preferred to challengers offering the same level of governance, at any level of governance for which a challenger is willing to take over the leadership from an incumbent, and at which he would be preferred by his group, the leader will at least weakly prefer to remain leader for the same level of governance. This implies that any MPE will feature incumbent leaders offering a level of governance in a non-reserved village that is just sufficient to ensure that a challenger from his group is indifferent to entering under a promise of governance at which his group is indifferent to supporting him. That is, σ^{A*} is such that the A group is indifferent between obtaining $G_{t+1}^{AC} + V_{t+1}^B(A)$ with probability γ^a and $G_{t+1}^A + V_{t+1}^B(A)$ with probability γ^A, and similarly for the σ^{B*} of the B group. So, G^{A*}, G^{B*}, G^{AC*} and G^{BC*} are such that (10), (11), (12) and (13) bind. The main existence result showing that there is a unique fixed point solving the corresponding value functions is now proved.

Proposition 1. *If the value of distributional benefits from leadership, η, is sufficiently great relative to the rents*

from office, π, then there exists a stationary Markov Perfect Equilibrium which corresponds to the binding solutions to equations (10) to (11) and (12) to (14) and the solutions to equations (24) to (32). This solution is unique.[21]

In such an equilibrium, incumbents are never deposed by challengers. Group members always prefer to vote for their own representative over the leader of another group, and as in Padro-i-Miquel (2007), the existence of personal rule ensures that incumbents enjoy kleptocratic rents. So provided that $\gamma^A - \gamma^a > 0$, the net present value of being an incumbent leader strictly exceeds the net present value of being a citizen. An incumbent leader in that situation sets $G^{A*} < \pi/2$, receiving utility strictly greater than any other member of the A group. Recall that the indifference level of output would be $G^A = \pi/2$.

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 is what rules out a deviation from a leader that would 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 taking the leadership, i.e., $G = \frac{\pi}{2}$, and a citizen's current leader provides zero governance, $G = 0$, this citizen will still prefer a leader from his own group. The parametric sufficient condition is $\eta \geq \frac{\pi}{2}$. [22]

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 compared to a non-reserved A village returning an incumbent. That is:*

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

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

Governance improves under reservations because kleptocratic rents enjoyed by incumbents are destroyed when leadership is guaranteed to the group. When that happens, group members can contest the leadership without the group fearing that it will lose to the other group. 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, the effects of reserving office are so great that entrants are willing to offer levels of governance making citizens (statically) better off than the entrants themselves would be were they to win office. That is:

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[21]A sufficient condition is $\eta \geq \frac{\pi}{2}$.

[22]The politics-of-fear arises precisely because inter-group distributional factors trump common governance goals. It is because of this that any disciplining role of inter-group competition on leader public good delivery does not arise. Weaker conditions than in the previous footnote could be established but are not of relevance for the theory or empirics, so we do not pursue them further.

Corollary 1.

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

Since the benchmark, first-best, level of governance at which a leader is indifferent to the leadership position is $G = \pi/2$, the corollary shows that the supported candidate under reservations is temporarily worse off than other group members when becoming leader. However, the leader is only worse off in his first period (commitment period). 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 than citizens while he remains in office. This makes clear the important role played by the commitment technology assumed in the model. Commitments are made by candidates for the upcoming term of office only. However, if they could commit to policies in to the infinite future, then candidates would never be able to enjoy kleptocratic rents. Their electoral promises would entail commitments that bind them for all future periods of office so that they could never exploit rents. With infinite commitments, then, the politics-of-fear problem goes away. Relatedly, with no commitment power in the upcoming term, there is no possibility of a contest stage, and no meaningful challenges to incumbents (at least in a Markov setting). All candidates would face the same ex post incentives in policy formation, and incumbents would always be strictly preferred when there is personal rule: $\gamma^A - \gamma^a > 0$. For cases in between these extremes, of which the current model is one, qualitatively similar results apply to those that we established above. That is, leaders are able to exploit kleptocratic rents over the non-commitment component of their terms in office. And reservations will destroy those rents, leading to a contest that improves subsequent governance when they arrive at a village. So, the main prediction, that improvements in governance arise from reservations, persist under all limited commitment extensions of the model.

We now turn to establishing a set of key characteristics of the equilibrium that will form the core of empirical tests that will follow:

Proposition 3. *(i) If $\gamma^A - \gamma^a = 0$, then reservations have no effect on village governance. That is: $G^{R*} - G^{A*} = 0$. (ii) 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, η. That is: $G^{R*} - G^{A*}$ is increasing in η for $\gamma^A - \gamma^a > 0$. (iii) If $\gamma^A - \gamma^a > 0$, then reservations have more impact on village governance, the greater is the other group's incumbency advantage, $\gamma^B - \gamma^b$. That is: $G^{R*} - G^{A*}$ is increasing in $\gamma^B - \gamma^b$ for $\gamma^A - \gamma^a > 0$.*

Implication (i): 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 contrast where $\gamma^A - \gamma^a > 0$, reservations should have positive effects. This is immediate from the equation in Proposition 2, but is important for explaining where we should see reservations working and where nothing should happen. Implication (ii): In villages where such rents are present, $\gamma^A - \gamma^a > 0$, reservations' effects on governance depend positively on the value the group puts on maintaining its distributional benefits, η. Intuitively, where distributional benefits

are highly valued, a leader's kleptocratic rents are greatest, and the improvement in governance under reservations (which destroy such rents) should be more pronounced. Implication (*iii*): In villages where such rents are present, $\gamma^A - \gamma^a > 0$, reservations' effects on governance depend positively on the magnitude of the other (non-reserved) group's leader's kleptocratic rent over his group members, i.e. $\gamma^B - \gamma^b$. Intuitively, with large kleptocratic rents for the other group's leader ($\gamma^B - \gamma^b$ large) the worse will be governance quality if the B group takes power. So the more the A group values maintaining its current incumbent leader, and hence the larger is the kleptocratic rent that the A leader can extract. So, once again reservation's positive effects on governance will be more pronounced when $\gamma^B - \gamma^b$ is large.[23]

2.3 Empirical Predictions

We now discuss how we use the information on the proportion of the reserved group in a village to test the implications of Proposition 3 and its dependence on $\gamma^A - \gamma^a$.[24]

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 $\gamma^A \to 0$, lowering re-election probabilities to $\gamma^a < \gamma^A$ is not costly to this group. Thus $\gamma^A - \gamma^a \to 0$, and from the proposition there should be no impact of reservations on output.[25]

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

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[23]We are indebted to comments from a previous anonymous reviewer of this paper who suggested that we explore the possibility of such a "mutual fear multiplier" in our framework. His/her conjecture that since the multiplier is negative in Padro i Miquel's framework, by undoing it reservations should generate a positive multiplier effect, turns out to be true in the theory here. As that reviewer conjectured, the positive governance effects of reservations are larger when the other group also suffers from politics of fear factors and, as we will see, this is observable in the data.

[24]Both in the model, and in reality, unreserved villages have two types of leaders, a leader that was previously an incumbent, and a new leader elected to replace an old incumbent. (Recall that, along the equilibrium path, incumbents in unreserved villages are never successfully challenged by own-group members). The baseline version of the model predicts that, relative to incumbent As in unreserved villages, A group leaders in reserved villages produce better governance. In an extension in section 7.9, we show that a notion of incumbency advantage may also apply to the incumbent representative when the A group is not in power. In that case a "usual" A representative would be assumed better able to contest for power than another A member, even when that usual representative is not currently in power. So this would extend the notion of incumbency advantage to an advantage of incumbency as a group representative even if not incumbent as leader. Under this assumption we generate the additional implication that even newly arriving A leaders in unreserved villages will produce lower quality governance than reserved A leaders. So under such an extension, any unreserved village lead by an A (whether that be an A who was already in power previously and was returned, or came to power by defeating a B) will have lower quality governance than a reserved A lead village. In the baseline model, reserved villages will only have improved governance relative to A leaders who were previously incumbents in unreserved villages. This difference between the two specifications of our model has no consequence so we do not explore it in the text. The reason is that in the data, whether an unreserved leader is a returned incumbent, or a newly elected leader replacing a previous incumbent is not observable. Consequently, the differing predictions of both versions of the model are not relevant as we are forced to treat all unreserved villages alike, and compare them as a group with reserved villages.

[25]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 8.2 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.

the group it is likely to win the leadership again anyway. This implies that $\gamma^a \to 1$. In that case, the increment to re-election probability gained by maintaining an incumbent leader is small enough to provide only marginal benefits to the group, i.e., this again implies $\gamma^A - \gamma^a \to 0$. So, once more, 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 turn to testing these predictions on the effects of reservations by the proportion of the village that shares the same caste as the village leader, and predictions (ii) and (iii) of Proposition 3 shortly. Before doing so we briefly contrast these predictions with those that would be generated by existing theories of caste based local politics.

3   Alternative Explanations

Here we discuss alternative theories that, though not in all cases designed to explore the issue of reservations and their effects on governance, have been built to understand caste based political interactions, and could be extended to explore the effects of reservations. Many of these models do have predictions about how governance is affected by the size of the group receiving a reservation. We ask whether these models could also explain the inverted U patterns of reservation effects predicted by our model.

Banerjee and Pande (2009), similar to our model, explore a setting where voters care about politicians sharing group identity, either in and of itself, or because of expectations about policies they will select in office. In such a setting, they argue that the party associated with the numerically dominant group will have a competitive advantage in elevating a candidate to office. Candidates from a large group can be of lower quality, ceteris parabus, and still receive numerous votes based solely on identity. On the other hand, for a candidate from a small group to win office, this candidate must be high quality since his pure identity vote numbers are low. We should therefore expect to see lower quality candidates winning office when they are representative of larger groups. Reservations would seem to have little effect in this model for large groups. A larger group under reservation will still be able to support a candidate of lower quality ascending to office, so not much is changed. But for small groups, there should be a large negative effect on candidate quality. Whereas without a reservation, the group would have to put forward an excellent candidate to win, with reservations the group wins no matter who is put up. Towards the middle of the size distribution we should expect something between the two effects, perhaps a slight worsening of winning candidate quality relative to small groups and a slight improvement relative to large ones. There does not seem to be a way to generate the inverted-U shaped relationship our model predicts.

Chattopadhyay and Duflo (2004) construct a citizen-candidate model primarily focused on the effects of gender reservations. The lack of commitment to policy in the contest stage implies that, once elected, the preferences of the representative will also affect policy. The model also includes the possibility of another effect which corresponds to the influence of a local elite on policy, reflecting, for example, a process of local elite capture as modeled in Bardhan and Mookherjee (2000). Without sufficient difference between male and female preferences and not too much influence of the local elite, reservations improve the median women's utility. More relevant for analysis here, this type of model may also improve governance in the direction of the median voter if it turns out that the preferences of the females counteract the distortion that comes from the local elite. One could imagine a version of this model with a similar effect arising to move policy towards the preferences of citizens and away from the local elite under a caste based reservation too. However, how this could generate an inverted U shaped pattern of improvement is less clear. If larger caste groups are more likely to have preferences closer to the local elite – this seems the most likely assumption – then one could imagine the beneficial effects of reservations for such groups to be smaller. But by this reasoning the effects of reservations for smaller groups would be the largest still, and middle sized groups something between the two; again there is monotonicity of reservation effect with group size. A version of the model where, when the reserved group is of middling size – the 25-50% range – it most closely aligns its interests with the ruling elite (and hence against good governance) would seem to be able to generate a non-monotonicity. As we will see, this type of explanation which is related to the village elite however, does not seem consistent with a series of placebo tests that we report in Section 5.6. There is no inverted-U pattern between the effects of reservations and proportion of the village that are large land-owners. If the traditional leaders are more likely to be aligned with the local elite when the jati of the Pradhan is in the 25-50% range then this should correlate with when the large landowners are in the 25-50% range of the village constituents, since landholding and elite status is so correlated in our villages. But there is no such pattern.

If access to office is costly or otherwise littered with barriers that would restrict highly talented individuals from traditionally underprivileged groups from power, then reservations, by facilitating access to such individuals may raise the quality of representatives and thereby improve governance. Banerjee, Duflo, Imbert, Pande (2013) report that after a reservation there are more contested elections because the leader is less likely to stand again, perhaps freeing the path for newcomers. A recent paper by Besley et. al. (2017) for Swedish municipal elections, provides confirmation of this possibility, albeit in a widely diverging electoral context. We can again project the effects that such a force, if at play, would have in our context. The barriers would be greatest for smallest groups, with the larger caste groups being those with the lowest barriers to a caste member ascending to the leadership. Consequently, the greatest improvements should arise when reservations go to groups that are small, and therefore unlikely to be able to obtain leadership in open contests. Highly talented individuals in such groups who are ordinarily unable to overcome the barriers to power, would then be free to lead. In contrast, for larger groups, that would tend

to experience smaller barriers, reservations should have smaller effects. Similarly, middle sized groups should be somewhere between in their effects. The pattern suggested then is similar to that suggested by extending the Banerjee and Pande (2009) model to our setting; it does not generate the inverted-U pattern distinctly predicted.

Munshi and Rosenzweig (2017) develop a model based on a markedly different departure point to that explored here, which has emphasized group capture by a venal leader. In their model, by contrast, caste groups can impose discipline on their leaders once in office. In fact, they assume that the disciplining power is so strong that leaders will act in the interest of the group, even sacrificing their own, by entering in to the representative role. The leader's group does this by leveraging its social connections and control over the leader's extra-political life to force the leader to produce levels of effort required by the group. According to this perspective, leaders may even be reluctant to take office (unlike our framework where office is coveted) but can be forced to stand and act in the interests of their caste group once elected. This perspective clearly rules out the electorate (or one's own group) being captured by a selfish, lazy or corrupt representative and generates strong predictions with respect to how the process of political reservations should interact with group size. Large groups, who highly value village level public goods, like governance because they comprise a large chunk of the electorate, and will demand high quality elected representatives (be it in terms of selection as they emphasize, or in terms of non-contractible effort too if that were introduced). Smaller groups, who consume relatively little of the village public good, will demand less from their representative, and middling groups lie somewhere in between. Reservations would not seem to matter too much in affecting this basic monotonicity of the effect of jati group size on leadership quality. That is, it would not seem to matter whether a large group obtains office via reservations or via direct elections in explaining this effect. So such a model would not generate a differential between the governance outcomes comparing reserved and non-reserved groups when interacted with jati size of the Pradhan. As they emphasize, it is purely the effect of group size that matters. Moreover, reservations would be damaging to governance overall if they ended up making it more likely for leaders to emerge from smaller groups. However, even if such a model could be extended to generate a differential effect of reservations that was independent from the pure group size effect, it does not seem possible to generate a non-monotonic effect of reservations by group size on governance quality since the model predicts a monotonic relationship between government quality and group size. A major distinction, however, should be drawn between their model and ours. Theirs is focused on ward level representatives – not the Pradhan. In terms of assumptions, their model depicting a group level servant may well apply more naturally to the unpaid members representing wards on the Panchayat. However, it would seem that ours applies better to the individuals holding the paid and powerful leadership position of the Pradhan, which is coveted by individuals and valued when held by someone from one's own caste group.

Pande (2003) develops a model of political competition demonstrating that the effectiveness of political reservation in altering policy depends on the nature of the contract between the electorate and the elected. In that

model, changes in legislator identity through reservations may affect policy if there is a lack of policy commitment. Reservations force the party to field a low caste candidate, and then if there is lack of commitment, this candidate has freedom to undertake the policies he/she wants (to some extent). It is straightforward to see how this could affect distributional outcomes by caste, but not so clear to see how this would effect governance quality overall, nor how this could generate an effect on governance that displays the inverted-U pattern predicted by our model.

Bardhan and Mookherjee (2012 and 2017) argue that if caste groups are rewarded for voting in favour of a Pradhan, even when they do not themselves elect their preferred candidate, then it may be the case that groups with little prospect of obtaining power would still support members of another group who may be corrupt or venal because they fear being "punished" through limited transfers and public goods when that candidate ascends to power. In fact, there exists an equilibrium where all individuals support the traditional candidate for fear of punishment, even if a better candidate exists, simply because they expect everyone else to support the traditional bad candidate and fear being the odd ones out. Reservations can clearly break such an equilibrium by excluding the bad candidate from running. Though this could improve governance, it is hard to see how this might interact with the size of the reserved group. If larger groups are likely to have the "bad" candidate, then reservations for smaller groups would help in improving governance, alternatively so if smaller or medium groups are more likely to have that candidate. Again, though reservations may improve governance in such a context, a systematic non-monotonic relationship with group size does not seem to be an outcome.

The general existence of clientelism in such villages (a recent survey is in Bardhan and Mookherjee 2017), could be a factor distorting governance away from pro-poor and pro-development policies. Rather than elite capture by brute force, clientelism involves transfers to non-elite in return for their political support. We have, in earlier work, Anderson, Francois and Kotwal (2015), explored the effects of just such clientelist structures in this same sample. We therefore agree with the prominence of clientelist structures of transfers between elites and non-elites in our villages. But again, we have trouble envisioning how clientelism alone could explain the inverted-U pattern of reservations effects by jati size without adding to it some sort of politics-of-fear considerations. Clientelism may lead to numerically small elites seizing power through transfers, and acting against the village's collective or majority interests. If reservations break this by forcing the elite to share or vacate power to the lower castes, whether they be numerous or not in the village, then governance quality could well increase along the dimensions that we measure. Of course, with the right set of assumptions about how the elite's valuation of governance interacts with their proportionate size in the village it would seem to be possible to generate an inverted-U relationship for the effects of governance on reservation, but there does not seem to be a natural way for this to happen purely through clientelism.

To summarize. No existing theory predicts a non-monotonic effect of reservations by the size of the group receiving a reservation. So this prediction of our theory is something that is worth searching for in the data. In

addition, we will look for evidence of the interactions between the effects of reservations and the group level value of holding village leadership, as well as the magnitude of incumbency advantages in non-reserved groups; implications (ii) and (iii) of Proposition 3. We have not discussed these additional implications here as they are completely unanticipated by any existing theories.

4   Data

4.1   Data Collection

The data was collected in the state of Maharashtra, which is located on the west coast of central India. Traditional Panchayats, or village councils, have been in place in this state for centuries. Politics in the village essentially functioned as a feudal legacy of dominance, where family members of certain upper caste groups of landed lineages persistently controlled the Panchayats. The establishment of the Bombay Village Panchayat Act of 1958, formally enumerated the duties, responsibilities, membership, and powers of the Gram (village) Panchayats. Regular secret ballot elections and universal franchise were formally mandated, and reservations on a lottery basis for seats on the Panchayats for marginalized groups: lower ranked caste groups (Scheduled Castes (SC), Scheduled Tribes (ST), and Other Backward Castes (OBC))[26] and women, but not for the Pradhan (leadership) position. Village case studies reveal that following the introduction of democratic elections, the Pradhan position still essentially remained in the hands of the established landed elite; other elected council members had little role to play (Kumar 2004, Gould 1967).

In accord with India's 73rd constitutional amendment of 1992 that sought to further democratize local governance, the Bombay Village Panchayat Act of 1958 was amended to increase resources and decision making power to the Gram Panchaysts. At this point, caste and gender reservations for the Pradhan position (the only paid member of the Gram Panchayat) were introduced as well. The randomization of reserved Pradhan positions in each election is on the basis of Gram Panchayat serial number rank, and random number tables provided by the Electoral Commission. In accord with the amended Panchayat Act, the number of the Pradhan positions reserved for the SC and ST groups are computed proportionally to the population of each caste group in the state. So the proportion of Pradhan positions reserved for these two groups (SC and ST) can vary slightly across election cycles, depending on relative population numbers in the state. By contrast, for the OBC group, the proportion of randomly selected villages with the Pradhan position reserved for this caste group has been fixed at 27% since 1992. The process for all reservations is administered via the state's electoral commission, which is independent, not tied to any parties,

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[26]All Hindus, the major religious group in India, are divided into a set of hereditary caste groups which fit into a traditional hierarchical ranking: Upper, OBC, SC, and ST. Within each of these larger groupings, there are thousands of sub-castes or jatis. Traditional rules have governed interaction within and across jatis. These include strict endogamy and restrictions on certain social interactions.

nor to any level of government.

The villages that will have reserved Pradhan positions are typically announced by the State Election Commission two to three months before the date of the election. Prior to each election, every individual desiring to contest for the office of the Pradhan reserved for SC, ST, or OBC, is required to submit, along with the nomination paper, a Caste Certificate and Validity Certificate issued by the Scrutiny Committee of the Electoral Commission.

Approximately two years after the Gram Panchayat elections were held in the year 2005, we surveyed 9132 households from 320 villages in the state of Maharashtra in 2007. 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 that are primarily agricultural (as opposed to factory based or small market towns), that are large enough to have their own Gram Panchayat (i.e. village government), and where social organization is caste based, rather than tribal, our criteria for village selection was a total population of 1500-2500 and a tribal proportion less than 10%.[27] From the universe of such villages within the geographic area (a total of 22 565 villages), 320 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.[28]

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 government offices using the "Right to Information Act".[29] In Maharashtra, a given GP typically covers a population of approximately 2000. As a result, in our data the GPs are 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. These can be broken up into programs directly targeted to individuals below the poverty line (BPL), and 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

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[27]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.

[28]That is, household income equal to less than 4367 Rs/capita/year, i.e., less than $1.25 ppp/day/capita in 2007 US dollars.

[29]The Panchayat Raj is the system of decentralized governance in the rural areas of India which has three levels: village (*Gram Panchayat*), block (*Panchayat Samiti*), and district (*Zilla Parishad*).

individuals the average 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.[30] 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 in place in only 20% of villages. This scheme, like all listed programs, is funded externally and administered by the GP. The GP draws up lists of eligible recipients, and disburses entitlements to them.

Our key governance outcome variables of interest relate to: (1) the availability of government programs in the village (as described above); and (2) government finances. For (1) we have three main measures we focus on: total programs available in the village, those targeted to BPL, and the availability of EGS. We collected information on program availability in both our village and household surveys. We will show all of our results for both of these survey methods. For (2), we have three key measures which capture government finances collected in the last 24 months, i.e., two years since the election. The first is total government revenue, which primarily includes funds from upper level governments, and to a much smaller extent stamp duty as well as water usage fees. The second is total government expenses, which includes all expenditure on public goods, program provision, resource management, and festivals. We will display results for funds from upper level governments separately. Refer to Tables A1 and A2 in the Appendix for summary statistics on all of our key outcome measures.

4.2   Kernel Density Plots

Our key independent variable of interest is the reservation status of the Pradhan (the leader of the Gram Panchayat).[31] Our model predicts that if a jati is a small proportion of the village's voters so that it almost never wins the Pradhan's position, then reservations should have no impact on governance. Likewise, 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. However, reservations should have an effect on jati 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. Providing a guaranteed reservation of the leadership to this group improves governance.

We now turn to testing predictions regarding the effects of reservations by proportion of the village sharing the same jati as the Pradhan (the leader of the Gram Panchayat). According to the model, what we should observe in

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[30]It is a precursor to, and more generous version of, the current nationally administered Mahatma Ghandi National Rural Employment Guarantee Act, MNREGA).

[31]In India, seats are reserved for historically disadvantaged caste groups (Scheduled Castes (SC), Scheduled Tribes (ST), and Other Backward Castes (OBC)) at all levels of government: federal, state, and throughout the Panchayat system - the system of decentralized governance in place in the rural areas.

the data is an inverted U-shaped relationship between the proportion of the village that shares the same caste as the Pradhan and our measures of governance in Reserved villages *relative* to this same relationship in Unreserved villages. So, we should see that the *differential* in governance quality between Reserved and Unreserved villages follows an inverted U-shaped relationship with respect to the proportion of the village sharing the Pradhan's jati. Though the proportion of a village sharing the Pradhan's jati is by no means exogenous, whether the village leadership position is reserved, or not, given the size of the Pradhan's jati is. Reservations are determined entirely randomly via the draws of the electoral commission. So, this relationship provides a pure test of the theory.

On the other hand, our theory has nothing to say about the direct relationship between the proportion of the village sharing the jati of the Pradhan and our measures of governance. Firstly, the jati of the Pradhan is going to be endogenous to the jati proportions in the village. Secondly, one might expect that in villages where a large proportion of the village ends up sharing the jati of the Pradhan, the Pradhan has a higher stake in quality governance and could perhaps be induced to contribute more effort or be selected to be of higher quality. Though this seems reasonable, direct relationships are not a prediction of our model, and more importantly, the form of the direct relationships will not affect how we test for our model's predictions.

The simplest first-brush way to look at this prediction, without taking a stance on how large a group needs to be to contest for power, is to simply look at Kernel density plots of these predicted relationships over the whole range of jati Pradhan proportions. Figure 1, below, plots our three key measures of government finances as a function of the proportion of the village that shares the same jati as the Pradhan. The blue line depicts the relationship between governance and Pradhan jati proportion in Reserved villages, the green line depicts the same relationship in Unreserved villages. As predicted, the differential between the two does follow an inverted U-shape pattern.

Insert Figure 1

Figure 2 plots the same relationships for our three key measures of government program provision using the village level data. Figure 3 plots the analogous relationships using the household level data instead. Again we see, differentials in favour of reserved villages emerging at middle values of the Pradhan jati village proportions.

Insert Figures 2 and 3

A further pattern that emerges in Figures 2 and 3 is that at high levels of jati pradhan, reservations appear to exert a negative differential effect. Our theory does not provide an explanation for this additional pattern, but we conjecture that this is driven by the presence of ineligible for reservation and politically dominant Marathas in the unreserved (green line) villages. Supporting that explanation, we will see in Section 4.3 that this negative differential at the upper end no longer occurs when excluding Maratha Pradhans from the control group. However, our main findings, which are consistent with the predictions of the model, hold independently of whether the

Maratha Pradhans are included or not. See our earlier work, Anderson, Francois, and Kotwal (2015), for a detailed discussion of the unique role that Marathas play in village politics.

5 Estimations

5.1 Effect of Reservations

We now turn to estimations which demonstrate that these key relationships borne out in the raw data are robust to a series of empirical specifications, as well as the addition of controls. As emphasized, reservations for the Pradhan position in each election are randomly allocated across villages on a lottery basis in Maharashtra. As discussed, in accord with the Bombay Village Panchayat Act, reservations for the SC and ST groups are computed proportionally to the population of each caste group in the state. By contrast, for the OBC group, the proportion of randomly selected villages with the Pradhan position reserved for this caste group has been fixed at 27% since 1992.[32] Table A3 in the Appendix compares village-level outcomes across reserved and unreserved villages. There it is demonstrated that there are essentially no significant differences in terms of measures of caste composition (using both the larger groupings of SC, ST, and OBC, as well as the smaller jati-level population numbers)[33], caste polarization and fragmentation, economic inequality, geographic endowments, and regional distributions. Thus consistent with the allocation of reservation status across villages being random. It is also worth noting that there are no known reports from any state in India (since the 1992 amendment) of reservations being allocated in violation of electoral rules.

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 equation below:

$$Y_{ik} = \beta_0 + \beta_1 RESERVED_k + \psi_k X_{ik} + \gamma_k Z_k + \epsilon_{ik}. \tag{15}$$

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 the higher caste group (the Marathas)). $RESERVED_k$ is our key variable of interest which is equal to 1 if the Pradhan

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[32]Consequently, testing the model predictions is slightly cleaner for OBC groups in reserved villages since reservations for them are not confounded by any possible effects that could arise from population frequencies across time. We show that all results persist when we just focus on reservations for OBCs and exclude the SC reservations from the analysis in Section 7.4 of the Appendix.

[33]One exception is a single SC jati, the Mahars, which are slightly more represented in reserved villages (8% compared to 6% in unreserved villages).

is reserved for a lower caste (OBC, SC, ST) member in village k and equal to 0 otherwise.[34] Therefore in these estimations, the comparison group is unreserved Pradhans.[35] ϵ_{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:

$$Y_k = \beta_0 + \beta_1 RESERVED_k + \phi_k Z_k + \varepsilon_k. \tag{16}$$

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

5.2 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, $\gamma^A \to 0$, and hence there is no effect of reservations on governance outcomes since kleptocratic rents are low: $\gamma^A - \gamma^a \to 0$. 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, $\gamma^a \to 1$, therefore there is again no effect of reservations as kleptocratic rents are similarly low: $\gamma^A - \gamma^a \to 0$. If instead, the candidate is from a jati which is large enough to contest elections then they are more likely to win if persisting with the incumbent. This generates the 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 γs, and these are unobservable, we test these implications using a series of different approaches. Our first test is to estimate (15) and (16) 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 numbers correspond with electoral power, and hence a jati's 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-offs that we should use, i.e., how population proportions reflect the underlying γs. Table A4 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 for potentially reservable groups. We see that jati groups with less than 25% of the village population are both never the largest jati in a village, and are also exceedingly unlikely to provide the Pradhan in an unreserved village contest (approximately 2% of the time); corresponding to our $\gamma^A \to 0$ case. Jatis which exceed 50% of the population are very likely to provide the Pradhan position (65%); corresponding to our $\gamma^a \to 1$ case.[36] Jatis

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[34] We also include region fixed effects.

[35] We include as an additional control whether the Pradhan is reserved for a woman.

[36] The problem with using a more stringent upper bound, for example, 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, having a high upper bound almost guarantees finding a statistical zero and therefore does not test the theory. So to preserve power we use the

between 25 and 50% are contesting jatis, and provide the Pradhan about 30% of the time in unreserved villages, 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, we split the villages into two groups: one group where the jati of the 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 large, i.e., greater than 50%, where the theory does not expect reservations to significantly impact governance. The top panel of Table 1 reports the estimation results from (16) for these two samples of villages, and the lower panel are from (15).

Insert Table 1

Our key outcome variables relate to the availability of government programs in the village and government finances. Revenue includes funds from upper level governments, stamp duty, and water usage fees collected in the last 24 months,. i.e. since the most recent election. Government expenses include all expenditure on public goods, program provision, resource management, and festivals in the last 24 months. Committees refers to the total number of Gram Panchayat committees out of a possible 12. They serve the purpose of overseeing issues regarding: education, health, beneficiary selection, water usage, village development and the weekly bazaar. We see that our key measures of governance are all significantly positively related to whether the Gram Prahdan is reserved only in villages where the jati of the Pradhan forms between 25 and 50% of the village population.

At the household level, our key outcome measures include the availability of government programs in the village, as well as household participation in these programs, whether households perceive that the "needy" obtain the benefits of the program, and whether households themselves received what they were entitled to from the programs. As per the village level variables, the key household measures of governance are all significantly positively related to whether the Gram Prahdan is reserved. But that is the case only in villages where the jati of the Pradhan forms between 25 and 50% of the village population.

5.3   Alternative Specifications

Below, we report alternative estimation results from (16) (top panel in Table 2) and from (15) (lower panel in Table 2). 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 2

relatively lenient cut-off of 50%. We undertake numerous robustness tests relaxing this in what follows.

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 the lower panel.

This statistically significant negative effect of reservations in villages where the jati of the Pradhan makes up more than 50% of the population does not persist when villages where the Pradhan is a Maratha (i.e., from the highest ranked caste) are excluded, as seen in Table 3 below. Our main reported effects of reservations in line with the model's predictions, however, are all robust to doing so.[37] This is consistent with our earlier conjecture regarding a similar dip in the kernel density plots. The negative effect of reservations at high levels seems to be explained by the disproportionately high number of Maratha Pradhans in unreserved villages there.

<center>***Insert Table 3***</center>

From Table 3, we see that now, for both uncontested categories, there is no significant effect of reservations in these types of villages on our key measures of governance at either the village or household level.

Because the Pradhan jati village population share is not randomly assigned, our main estimation strategy is to estimate (15) and (16) for different samples of villages, and focus on the estimated coefficient of the randomly assigned reservation status for the different sub-samples of data. Alternatively we could interact the Pradhan jati population shares with the reservation status variable. We do this in Table A6 in the Appendix. There we define three separate dummy variables - capturing the three corresponding Prahdan jati population shares: low (less than 25%), medium (between 25% and 50%), and high (greater than 50%). We see there that all of the results of the previous estimations follow through. That is, the significant positive effects of reservation status on governance outcomes are only present when interacted with a dummy variable (the medium category) equal to one if the jati of the Pradhan forms between 25 and 50% of the village population. Moreover, the negative interaction effect of reservations with the highest Pradhan jati proportion (greater than 50%) is not statistically significant in this specification, as consistent with Table 3. Please see Section 7.5 in the Appendix for more details.

5.4 Robustness Checks

We now explore a series of robustness checks of our baseline estimates which continue to suggest that reservations only have a positive and significant impact on governance when going to jatis who may reasonably contest for the Pradhan position, but are not ordinarily guaranteed it. The first consideration is the determination of the population

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[37]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.

cutoffs. Below, we report the estimates under varying cut-offs. In Table 4, 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, Funds, Expenses). In the top panel, 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 two columns are for the whole sample, the last two columns exclude 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%. These cutoffs correspond to what we observed in the raw data Kernel density plots of Figures 1 through 3.

Insert Table 4

Similar results hold for the household level data. In Table 5 below, the key dependent variable is 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).

Insert Table 5

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 group, 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 since they are still competing with each other under reservation. 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.[38]

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[38]This violation is so rare probably because of the traditional occupational distribution of villages, its correspondence with caste, and

In the lower panel of Table 4, 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 again evidence of reservations having a positive effect only in our contested villages and not in the uncontested ones. 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. The lower panel of Table 5 demonstrates that similar results hold for our governance measures from the household level survey.

5.5 Quality of the Pradhan

Although reservations are randomly determined, it is conceivable that other variables are systematically correlated with our key source of variation, i.e. the proportion of the village sharing the Pradhan's jati. One particular consideration is the quality of the Pradhan. In fact, it is possible that the mechanism by which reservations affect governance is through political selection and hence effects the quality of the Pradhan.[39] It has been shown that altering the electoral system may affect politician selection; for a recent example with very well identified effects of this at local level elections (though in a different setting) see Beath et al. (2016).

Though we have not focused on the effects through a selection channel under reservations in our model, instead emphasizing the moral hazard channel, a slight extension of the model could easily be developed to include a channel that would operate through selection. For example, if candidates were to differ in their inherent observable qualities (like education) or unobservables (to the researcher) like honesty, a group experiencing reservations would not fear replacing their low quality (low education or dishonest) candidate who was ordinarily unopposed because of the group fearing displacement from power, with a more honest or more educated one when they got a reservation. We remain open to this being part of the mechanism through which politics-of-fear effects may operate in reality, 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 (2017) 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.

[39]There is a substantial literature on how the identity of politicians influence governance. Refer to, for example, Dal Bo et. al. (2017).

test it here with the observables we do have.

We first demonstrate that, even if such effects are present, it is likely that there still remains a moral hazard channel. We do this by controlling for observable characteristics of the Pradhan. In the left panel of Table 6 below we demonstrate that results from our baseline specification are robust to including other characteristics of the Pradhan such as education, occupation, 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 6

The lower set of results in Table 6 demonstrate that this robustness check also holds for our governance measures at the household level.

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 (16) 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 4 below depicts the estimated coefficient (using (16)) of the variable reserved, in a series of estimations that vary by the proportion of the village that shares the same jati as the Pradhan, on the education, occupation, and landholdings of the Pradhan respectively. We see that there is no evidence of an inverted U-shaped relationship for any of these quality measures with regards to the Pradhan jati proportions.

Insert Figure 4

This tentatively supports a conclusion that selection does not seem to be a primary channel through which politics-of-fear induced changes due to reservations are having their effects on governance. But this conclusion remains somewhat tempered. Firstly, individuals within our reserved groups (once we control for jati) exhibit remarkably little variation in education or the other observables we use. But this lack of variation may obscure true variation in unobservables that are not correlated with these observables. We have no way of detecting that in our data, as we only have measures that correspond with those used in similar settings.[40] One dimension where we are limited with respect to other studies in Indian villages is that we do not have information regarding the length of a village leader's tenure in office. So we cannot check whether new leaders tend to enter under reservations; a potential channel of improved selection occasioned by them. As a side point, a standard question on tenure would be unlikely to pick up such effects even if it had been asked. Many of the caste group members refer to their

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[40]For examples as a benchmark see Munshi and Rosenzweig (2017) and Chattopadhyay and Duflo (2004).

"traditional ruling families" who tend to hold village representative positions with different male members of the families taking turns alternating in the leadership positions. A question on individual tenure would not therefore distinguish between cosmetic and real changes in representativeness. We would need a question on the political experience and tenure of a representative's family to properly observe this.

5.6 Placebo Tests

Our results could also be spuriously caused by something else 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, caste polarization and fractionalization, as well as village-level landholdings. To look for evidence of this possibility, using (16), we estimate the effect of reservations on government revenue and government programs in a series of estimations that vary by several measures of village type. That is, 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 five groupings. The figure below depicts the estimated coefficient on reservation status in each of these groupings. 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 categories.

Insert Figure 5

We now perform an analogous exercise (using (16)) for different village measures: caste polarization index; caste fractionalization index; proportion of the village which are large land owners (> 5 acres); proportion of the village which is from the Maratha caste, and proportion from the SC caste grouping. 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 5 we never see an inverted U-type relationship with regards to the increasing values of these village-level measures and governance indicators.

Insert Figures 6 and 7.

5.7 Test of η Prediction

Another prediction of the model, from Proposition 3 (part (ii)), is that the effects of reservations should be greater, the greater is the distributional benefit to the group when they have the Pradhan's position; the η term

in the benefit to reservations expression which appears in the numerator and multiples $\left(\gamma^A - \gamma^a\right)$ in Proposition 2. We cannot measure η directly, but the group value of holding the Pradhan position should be higher if it is easier for the Pradhan to target his own jati with distributional benefits. Following this reasoning, we construct a type of Herfindahl index of jati concentration. As mentioned in Section 3, villages were surveyed along neighbourhood lines, so 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 Pradhan in neighbourhood j divided by the number of households who share the same jati as the Pradhan in the entire village. We then construct an index, $H = \sum_{j=1}^{n} s_j^2$, which will be higher the more concentrated is the jati in the village. If all of the 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, yielding $H = 1$, which is the upper bound on H. In this case, the members of the Pradhan's jati are concentrated in a single neighbourhood, it will be easy to target group members with local public goods, and η would be high. Alternatively, suppose instead that the members of the 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 diffused jati would be more difficult to single out with targeted benefits and η would be low. The model predicts that, in contested villages, reservations have larger effects the larger is η.

To test this prediction we estimate the following two equations, including an interacted measure of concentration. Specifically we run the household level regression represented by the following:

$$Y_{ik} = \beta_0 + \beta_1 RESERVED_k + \beta_2 RESERVED_k * H_k + \beta_3 H_k + \psi_k X_{ik} + \gamma_k Z_k + \epsilon_{ik}, \qquad (17)$$

with H_k being our index of the degree of concentration of the Pradhan's jati village k. Our key coefficient of interest is the interaction coefficient, β_2, which our theory predicts to be positive. That is, the impact of reservations (represented by $RESERVED_k$) is larger the easier it is to target the Pradhan's jati members, as captured by a higher H_k. The analogous village level regression is:

$$Y_k = \beta_0 + \beta_1 RESERVED_k + \beta_2 RESERVED_k * H_k + \beta_3 H_k + \phi_k Z_k + \varepsilon_k. \qquad (18)$$

The last two columns on the right-hand side panel of Table 7 report the results from estimating (18) and (17). In both cases, we have restricted the sample to those villages where reservations had an impact, that is, where members of the jati of the Pradhan make up between 25% and 50% of the village population. The significance of the point estimates suggest support for the model's prediction on interactions. That is, the positive impact of reservations on governance outcomes seems to be larger the more concentrated are members of the jati of the Pradhan; i.e., a higher estimated β_2, for program provision and government finances in the village.

Insert Table 7

5.8 Test of $\gamma^B - \gamma^b$ Prediction

A final prediction of the model, from Proposition 3 (part (iii)), is that reservations have more impact on village governance, the greater is the other group's incumbency advantage, $\gamma^B - \gamma^b$. The other group - the group for which political reservations do not apply - are the higher ranking Maratha caste in our context.[41] Due to their paramount political dominance across the state of Maharashtra, no matter how few Marathas reside in a village, they have a positive probability of running the government. That is, our data show that even if Marthas make up less than 5% of the village population, they hold 15% of the leadership positions in unreserved villages. On the other hand, if their population numbers are greater than 45%, they always hold political power in unreserved villages. Therefore, according to our model, we should expect the impact of reservations to be higher, when the Maratha caste group comprise less than 45% of the village population.

To test this prediction we estimate the following two equations which include an interacted measure of Maratha representation. Specifically we run the household level regression represented by the following:

$$Y_{ik} = \beta_0 + \beta_1 RESERVED_k + \beta_2 RESERVED_k * ML_k + \psi_k X_{ik} + \gamma_k Z_k + \epsilon_{ik}, \tag{19}$$

with ML_k defined as a dummy variable equal to one if the proportion of Marathas in the village k is less than 45% and zero otherwise. In the Appendix (in Section 7.5), we consider alternative ways for how to define this variable and demonstrate robustness of the estimation results which follow. Our key coefficient of interest is the interaction coefficient, β_2, which our theory predicts to be positive. That is, the impact of reservations (represented by $RESERVED_k$) is larger the greater is the other group's (i.e. Marathas) incumbency advantage (i.e., kleptocratic rents are high). The analogous village level regression is:

$$Y_k = \beta_0 + \beta_1 RESERVED_k + \beta_2 RESERVED_k * ML_k + \phi_k Z_k + \varepsilon_k. \tag{20}$$

The first two columns of the left-hand side panel of Table 7 report the results from estimating (20) and (19). In both cases, we have restricted the sample to those villages where reservations had an impact, that is, where the members of the jati of the Pradhan make up between 25% and 50% of the village population. The significance of the point estimates suggest support for the model's prediction on interactions. That is, the positive impact of reservations on governance outcomes seems to be larger when Marthas are not the most populous group - so that kleptocratic rents are contested - i.e., a higher estimated β_2, for program provision and government finances in the village.

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[41] The Bombay High Court granted reservation status to Marathas in 2019 but this controversial policy change well postdates our data collection.

6 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. The pattern of improvement lines up well with what would be predicted if reservations are acting upon politics-of-fear type situations in these villages. According to that interpretation, governance improves under reservation 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 these considerations are extremely relevant 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, though it is better if he does that well too, the former consideration is clearly primary. 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.

Extending this reasoning to explicitly analyze the political contest within a group, we show that political reservations – by allowing the incumbent's kleptocratic rent to be safely contested from within – are a means by 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. Further, such positive effects should be more pronounced when the value of a group's hold on the leadership position is great, and when other (non-reserved) contesting groups are themselves more likely to suffer from kleptocratic rents. Again, these patterns are found in the data.

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 for misgovernance, 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. The general message is that since democracy doesn't work well in identity based settings, as leaders capture rents from office by dint of incumbency, a second best policy of restricting entry in to democratic contests and hence reducing leader rents, can increase quality of representation.

Though this is a direct conclusion from our findings, there are other factors to take in to account. As Laitin

(1986) and Posner (2004) have argued in an African context, explicitly prioritizing group identity in the formal political process –(here it is caste sub-groups or jatis, but it could be tribes or religions elsewhere) – may further entrench any pre-existing tendencies individuals had to organize 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 modelled or even considered here. Going a step further and deciding leadership eligibility solely via group identity could solidify such identities even more, and further undermine democratic functioning.

That caveat aside, there is already considerable evidence (surveyed earlier) that reservations do affect the distribution of public goods within villages to the benefit of reserved groups, who are traditionally marginalized. This has been accompanied by some concern that reservations may lower the quality of governance. At least in our sample this is not the case. Governance, by almost any measure, improves under reservations when the leader's group is large enough to ordinarily contest for power, but not so large as to be guaranteed power without the reservation. We think this is an important, and heretofore unanticipated, positive effect of reservations. It is predicted to happen when politics-of-fear factors undermine democratic competition, and it should be considered as a possible positive when assessing the efficacy of reservations further afield.

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7 Appendix - For Online Publication

7.1 Summary Statistics

<div align="center">***Insert Tables A1, A2 and A3.***</div>

7.2 Probability of Winning 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 γs. The table below lists the probability of winning the Pradhan position as a function of the population share of the jati of the Pradhan in unreserved villages. The sample is restricted to those jatis which are eligible for political reservations (i.e., we exclude Marathas).

<div align="center">***Insert Table A4.***</div>

7.3 Voting by Jati

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

$$Y_{ink} = \beta_0 + \beta_1 SHAREJATI_k + \psi_k X_{ik} + \gamma_k Z_k + \epsilon_{ik}. \tag{21}$$

Y_{ink} is an outcome of household i, residing in nieghbourhood 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 Pradhan in a village k.

Below we present results from estimating (21) 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 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 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 Pradhan. Not only do they have a more positive perception of a Pradhan of their own caste but they believe that he is more likely to cater to the particular needs of their own caste.

<div align="center">***Insert Table A5.***</div>

7.4 Reservations for OBCs

Figures A1 and A2 below report the estimated effect of a reservation for OBCs on our key governance outcomes at different population shares of the jati of the Pradhan. That is, we break the population share of the jati of the Pradhan into five groupings. The figure below depicts the estimated coefficient (using (16)) on OBC reservation status in each of these groupings. Consistent with our baseline estimates being driven by a data generating process like that of our theory, we see that OBC reservation status is a positive and significant determinant of governance only for the middle category. That is, we observe the predicted inverted U shaped relationship.

Insert Figures A1 and A2.

7.5 Alternative Specifications

Table A6 below presents results from estimating analogous equations to those presented in Sections 5.2 and 5.3 but using an alternative specification, where the randomly assigned reservation status of a village is interacted with Pradhan jati population shares.

More specifically, using the household level data we estimate the below regression equation:

$$Y_{ik} = \beta_0 + \beta_1 RESERVED_k * PJ_{lk} + \beta_2 RESERVED_k * PJ_{mk} + \beta_3 RESERVED_k * PJ_{hk} + \psi_k X_{ik} + \gamma_k Z_k + \epsilon_{ik}. \quad (22)$$

where PJ_{lk} is equal to one if the village population share of the jati of the Pradhan is greater or equal to zero and less than 25%, and equal to zero otherwise; PJ_{mk} is equal to one if the village population share of the jati of the Pradhan is between 25 and 50%, and equal to zero otherwise; PJ_{hk} is equal to one if the village population share of the jati of the Pradhan is greater than 50%, and equal to zero otherwise.

As in Section 5.2, we also use the village level data to explore the corresponding impact of reservations on the Gram Panchayat performance measures and estimate the following:

$$Y_k = \beta_0 + \beta_1 RESERVED_k * PJ_{lk} + \beta_2 RESERVED_k * PJ_{mk} + \beta_3 RESERVED_k * PJ_{hk} + \phi_k Z_k + \varepsilon_k. \quad (23)$$

The top panel of Table A6 below represents the results from the village level estimations, and the bottom panel for the household level estimations. We see that the results of Sections 5.2 and 5.3 persist. That is, it is the estimated coefficient, β_2, of the interaction term $RESERVED_k * PJ_{mk}$ which is a positive significant determinant of governance quality outcomes (the results of the second column in Table A6 below).

Insert Table A6.

Table A7 below presents analogous results to those in Section 5.8. In these estimations, we consider two alternative measures of ML_k. The first, ML_k^1, is equal to one if the proportion of Marathas in village k is less than 50%, and equal to zero otherwise. The second, ML_k^2, is equal to one if the Maratha caste group is not the largest jati in the village, and equal to zero otherwise. We see from Table A7 below that the results presented in Section 5.8 are robust to these alternative definitions of our interaction term of interest.

Insert Table A7.

7.6 Proofs of Propositions in Text

Proof of Proposition 1: We proceed by imposing stationarity and thus drop all t subscripts. The optimal group support decisions are σ^{A*}: $s = 1$ if and only if $G^A \geq G^{AC*}$, σ^{B*}: $s = 1$ if and only if $G^B \geq G^{BC*}$ where G^{AC*}, G^{BC*} are such that (10), (11), (12) and (13) bind. Given these values for the challengers, G^{A*}, G^{B*} and G^{R*} solve: (24), (25) and (26), with the value functions of citizens defined in equations (27) to (32). The value functions for leaders then reduce to:

$$V_L^A(A) \;=\; \pi - G^{A*} + \eta + \delta\left(pV_L^A(R) + (1-p)\left(\gamma^A V_L^A(A) + (1-\gamma^A)V^A(B)\right)\right) \tag{24}$$

$$V_L^B(B) = \pi - G^{B*} + \eta + \delta\left(pV^B(R) + (1-p)\left(\gamma^B V_L^B(B) + (1-\gamma^B)V^B(A)\right)\right) \tag{25}$$

$$V_L^A(R) = \pi - G^{R*} + \eta + \delta\left(pV_L^A(R) + (1-p)\left(\gamma^A V_L^A(A) + (1-\gamma^A)V^A(B)\right)\right). \tag{26}$$

In each of these, the transition function reflects support for the incumbent along the equilibrium path.

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

$$V^A(A) \;=\; G^{A*} + \eta + \delta(p\left(G^{R*} + \eta + \delta V^A(A)\right) + (1-p)\left(\gamma^A V^A(A) + (1-\gamma^A)V^A(B)\right) \tag{27}$$

$$V^B(B) \;=\; G^{B*} + \eta + \delta(p\left(G^{R*} + \delta V^B(A)\right) + (1-p)\left(\gamma^B V^B(B) + (1-\gamma^B)V^B(A)\right) \tag{28}$$

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

$$V^A(B) \;=\; G^{B*} + \delta(p\left(G^{R*} + \eta + \delta V^A(A)\right) + (1-p)\left(\gamma^B V^A(B) + (1-\gamma^B)V^A(A)\right) \tag{29}$$

$$V^B(A) \quad = \quad G^{A*} + \delta(p\left(G^{R*} + \delta V^B(A)\right) + (1-p)\left(\gamma^A V^B(A) + (1-\gamma^A)V^B(B)\right) \tag{30}$$

Value functions for citizens in reserved villages are:

$$V^A(R) = V^A(A) + G^{R*} - G^{A*}$$
$$= G^{R*} + \eta + \delta(p\left(G^{R*} + \eta + \delta V^A(A)\right) + (1-p)\left(\gamma^A V^A(A) + (1-\gamma^A)V^A(B)\right) \tag{31}$$

$$V^B(R) \quad = V^B(A) + G^{R*} - G^{A*} = \quad G^{R*} + \delta(p\left(G^{R*} + \delta V^B(A)\right) + (1-p)\left(\gamma^A V^B(A) + (1-\gamma^A)V^B(B)\right). \tag{32}$$

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 γ^I, $I = A$ or B.[42]

In any MPE, challengers in unreserved villages must be defeated for support (weakly) by incumbents so that conditions (10) and (11) bind. Free entry of challengers necessitates that equations (12) to (14) also bind. These five conditions, plus equations (24) to (32), yield a system of fourteen equations in the model's fourteen unknowns: $\{V_L^A(A), V_L^B(B), V_L^A(R), V^A(A), V^B(B), V^A(B), V^B(A), V^A(R), V^B(R), G^{A*}, G^{AC*}, G^{B*}, G^{BC*}, G^{R*}\}$. This system can be solved explicitly and yields:

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

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

Where the terms Φ and Θ stated in the proposition are:

$$\Phi = \frac{2\left(2\gamma^B - \gamma^b + (p-1)(\gamma^b(\gamma^A - 1 - \gamma^B) + 2\gamma^{B2})\delta)\right)}{(1 + (p-1)(\gamma^A + \gamma^B - 1)\delta)}$$

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

Since these are the unique fixed points of this system, this is the unique MPE corresponding to this game. $\square$

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[42]Since successful challenges to incumbents do not occur along the equilibrium path γ^i, $i = a$ or b, do not feature in the citizen or leader value functions.

Proof of Proposition 2: From the solutions stated in Proposition 1, we obtain the expression:

$$G^{R*} - G^{A*} = \frac{2\left(\gamma^A - \gamma^a\right)\left(2\gamma^B + (p-1)(\gamma^b(\gamma^A - 1 - \gamma^B) + 2\left(\gamma^B\right)^2)\delta\right)\eta}{[(1 + (1-p)(1 - \gamma^A + \gamma^B)\delta]\left[\gamma^A\gamma^b(2 - 2\gamma^A\delta + p(2\gamma^A - 1)\delta) + \gamma^a\left(-\gamma^b(2 + (p-2)\delta) + 2\gamma^B\left(1 + (p-1)\gamma^B\delta\right)\right)\right]}.$$

(33)

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, $G^{R*} - G^{A*}$ is given by:

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

In the denominator, the term in the first square bracket: $1 - \left(1 - \gamma^A - \gamma^B\right)\delta > 0$ because $\left(1 - \gamma^A - \gamma^B\right)\delta < 1$. 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 $\gamma^b\left(1 - \delta\gamma^B\right) + 2\gamma^B\left(\gamma^B\delta - 1\right) > \gamma^b\left(1 - \delta\left(1 - \gamma^A + \gamma^B\right)\right) + 2\gamma^B\left(\gamma^B\delta - 1\right)$ since $1 - \gamma^A > 0$. And $\gamma^b\left(1 - \delta\gamma^B\right) + 2\gamma^B\left(\gamma^B\delta - 1\right) \equiv \left(1 - \delta\gamma^B\right)\left(\gamma^b - 2\gamma^B\right) < 0$, 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:

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

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, it would have to be the case that $G^{R*} - G^{A*}$ 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:

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

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

Proof of Proposition 3: Parts (i) and (ii) are immediate from inspection of the numerator in (33). $G^{R*} - G^{A*} \geq 0$, so necessarily, it is also increasing in η and $\left(\gamma^A - \gamma^a\right)$.

For part (iii) define $\xi\gamma^b \equiv \gamma^B$ so that $\gamma^B - \gamma^b \equiv \gamma^b\left(\xi - 1\right)$. Replace γ^B with $\xi\gamma^b$ in (33). Differentiating with respect to ξ yields a positive term so that $G^{R*} - G^{A*}$ is increasing in $\gamma^B - \gamma^b$.

7.7 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 another way to model this occurence is to introduce heterogeneity in leaders as follows. If the "random event"

of a small group gaining power in a contested election is that the leader of this group is particularly skilled, and therefore the group wins leadership because of this leader's idiosyncratic quality, then the competition enhancing effects of reservations do not apply. Providing a reservation for this group will not allow an even contest over the kleptocratic rents (which the current leader holds and benefits from) in the same way that it does when leaders are homogeneous. Though a reservation guarantees the group leadership for the upcoming term, if the group supports a challenger this challenger 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, but they would be less likely to have done so 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, the 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:

$$\pi - G^{AC} + \eta + \delta\left(pV_L^R + (1-p)V^A(B)\right) \geq G^A + \eta + \delta\left(pV^A(R) + (1-p)(\gamma^A V^A(A) + (1-\gamma^A)V^A(B))\right). \quad (34)$$

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:

$$G^{AC*} + \eta + \delta\left(pV^A(R) + (1-p)V^A(B)\right)$$
$$> G^A + \eta + \delta\left(pV^A(R) + (1-p)\left(\gamma^A V^A(A) + (1-\gamma^A)V^A(B)\right)\right) \quad (35)$$

Using the binding G^{AC*} from (34) and substituting into (35) yields:

$$G^{AC*} + \eta + \delta\left(pV^A(R) + (1-p)V^A(B)\right) > \pi - G^{AC*} + \eta + \delta\left(pV_L^R + (1-p)V^A(B)\right).$$

But note that $V^A(R) = V_L^R$, since this is a group for which $\gamma^A - \gamma^a \to 0$, 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 $V^A(R) = V_L^R$ 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.

7.8 Non-randomized reservations

Within the broad parameters set by the 73rd constitutional amendment that mandated reservations, there is considerable freedom for states to implement reservations in differing ways and to differing groups. For instance, though reservations for SCs, STs, and women were mandated across all states in some form, extending reservations to OBCs was optional and discretionary on the part of state governments. Despite numerous attempts, we have been unable to obtain from the Maharashtrian electoral commission, their position on repeated reservations for a single village across election cycles.

We have built the formal model under the assumption that caste based reservations are IID, so that a reserved village – which received a reservation with probability p in the current cycle, has the equivalent probability of being reserved in the subsequent cycle. This is reflected throughout the model set-up, and its effects can be most clearly seen in equations (26), (31) and (32), where the p term denotes the probability of a currently reserved village receiving a reservation again. However, if the electoral commision uses some alternative conditioning factors in determining reservations for consecutive elections, for example if they allocate them with a lower probability to a village that is currently under reservation, say denoted $p_l < p$ where it is possible that $p_l = 0$, then equation (26) changes to:

$$V_L^A(R) = \pi - G^{R*} + \eta + \delta \left(p_l V_L^A(R) + (1 - p_l) \left(\gamma^A V_L^A(A) + (1 - \gamma^A) V^A(B) \right) \right),$$

and equations (31) and (32) to:

$$V^A(R) = G^{R*} + \eta + \delta(p_l \left(G^{R*} + \eta + \delta V^A(A) \right) + (1 - p_l) \left(\gamma^A V^A(A) + (1 - \gamma^A) V^A(B) \right)$$

$$V^B(R) = G^{R*} + \delta(p_l \left(G^{R*} + \delta V^B(A) \right) + (1 - p_l) \left(\gamma^A V^B(A) + (1 - \gamma^A) V^B(B) \right).$$

It turns out that adding this extra parameter to the system of equations no longer allows us to obtain a closed form solution. But the solution behaves qualitatively identically to the baseline model when solved numerically. In fact, the effects of reservations on governance are actually more pronounced in this version of the model. The intuition for this follows from the discussion surrounding the corollary above. That corollary showed that in reserved villages governance quality exceeds first-best levels; representatives contesting for office are willing to offer governance making them strictly worse off than their constituents. They do this because they will become incumbents in subsequent periods (with a positive probability) and hence have the chance to extract kleptocratic rents in to the future. Lowering p_l below p simply raises the chance of the now reserved leader remaining relatively unchallenged in future. In the limit, when $p_l = 0$, the candidate the group puts foward to lead in the reserved period is guaranteed to be able to re-stand in the next period, without the threat of increased competition under reservations from his own group; that is, if he wins re-election he is guaranteed at least one period of kleptocratic rents. In the current version of the model, he only obtains the extra period of rents with probability p. After that period, the value

functions are identical, so necessarily the effects of reservations in improving governance are greater when $p_l = 0$.

7.9 Incumbency advantages when out of office

Now suppose that there exists, for each group, a "usual" representative. This is someone who, even even when not currently in office, has a higher chance of winning power than would be had by a replacement representative drawn from the group. We show here that this would similarly generate kleptocratic rents for that group's incumbent representative. Though this is not essential to the main results, and actually generates no extra empirical implications, it illustrates a complementary channel by which reservations may improve governance.

To simplify things, this effect can be illustrated in a static version of the model. So for this extension drop the time notation, t and assume that all effects are instantaneous. Then an A challenger offering G^{AC} is indifferent to entering pre-selection against an incumbent offering G^A if:

$$\gamma^a \left(\pi - G^{AC} + \eta\right) + (1 - \gamma^a) G^B = \gamma^A \left(G^A + \eta\right) + \left(1 - \gamma^A\right) G^B. \tag{36}$$

As in the fully fledged model, the challenger takes in to account that, by his contesting the election instead of the incumbent, his group has a lower chance of winning, $\gamma^a \leq \gamma^A$, and that in the event he loses this will cost him personally as a citizen since η will be foregone. We ignore the continuation values for this example.

So this implies that $A's$ group will be indifferent between continuing to support their incumbent, offering G^A, and selecting their challenger offering G^{AC} if:

$$\gamma^A \left(G^A + \eta\right) + \left(1 - \gamma^A\right) G^B = \gamma^a \left(G^{AC} + \eta\right) + (1 - \gamma^a) G^B. \tag{37}$$

The group also accounts for the lower electability of the replacement representative.

The level of G^B under which a member of group B is indifferent to standing for election as a representative of group B, or remaining a non-politician is:

$$\left(1 - \gamma^A\right) \left(\pi - G^B + \eta\right) + \gamma^A G^A = \left(1 - \gamma^A\right) \left(G^B + \eta\right) + \gamma^A G^A. \tag{38}$$

The solution to these equations yields:
$$G^B = G^{AC} = \frac{\pi}{2},$$

and
$$G^A = \frac{\pi}{2} - \frac{\left(\gamma^A - \gamma^a\right)}{\gamma^A} \eta.$$

The second term in the expression above denotes the leader's kleptocratic rent in this toy model, and is the analogue of the term $\eta(\gamma^A - \gamma^a)\Theta\Phi$ in Proposition 2 of the full intertemporal model. In this toy model, reservations will have a similar effect to their effect in the full model. By assuring the group A that they will come to power for sure after the next election, there becomes no reason to tolerate a lower level of governance quality from their usual

representative. Consequently, governance under reservations improves up to the level of indifference to being leader, that is to $\pi/2$.

Using this toy model expression as our baseline, now define a new term: $\gamma^{B'} \geq \gamma^{B}$ as the probability of a B incumbent being returned to office if he is challenged by a novice challenger from the A group instead of their "usual" representative. And assume that the A group are not currently in power. Leadership is held by a B. So now the "usual" challenger can be thought of as that member of the A group who, by dint of currently being their representative, has the best chance of winning in the next election if he continues to represent the group, even though he is not in power. In that case, starting with a B leader in office, A group members are indifferent to standing as a novice representative challenging for leadership on behalf of their group instead of their usual representative if:

$$\left(1 - \gamma^{B'}\right)\left(\pi - G^{A'C} + \eta\right) + \gamma^{B'} G^{B} = \left(1 - \gamma^{B}\right)\left(G^{A'} + \eta\right) + \gamma^{B} G^{B}, \tag{39}$$

where $G^{A'}$ denotes the level of governance offered by the A group's incumbent representative, and $G^{A'C}$ denotes the level of governance offered by the challenger to the incumbent representative. Members of the A group are indifferent between continuing to support their incumbent representative, offering $G^{A'}$, and chance $1 - \gamma^{B}$ of winning, versus selecting a new challenger offering $G^{A'C}$ and lower chance $1 - \gamma^{B'}$ of winning if:

$$\left(1 - \gamma^{B}\right)\left(G^{A'} + \eta\right) + \gamma^{B} G^{B} = \left(1 - \gamma^{B'}\right)\left(G^{A'C} + \eta\right) + \gamma^{B'} G^{B}. \tag{40}$$

These two equations immediately yield $G^{A'C} = \pi/2$. And using $G^{B} = \frac{\pi}{2}$ from the previous yields:

$$G^{A'} = \frac{\pi}{2} - \frac{\left(\gamma^{B'} - \gamma^{B}\right)}{1 - \gamma^{B}}\eta. \tag{41}$$

Hence a similar wedge between first best levels of governance, and the level that is provided by an elected A leader who is the usual representative of a group is generated. Here, the "incumbency advantage" comes from the usual representative being better able to defeat an incumbent B leader, than would any other leader appointed from the A group. That is, the term $\frac{\left(\gamma^{B'} - \gamma^{B}\right)}{1 - \gamma^{B}}\eta$ is the analogue of the term $\eta(\gamma^{A} - \gamma^{a})\Theta\Phi$ in Proposition 2 of the full intertemporal model.

So such a usual representative can again offer lower governance quality than a rival, and still receive the group's support because he offers the group the best chance of coming to power. Once again reservations will have a similar effect to their effect in the full model. By assuring the group A that they will come to power for sure after the next election, there becomes no reason to tolerate a lower level of governance quality from their usual representative. Consequently, governance under reservations improves analogously up to $\pi/2$.

Table 1 - Baseline Estimations of Governance Measures

Variable	25% ≤ Jati Pradhan ≤ 50% $RESERVED_k$	Jati Pradhan < 25% / Jati Pradhan > 50% $RESERVED_k$
GP Measures		
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)
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
Household Measures		
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)
Observations	1869	4990

Notes: The top panel of the table reports estimation results using the GP level data. These estimations include geographic, demographic, climatic, and also regional controls. Robust standard errors are in parentheses. Refer to Table A1 in the Appendix for more information on the variables in these estimations. The bottom panel of the table reports estimation results using the household level data. In these estimations, regression disturbance terms are clustered at the village level and robust standard errors are in parentheses. These estimations include geographic, demographic, climatic, regional, and household controls. Refer to Table A2 in the Appendix for more inforation on the variables in these estimations. A single asterix denotes significance at the 10% level, double for 5%, and triple for 1%.

Table 2 - Estimations of Governance Measures - Uncontested Categories

Variable	$RESERVED_k$ [Jati Pradhan < 25%]	$RESERVED_k$ [25% ≤ Jati Pradhan ≤ 50%]	$RESERVED_k$ [Jati Pradhan > 50%]
GP Measures			
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)
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
Household Measures			
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)**
Observations	2744	1869	2246

Notes: The top panel of the table reports estimation results using the GP level data. These estimations include geographic, demographic, climatic, and also regional controls. Robust standard errors are in parentheses. Refer to Table A1 in the Appendix for more information on the variables in these estimations. The bottom panel of the table reports estimation results using the household level data. In these estimations, regression disturbance terms are clustered at the village level and robust standard errors are in parentheses. These estimations include geographic, demographic, climatic, regional, and household controls. Refer to Table A2 in the Appendix for more inforation on the variables in these estimations. A single asterix denotes significance at the 10% level, double for 5%, and triple for 1%.

Table 3 - Estimations of Governance Measures - Excluding Villages with a Maratha Pradhan

Variable	$RESERVED_k$ [Jati Pradhan < 25%]	$RESERVED_k$ [25% ≤ Jati Pradhan ≤ 50%]	$RESERVED_k$ [Jati Pradhan > 50%]
GP Measures			
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)
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
Household Measures			
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)
Observations	2446	1235	765

Notes: The top panel of the table reports estimation results using the GP level data. These estimations include geographic, demographic, climatic, and also regional controls. Robust standard errors are in parentheses. Refer to Table A1 in the Appendix for more information on the variables in these estimations. The bottom panel of the table reports estimation results using the household level data. In these estimations, regression disturbance terms are clustered at the village level and robust standard errors are in parentheses. These estimations include geographic, demographic, climatic, regional, and household controls. Refer to Table A2 in the Appendix for more inforation on the variables in these estimations. A single asterix denotes significance at the 10% level, double for 5%, and triple for 1%.

Table 4 - Estimations of GP-Level Governance Measures

Sample	Whole Sample:		Excluding Maratha Pradhan Villages:	
	Government Programs (AES) $RESERVED_k$	Government Finances (AES) $RESERVED_k$	Government Programs (AES) $RESERVED_k$	Government Finances (AES) $RESERVED_k$
Lower Category:				
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)
Middle Category:				
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)***
Upper Category:				
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)
Contesting Castes:				
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)

Notes: All estimations include GP, geographic, demographic, climatic, and regional controls. A single asterix denotes significance at the 10% level, double for 5%, and triple for 1%. Robust standard errors are in parentheses. The two dependent variables are the estimated average effect size (AES) of the government program variables (Programs, BPL Programs, Income Programs, Employment Guarantee Scheme) and government finances (Revenue, Funds, Expenses).

Table 5 - Estimations of Household-Level Governance Measures

Sample	Whole Sample: Government Programs (AES) $RESERVED_k$	Excluding Maratha Pradhan Villages: Government Programs (AES) $RESERVED_k$
Lower Category:		
Jati Pradhan < 25%	0.19 (0.25)	0.44 (0.33)
Jati Pradhan < 20%	0.19 (0.28)	0.52 (0.35)
Jati Pradhan < 15%	0.57 (0.43)	0.57 (0.44)
Middle Category:		
25% ≤ Jati Pradhan ≤ 50%	0.82 (0.37)**	0.92 (0.43)**
20% ≤ Jati Pradhan ≤ 50%	0.49 (0.29)*	0.71 (0.33)**
15% ≤ Jati Pradhan ≤ 50%	0.32 (0.22)	0.54 (0.29)*
25% ≤ Jati Pradhan ≤ 45%	1.13 (0.35)***	1.24 (0.39)***
20% ≤ Jati Pradhan ≤ 45%	0.56 (0.29)**	0.94 (0.35)***
15% ≤ Jati Pradhan ≤ 45%	0.29 (0.23)	0.62 (0.30)**
25% ≤ Jati Pradhan ≤ 60%	0.54 (0.29)*	0.99 (0.30)***
25% ≤ Jati Pradhan ≤ 75%	0.21 (0.28)	0.56 (0.32)*
25% ≤ Jati Pradhan ≤ 1	-0.02 (0.29)	0.56 (0.32)*
Upper Category:		
Jati Pradhan > 50%	-1.01 (0.43)**	-0.26 (0.36)
Jati Pradhan > 45%	-0.77 (0.38)**	0.31 (0.54)
Contesting Castes:		
Jati Pradhan < 25% (Other Jati ≥ 15%)	-0.16 (0.29)	0.44 (0.33)
Jati Pradhan < 25% (Other Jati ≥ 20%)	-0.16 (0.29)	0.44 (0.33)
25% ≤ Jati Pradhan ≤ 50% (Other Jati ≥ 15%)	0.82 (0.37)**	0.92 (0.43)**
25% ≤ Jati Pradhan ≤ 50% (Other Jati ≥ 20%)	0.82 (0.37)**	0.92 (0.43)**
Jati Pradhan > 50% (Other Jati ≥ 15%)	0.10 (0.81)	-0.26 (0.36)
Jati Pradhan > 50% (Other Jati ≥ 20%)	0.10 (0.81)	-0.26 (0.36)
[0.5*Jati Pradhan ≤ Other Jati ≤ 2*Jati Pradhan]=1	0.33 (0.28)	0.51 (0.30)*
[0.5*Jati Pradhan ≤ Other Jati ≤ 2*Jati Pradhan]=0	-0.003 (0.18)	0.28 (0.22)
[0.33*Jati Pradhan ≤ Other Jati ≤ 3*Jati Pradhan]=1	0.29 (0.24)	0.50 (0.26)*
[0.33*Jati Pradhan ≤ Other Jati ≤ 3*Jati Pradhan]=0	-0.07 (0.20)	0.24 (0.25)

Notes: Regression disturbance terms are clustered at the village level and robust standard errors are in parentheses. All estimations include geographic, demographic, climatic, regional, and household controls. A single asterix denotes significance at the 10% level, double for 5%, and triple for 1%. The dependent variable is the estimated average effect size (AES) of the household level government program variables (Programs, BPL Programs, Employment Guarantee Scheme, Program participation, Needy get benefits, Received what entitled to).

Table 6 - Estimations on Villages with 25% ≤ Jati Pradhan ≤ 50% - Robustness Checks

Variable	$RESERVED_k$ [Controlling for Maratha Pradhan]	$RESERVED_k$ [Controlling for Pradhan Characteristics]
GP Measures		
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)***
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
Household Measures		
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)**
Observations	1869	1869

Notes: The top panel of the table reports estimation results using the GP level data. These estimations include geographic, demographic, climatic, and also regional controls. Robust standard errors are in parentheses. Refer to Table A1 in the Appendix for more information on the variables in these estimations. The bottom panel of the table reports estimation results using the household level data. In these estimations, regression disturbance terms are clustered at the village level and robust standard errors are in parentheses. These estimations include geographic, demographic, climatic, regional, and household controls. Refer to Table A2 in the Appendix for more inforation on the variables in these estimations. A single asterix denotes significance at the 10% level, double for 5%, and triple for 1%. Pradhan characteristics include their education level and land ownership..

Table 7 - Estimations on Villages with 25% ≤ Jati Pradhan ≤ 50% - Interaction Effects

Variable	$RESERVED_k$	$RESERVED_k * ML_k$	$RESERVED_k$	$RESERVED_k * H_k$
GP Measures				
All programs	-1.12 (0.76)	3.27 (0.75)***	0.43 (0.94)	3.3 (2.0)*
BPL programs	-0.06 (0.25)	0.82 (0.24)***	0.24 (0.32)	1.2 (0.65)*
Income programs	-1.13 (0.69)	3.06 (0.71)***	0.37 (0.88)	2.99 (1.81)*
Employment Guarantee Scheme	-0.19 (0.05)***	0.32 (0.06)***	0.02 (0.08)	0.26 (0.14)*
Revenue/capita	12.0 (122.9)	450.9 (215.4)**	388.2 (319.9)	826.4 (469.1)*
Funds/capita	-4.4 (63.1)	194.9 (97.1)**	82.5 (161.5)	445.9 (261.9)*
Expenses/capita	-4.6 (133.3)	438.3 (213.6)**	353.1 (300.1)	735.1 (470.4)†
Observations	65	65	65	65
Household Measures				
All programs	-1.93 (1.29)	3.52 (1.34)***	0.75 (0.77)	2.68 (1.53)*
BPL programs	-0.36 (0.46)	0.97 (0.48)**	0.26 (0.34)	1.03 (0.63)*
Employment Guarantee Scheme	-0.38 (0.14)***	0.48 (0.14)***	0.004 (0.08)	0.26 (0.14)*
Program participation	-0.67 (0.37)*	1.13 (0.39)***	0.11 (0.27)	0.84 (0.54)†
Needy get benefits	-1.39 (0.99)	2.63 (1.04)***	0.40 (0.68)	2.26 (1.38)*
Received what entitled to	-0.92 (0.54)*	1.52 (0.60)***	0.09 (0.48)	1.26 (0.76)*
Observations	1869	1869	1869	1869

Notes: The top panel of the table reports estimation results using the GP level data. These estimations include geographic, demographic, climatic, and also regional controls. Robust standard errors are in parentheses. Refer to Table A1 in the Appendix for more information on the variables in these estimations. The bottom panel of the table reports estimation results using the household level data. In these estimations, regression disturbance terms are clustered at the village level and robust standard errors are in parentheses. These estimations include geographic, demographic, climatic, regional, and household controls. Refer to Table A2 in the Appendix for more inforation on the variables in these estimations. A single asterix denotes significance at the 10% level, double for 5%, and triple for 1%.

Variable	Mean (Standard Deviation)
All Programs	5.33 (2.56)
BPL Programs	1.71 (0.89)
Income Programs	4.81 (2.36)
Employment Guarantee Scheme	0.20 (0.21)
Revenue/Capita	149.8 (360.8)
Funds/Capita	55.6 (186.2)
Expenses/Capita	138.5 (359.2)
Number of Committees	3.66 (1.71)
Reserved OBC	0.28 (0.45)
Reserved SC/ST	0.14 (0.34)
Proportion Jati Pradhan	0.37 (0.26)
Proportion OBC	0.28 (0.26)
Proportion SC/ST	0.27 (0.19)
Proportion Maratha	0.41 (0.31)
Pradhan - Cultivator	0.84 (0.36)
Pradhan - Large Land Owner	0.66 (0.47)
Pradhan - High Education	0.75 (0.43)
Caste Polarization	0.68 (0.18)
Caste Fractionalization	0.33 (0.18)
Large Land Owners	0.29 (0.13)
Observations	320

Notes: Data comes from our Village and Gram Panchayat Level Surveys that we administered in the field, as well as the books of the Gram Panchayats, as well as the information we obtained using the RTI Act. Total Programs refers to the total number of the possible 15 Government Schemes implemented in the village. BPL refers to the number of the possible 8 programs targeted at individuals below the poverty line. Revenue/capita refers to data collected from the balance sheets (covers last 24 months) submitted by the GPs (obtained using RTI Act). Revenue primarly comprises funds (resources optained from upper level governments), and to a much smaller extent stamp duties and some taxes (mainly on water usage). Expenses/capita refers to data collected from the balance sheets (covers last 24 months) submitted by the GPs (obtained using RTI Act). Expenditure items include public goods, subsidies, resource management, and festivals. Number of committees refers to the total number of GP committees out of a possible 12 that exist in the village. These serve the purpose for issues such as education, heatlh, beneficiary slection, water usage, village development, and the weekly bazaar. Large land owner refers to a household with more than 5 acres of land. The measure of Caste Polarization is taken from Montalvo and Reynal-Querol (2005): $POLARIZE_k = 1 - \sum_{i=1}^{N} \left(\frac{\frac{1}{2} - \pi_i}{\frac{1}{2}} \right)^2 \pi_i$, where π_i is the proportion of the village population that belongs to jati i. This index is meant to capture how far the distribution of jati groups is from the (1/2, 0, 0, ..., 0, 1/2) distribution (bipolar), which represents the highest level of polarization. Our measure of caste fractionalization is represented by: $FRAC = \sum_{i=1}^{N} \pi_i(1 - \pi_i)$. (Again from Montalvo and Reynal-Querol 2005, which is meant to capture the probability that two randomly selected individuals from a given village will not belong to the same sub-caste).

Table A2 - Summary Statistics - Household Level Data

Variable	Mean (Standard Deviation)
All programs	5.35 (3.14)
BPL programs	1.72 (1.18)
Employment Guarantee Scheme	0.20 (0.40)
Program Participation	1.49 (1.42)
Needy get benefits	4.31 (3.06)
Received what entitled to	2.17 (1.73)
Maratha Caste	0.38 (0.49)
OBC Caste	0.31 (0.45)
Scheduled Caste	0.23 (0.42)
Scheduled Tribe	0.06 (0.24)
Less than primary school - Females	0.53 (0.50)
Less than primary school - Males	0.28 (0.45)
Total land owned	2.05 (1.75)
Observations	9218

Notes: Data comes from our household level surveys. Programs refer to the households' response as to whether government programs exist in the village. Program participation refers to whether the household participated in these programs. Needy get benefits refers to whether the household percieves that the needy of the village are benefiting from these programs. Received what entitled to refers to whether the household received what they were entitled to from the programs. Less than primary refers to the highest level of completed education in the household is less than primary school. Land owned is in acres.

Table A3 - Village Characteristics by Reservation Status

Variable	Reserved	Unreserved	Equivalence of Means
Proportion OBC	0.28 (0.02)	0.28 (0.02)	-0.003 (0.03)
Proportion SC	0.22 (0.01)	0.19 (0.01)	0.03 (0.01)**
Proportion ST	0.08 (0.01)	0.06 (0.01)	0.02 (0.02)
Proportion Maratha	0.35 (0.02)	0.37 (0.02)	-0.02 (0.03)
Proportion Mang	0.03 (0.005)	0.03 (0.004)	0.0003 (0.006)
Proportion Mali	0.03 (0.01)	0.04 (0.01)	0.003 (0.01)
Proportion Mahar	0.08 (0.01)	0.06 (0.01)	0.026 (0.012)**
Proportion Chambar	0.01 (0.002)	0.02 (0.002)	0.003 (0.003)
Proportion Dhangar	0.08 (0.01)	0.08 (0.01)	0.007 (0.02)
Proportion Kunabi	0.07 (0.01)	0.07 (0.01)	0.005 (0.02)
Proportion Wanjari	0.03 (0.01)	0.04 (0.01)	0.016 (0.014)
Caste Polarization	0.66 (0.01)	0.66 (0.01)	0.0002 (0.02)
Caste Fragementation	0.62 (0.02)	0.60 (0.01)	0.02 (0.02)
Proportion Large Land Owners	0.28 (0.01)	0.30 (0.01)	-0.02 (0.014)
Proportion Educated	0.72 (0.01)	0.72 (0.01)	-0.001 (0.01)
Gini - Land Ownership	0.63 (0.01)	0.61 (0.01)	0.016 (0.012)
Gini - Household Income	0.51 (0.01)	0.50 (0.01)	0.01 (0.01)
Village Population	388.0 (14.0)	394.4 (10.2)	-6.4 (16.8)
Distance to Water	3023.3 (209.8)	2716.9 (148.3)	306.4 (249.5)
Distance to Road	2414.6 (234.1)	2942.7 (206.3)	-328.1 (313.3)
Distance to Rail	22652.6 (1617.3)	22768.7 (1405.3)	-116.1 (2147.6)
Rainfall	297.7 (11.2)	295.3 (9.1)	2.4 (14.3)
Soil Quality Index	12.7 (0.3)	12.4 (0.1)	0.3 (0.3)
Marathwada	0.40 (0.04)	0.41 (0.04)	-0.01 (0.05)
Western Maharashtra	0.33 (0.04)	0.28 (0.03)	-0.04 (0.05)
West Vidarbha	0.19 (0.03)	0.24 (0.03)	-0.05 (0.05)
East Vidarbha	0.05 (0.02)	0.05 (0.01)	0.002 (0.02)
Observations	135	185	

Notes: Data on caste composition comes from our Village Level Survey. The measure of Caste Polarization is taken from Montalvo and Reynal-Querol (2005): $POLARIZE_k = 1 - \sum_{i=1}^{N} \left(\frac{\frac{1}{2} - \pi_i}{\frac{1}{2}} \right)^2 \pi_i$, where π_i is the proportion of the village population that belongs to jati i. This index is meant to capture how far the distribution of jati groups is from the (1/2, 0, 0, ..., 0, 1/2) distribution (bipolar), which represents the highest level of polarization. Our measure of caste fractionalization is represented by: $FRAC = \sum_{i=1}^{N} \pi_i (1 - \pi_i)$. (Again from Montalvo and Reynal-Querol 2005, which is meant to capture the probability that two randomly selected individuals from a given village will not belong to the same sub-caste). Large land owner refers to a household with more than 5 acres of land, and educated refers to at least primary school. The Gini measures for land and income are computed using data from our Household Level Survey.

Distance to a natural water source, main road, and railways comes from the village amenities and GPS data from the 2001 Census of India. The soil quality index comes from the FAO-UNESCO soil maps. Rainfall information comes from the India Meterological Department. The final four variables are the four main regions of Maharashtra where we collected our data

Table A4 - Pradhan Positions - Unreserved Villages - Castes with Reservations

Jati Proportion	Whole Sample: ProbabilityWin	Observations	Excluding Maratha Pradhan Villages: Probability Win	Observations
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

<u>Notes</u>: Observations are at the jati level. The sample excludes Marathas.

Table A5 - Public Goods in Caste Neighbourhood - Low Castes

Variable	$SHAREJATI_k$
Public goods in caste neighbourhood:	
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)***
Perceptions of Gram Pradhan:	
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

<u>Notes</u>: The sample excludes Maratha households. Regression disturbance terms are clustered at the village level. Robust standard errors are in parentheses. All estimations include GP, geographic, demographic, climatic, regional, and household controls. A single asterix denotes significance at the 10% level, double for 5% , and triple for 1%,

Table A6 - Estimations of Governance Measures - Interacted Categories

Variable	$RESERVED_k*$ (Jati Pradhan < 25%)	$RESERVED_k*$ (25% ≤ Jati Pradhan ≤ 50%)	$RESERVED_k*$ (Jati Pradhan > 50%)
GP Measures			
All programs	0.23 (0.33)	1.70 (0.54)***	-0.17 (0.64)
BPL programs	0.08 (0.11)	0.63 (0.19)***	-0.02 (0.22)
Income programs	0.17 (0.30)	1.51 (0.49)***	-0.22 (0.59)
Employment Guarantee Scheme	-0.01 (0.03)	0.10 (0.05)**	0.02 (0.06)
Revenue/capita	0.77 (49.7)	294.1 (79.1)***	-35.6 (86.8)
Funds/capita	8.05 (26.5)	148.4 (42.2)***	-11.1 (46.3)
Expenses/capita	21.5 (48.5)	227.8 (77.2)***	4.2 (84.7)
Observations	320	320	320
Household Measures			
All programs	0.28 (0.33)	1.56 (0.42)***	-0.24 (0.73)
BPL programs	0.09 (0.12)	0.58 (0.15)***	-0.05 (0.25)
Employment Guarantee Scheme	-0.01 (0.04)	0.08 (0.04)**	-0.02 (0.06)
Program participation	0.17 (0.11)	0.47 (0.15)***	-0.01 (0.23)
Needy get benefits	0.40 (0.29)	1.51 (0.43)***	-0.01 (0.71)
Received what entitled to	0.24 (0.15)	0.71 (0.22)***	0.11 (0.34)
Observations	6859	6859	6859

Notes: The top panel of the table reports estimation results using the GP level data. These estimations include geographic, demographic, climatic, and also regional controls. Robust standard errors are in parentheses. Refer to Table A1 in the Appendix for more information on the variables in these estimations. The bottom panel of the table reports estimation results using the household level data. In these estimations, regression disturbance terms are clustered at the village level and robust standard errors are in parentheses. These estimations include geographic, demographic, climatic, regional, and household controls. Refer to Table A2 in the Appendix for more inforation on the variables in these estimations. A single asterix denotes significance at the 10% level, double for 5%, and triple for 1%.

Table A7 - Estimations on Villages with 25% ≤ Jati Pradhan ≤ 50% - Interaction Effects

Variable	$RESERVED_k$	$RESERVED_k * ML_k^1$	$RESERVED_k$	$RESERVED_k * ML_k^2$
<u>GP Measures</u>				
All programs	-0.19 (0.79)	2.48 (0.75)**	0.01 (0.77)	1.67 (0.79)**
BPL programs	0.21 (0.23)	0.63 (0.32)**	0.16 (0.27)	0.43 (0.27)†
Income programs	-0.18 (0.75)	2.27 (0.99)**	-0.10 (0.69)	1.67 (0.72)**
Employment Guarantee Scheme	0.01 (0.14)	0.16 (0.16)	0.02 (0.08)	0.11 (0.09)
Revenue/capita	34.1 (112.1)	344.1 (167.1)**	-48.9 (152.4)	343.8 (222.5)†
Funds/capita	21.7 (52.4)	155.6 (84.6)*	-12.4 (69.8)	169.8 (108.7)†
Expenses/capita	8.4 (107.2)	328.7 (173.8)*	4.2 (187.1)	263.7 (244.2)
Observations	65	65	65	65
<u>Household Measures</u>				
All programs	-0.51 (1.03)	2.85 (1.11)***	0.12 (0.74)	1.60 (0.78)**
BPL programs	0.07 (0.36)	0.74 (0.35)**	0.22 (0.25)	0.34 (0.27)
Employment Guarantee Scheme	-0.04 (0.19)	0.15 (0.19)	0.03 (0.18)	0.07 (0.10)*
Program participation	-0.22 (0.43)	0.91 (0.44)**	0.01 (0.27)	0.48 (0.24)*
Needy get benefits	-0.67 (0.92)	2.56 (0.99)***	-0.08 (0.65)	1.41 (0.71)**
Received what entitled to	-0.41 (0.59)	1.31 (0.58)**	0.01 (0.40)	0.59 (0.42)
Observations	1869	1869	1869	1869

<u>Notes</u>: The top panel of the table reports estimation results using the GP level data. These estimations include geographic, demographic, climatic, and also regional controls. Robust standard errors are in parentheses. Refer to Table A1 in the Appendix for more information on the variables in these estimations. The bottom panel of the table reports estimation results using the household level data. In these estimations, regression disturbance terms are clustered at the village level and robust standard errors are in parentheses. These estimations include geographic, demographic, climatic, regional, and household controls. Refer to Table A2 in the Appendix for more inforation on the variables in these estimations. A single asterix denotes significance at the 10% level, double for 5%, and triple for 1%. † denotes statistical significance at the 12% level.
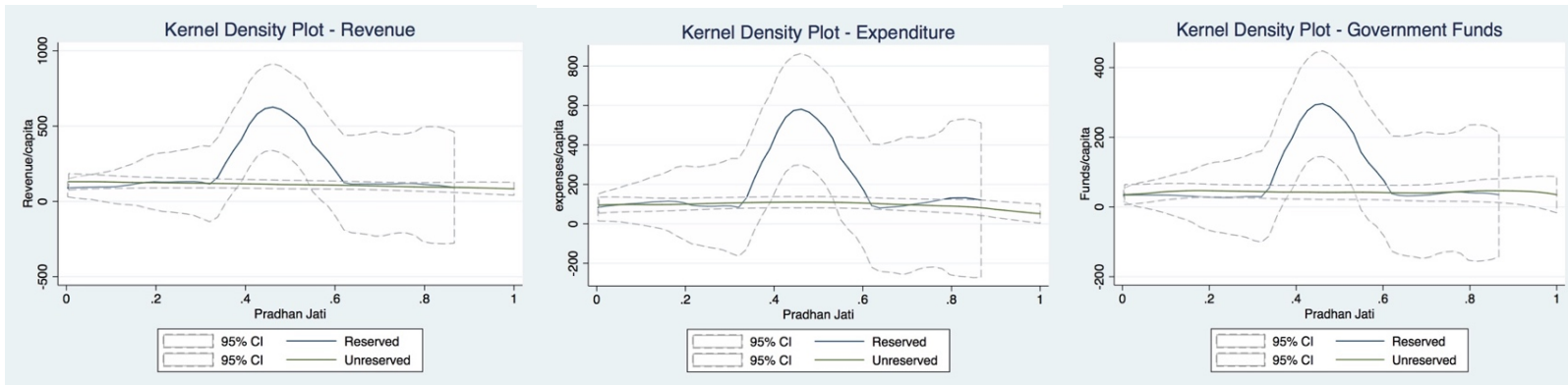
Figure 1 – Government Finances – Kernel Density Plots
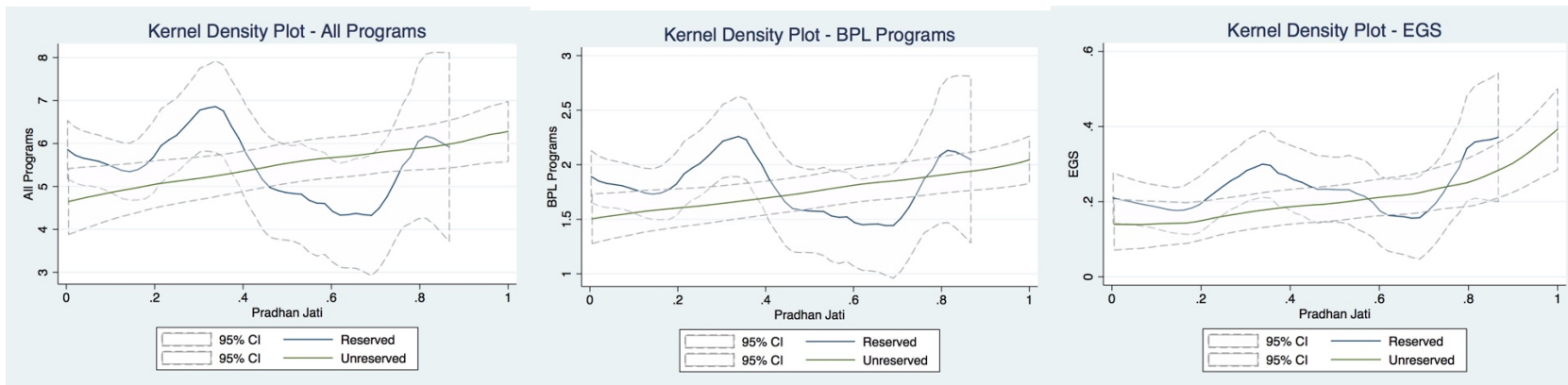

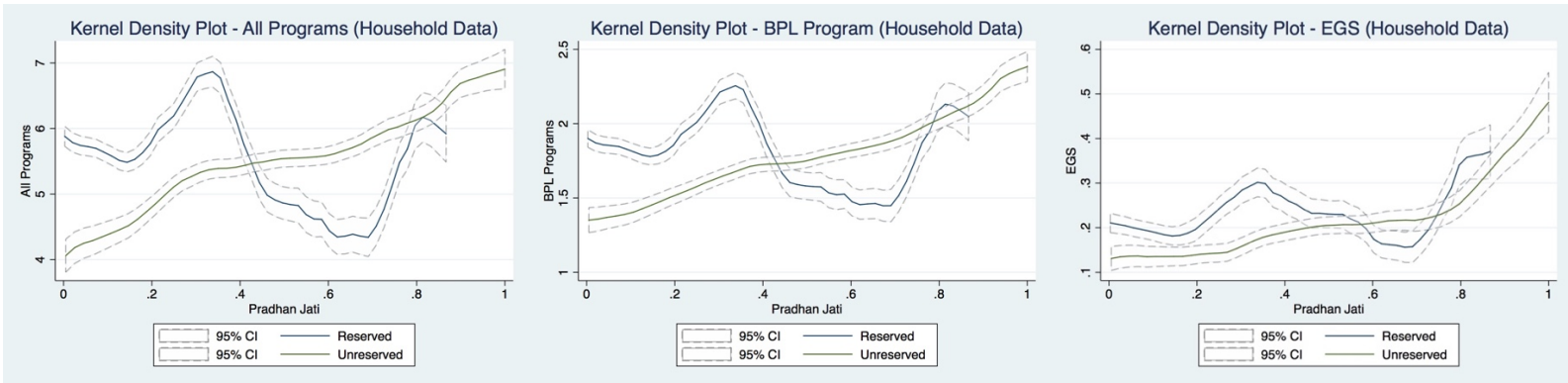*Figure 2 – Government Programs (Village Data) – Kernel Density Plots*

Figure 3 – Government Programs (Household Data) – Kernel Density Plots
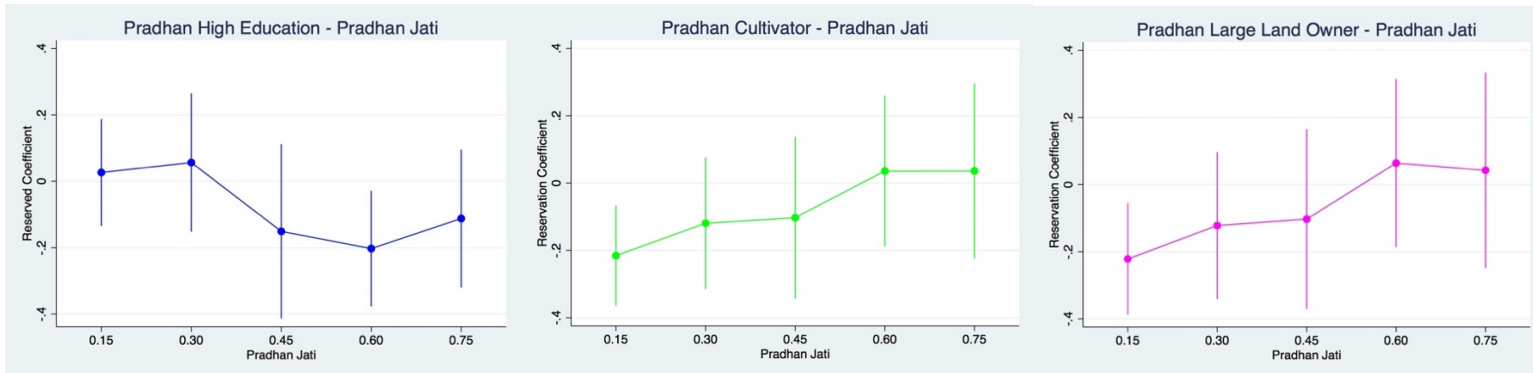

Figure 4 – Pradhan Quality – Estimated Coefficient Plots
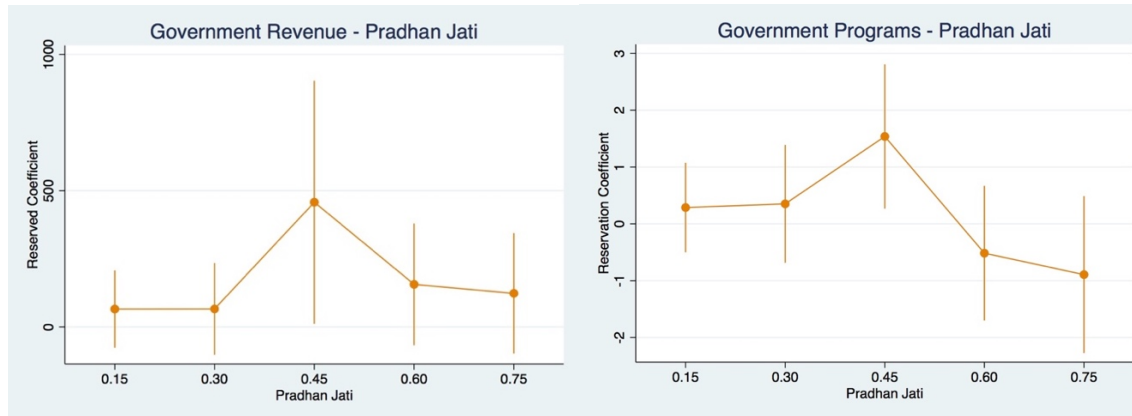
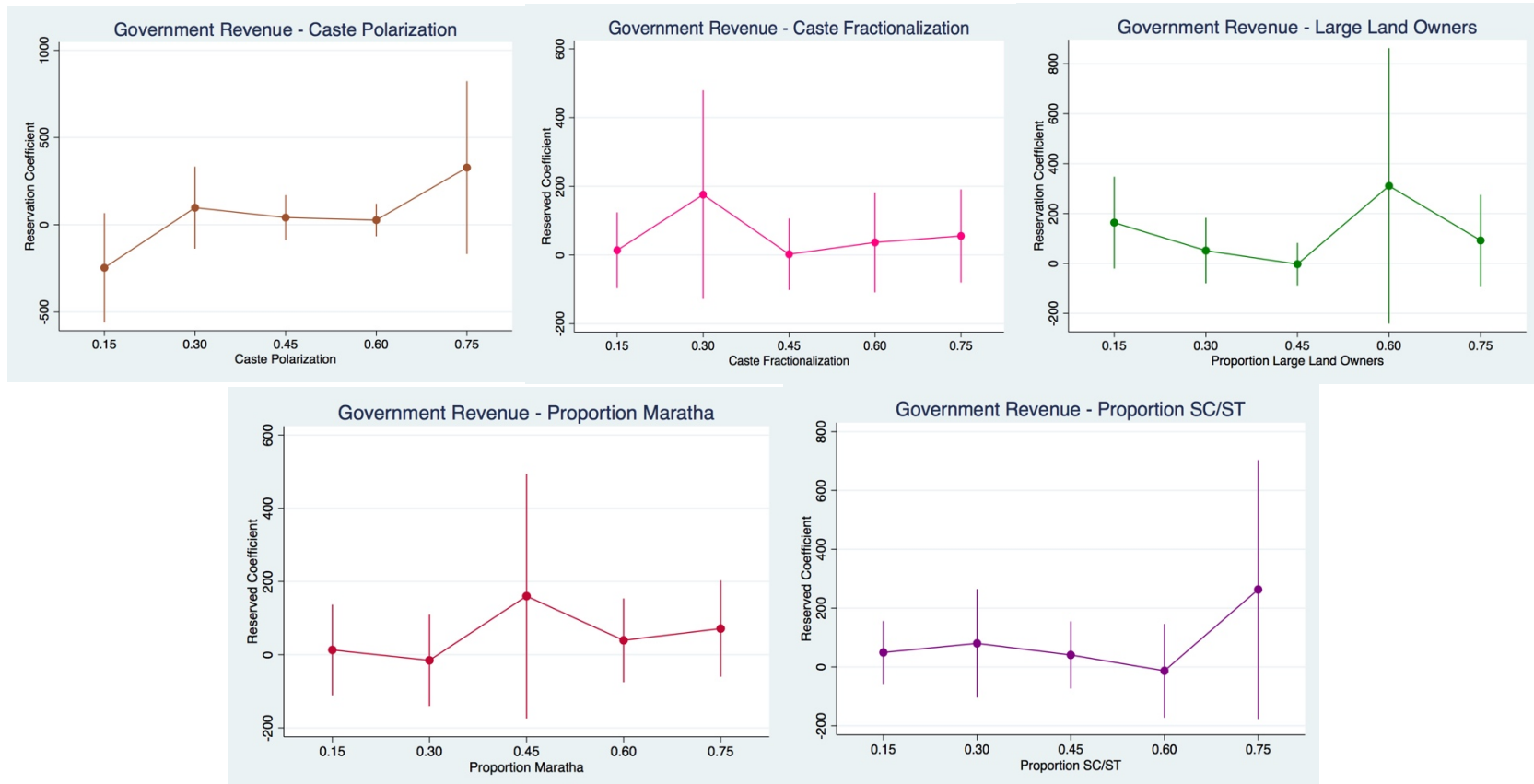*Figure 5 – Governance Outcomes and Pradhan Jati – Estimated Coefficient Plots*

Figure 6 – Governance Revenue – Placebo Tests – Estimated Coefficient Plots
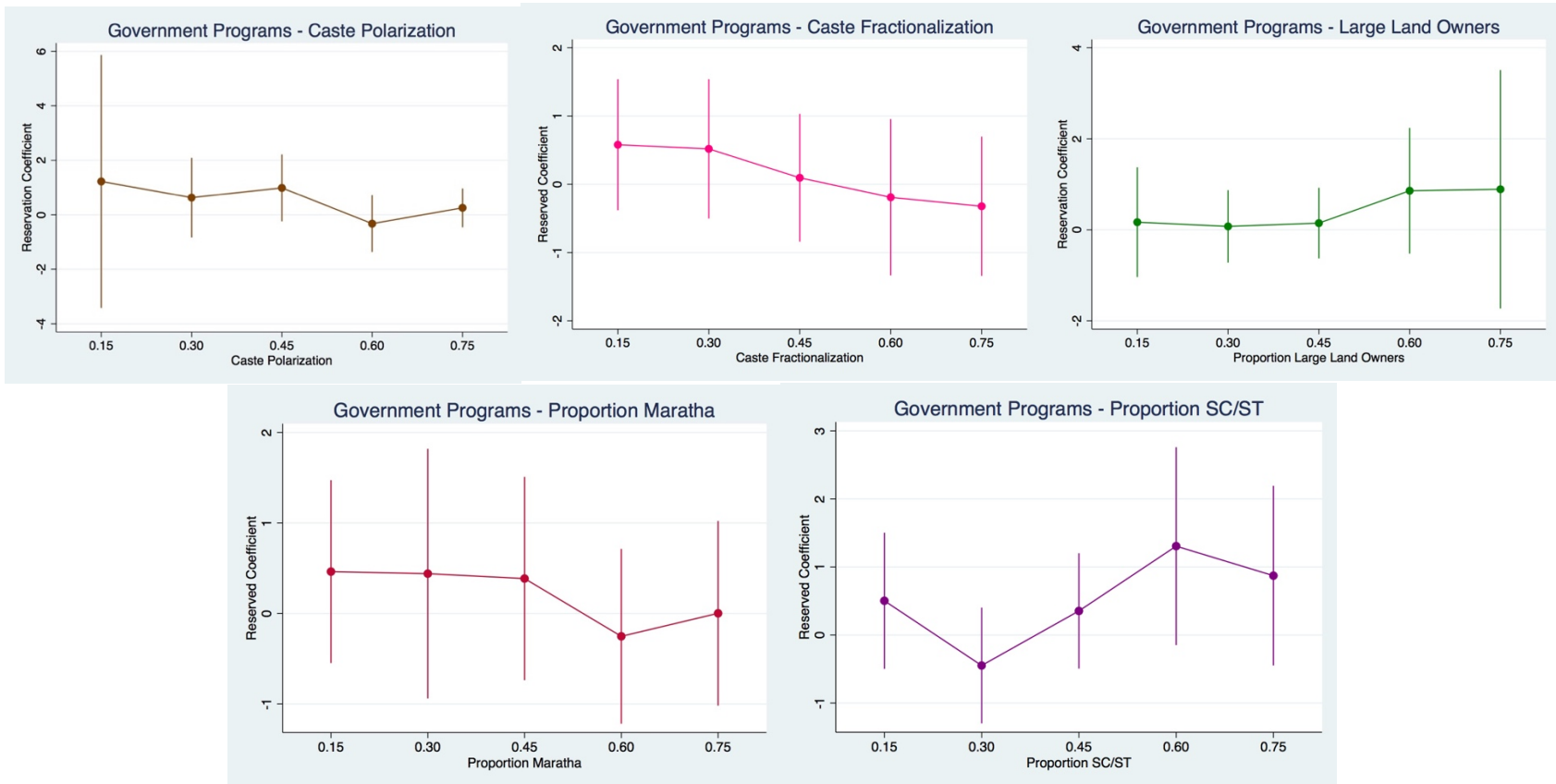
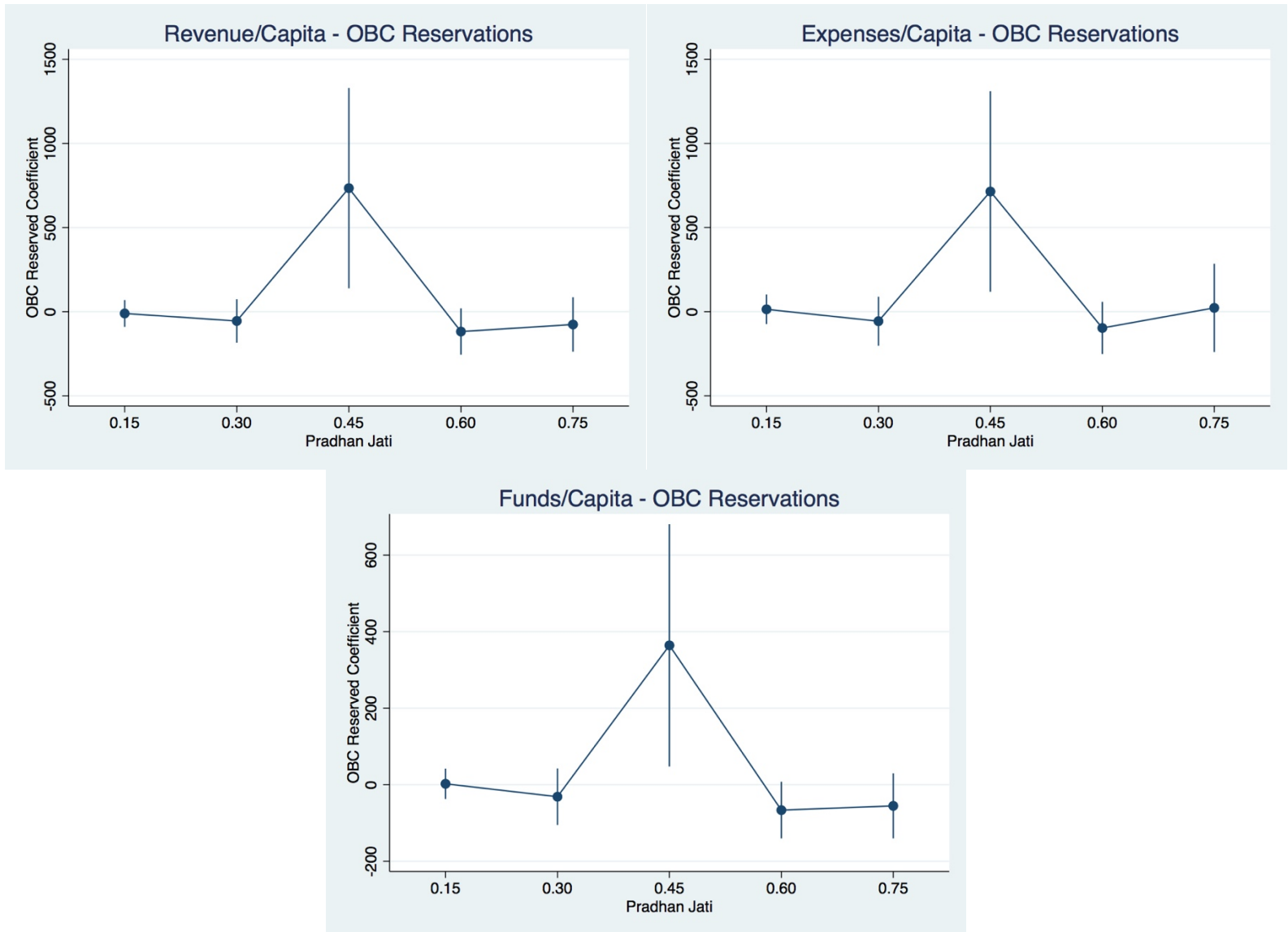*Figure 7 – Governance Programs – Placebo Tests – Estimated Coefficient Plots*

Figure A1 – Government Finances – OBC Reservations – Estimated Coefficient Plots
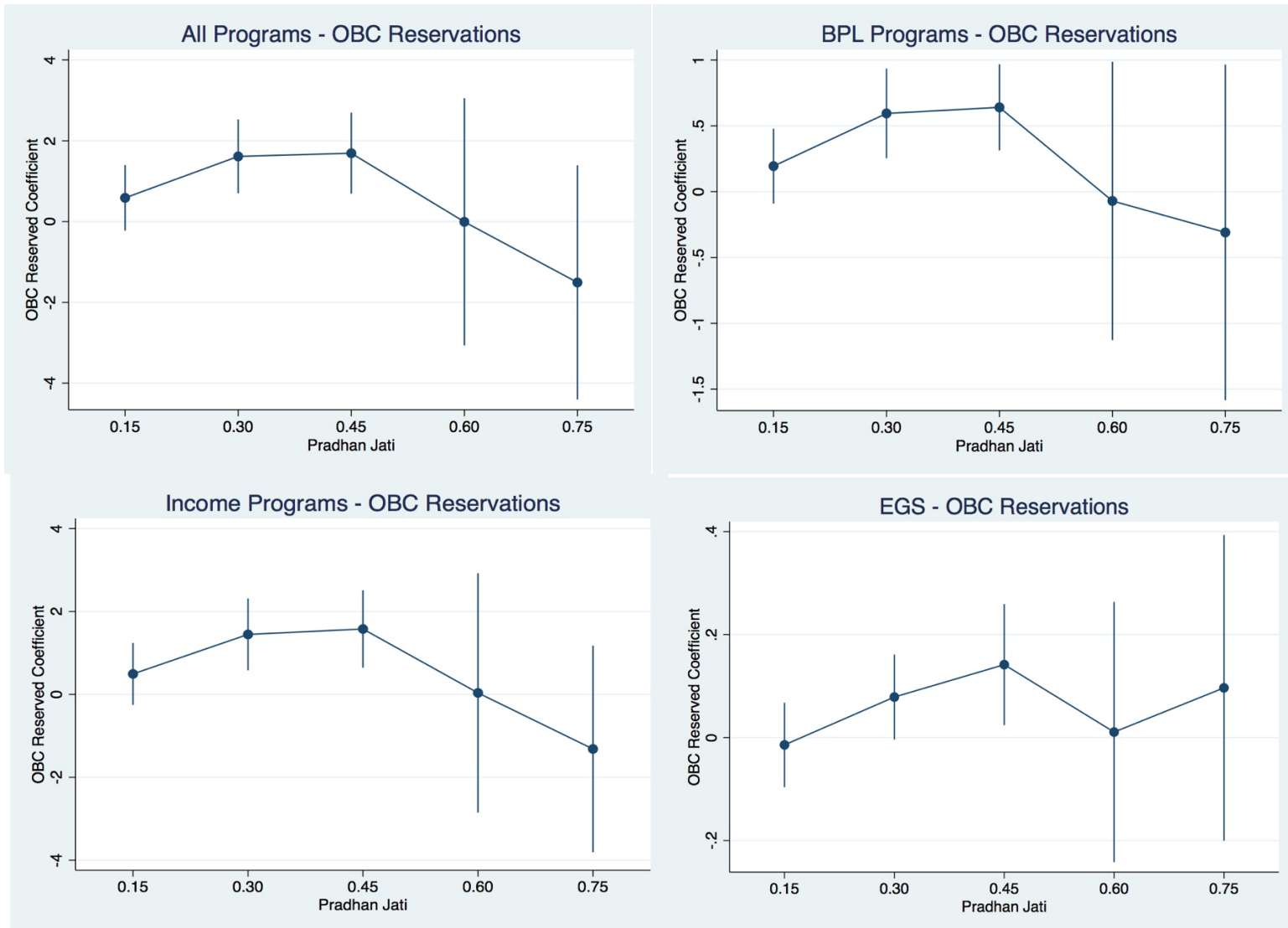
Figure A2 – Government Programs – OBC Reservations – Estimated Coefficient Plots