EFFICIENCY CONSEQUENCES OF AFFIRMATIVE ACTION IN POLITICS: THEORY AND EVIDENCE FROM INDIA*

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Abstract

We examine the efficiency consequences of affirmative action (AA) in politics, i.e., restricting candidate entry in elections to one group of population. AA can affect efficiency through both ability (selection effect) and effort (competition effect) of leader. Our model shows that the competition effect of restricting candidate entry to one group on public spending would depend on the population share of the group. The outcome may *improve* with restriction when one group is relatively large, *even when* restriction worsens the average ability of candidates. We provide empirical evidence in favor of our model in the context of elections of village heads in Rajasthan, India. We exploit randomized reservation quota for a caste group (OBCs) to show that restriction indeed increased public spending in the relevant villages. We also provide empirical support for the mechanism explored in the model. Our results highlight that efficiency concerns regarding affirmative action policies may need reevaluation.

Key words: Electoral competition, OBC Reservation, Public goods, Gram Panchayat.
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1 INTRODUCTION

Affirmative action (AA) in electoral politics have proliferated in the modern world. These policies impose some form of restrictions or quotas in elections for members of certain population groups. They are based either on gender (i.e., quotas for women) or ethnicities (e.g., caste groups in India, or indigenous groups in New Zealand or Bolivia etc). Currently there are more than 100 countries which have some form of quota for women in elections and about 24 countries with electoral quotas for some ethnic group.[1] Evidently, these restrictions have been imposed to achieve equity in political representation that these groups lack due to being historically discriminated in their respective societies. However, these affirmative action policies often face criticisms in public debates on the grounds of efficiency. Since this is an imposition of restriction on candidate entry, such policies, the critics argue, may bar more competent candidates from running. The website `http://www.quotaproject.org`, for example, lists as one of the cons of gender quotas in elections the following: "Quotas imply that politicians are elected because of their gender, not because of their qualifications and that more qualified candidates are pushed aside."[2] Moreover, restrictions on candidate entry may also dampen electoral competition, as found in the United States which have other forms of candidate restriction policies such as filing fees and signature requirements.[3] If performance of elected leaders depends on their effort, and if effort is determined by both competence and electoral competition, then affirmative action policies may potentially lead to worsening of overall delivery of public goods and services.

We examine and challenge this view both theoretically and empirically by looking at caste based affirmative action policies in village elections in India. We consider a probabilistic voting model with rent-seeking politicians where voters are divided into two groups and they prefer a leader from their own group. This preference for a "co-ethnic" leader, we believe, is natural in contexts where AA is relevant. We claim that if group members have such "co-ethnic" preferences, then effect of restricting candidate entry to one group depends on the size configuration of the groups. We show that public goods provision may in fact *improve*

[1]The information about quotas on women is available at `http://www.quotaproject.org`, which is a joint project of International IDEA, Inter-Parliamentary Union and Stockholm University. The information about countries adopting ethnic quotas is in Bird (2014).

[2]Gajwani and Zhang (2014) finds that in the village councils in the state of Tamil Nadu in India, the quota on women did lead to a fall in provision of certain public goods which require more coordination with higher level officials. They argue that this happened because the elected women were less experienced with procedures within government. We elaborate more on such evidence later in this section when we review the literature.

[3]These are referred to as ballot access restrictions. Several papers studying this context (such as Drometer and Rincke (2009), Stratmann (2005), Burden (2007)) show how presence of such restrictions reduced electoral competition in US elections.

with AA when the sizes of the two voting groups are skewed, i.e., when one group is large enough. If preferences of voters are different across groups then the group eligible for AA would have to be large to get the result. When preferences are identical across groups, it doesn't matter which group is subjected to AA; as long as one group is relatively large, public goods provision under AA would be better than without AA. Importantly, we get this result even when we allow for the possibility that average quality of candidates may worsen with AA.

The model as it stands ignores any distributional consequence of AA. This is partly motivated by our context. Recent papers looking at caste based AA policies in Indian elections have found negligible distributional effects of such policies (see, for example, Bardhan, Mookherjee, and Torrado (2010) and Dunning and Nilekani (2013) for AA policies in village elections and Jensenius (2015) for such policies in elections of state legislatures or MLAs). This happens to be the case in our data as well (see Section 6 for more details). We therefore abstract from the discussion about equity vs efficiency trade-offs of AA policies and focus primarily on its efficiency consequences. Our results in fact imply that in certain cases there is no such trade-off to begin with.

We empirically test the predictions of the model in the context of elections of village heads in Rajasthan, a large Indian state. We exploit randomized reservation of village head elections for a caste group, known as the Other Backward Classes (OBCs), to get exogenous variation in the nature of elections (i.e., open vs restricted). In this context the relevant groups that we consider are SC/STs and non SC/STs, and the reservation for OBCs restricts candidate entry to the non SC/ST group. OBCs constitute 85% of the non SC/ST group in Rajasthan and therefore, may be treated similarly. Also, there is wide variation in the population shares of the non SC/ST group across village councils; this is helpful for identifying the effect across the entire range of values of population shares. Also, we look at public spending under the largest public works program implemented by the village councils, NREGS, to test the effects of AA on village head's performance. We note that the preferences for spending under NREGS is not identical across the two groups; specifically, the SC/STs derive higher benefits from NREGS spending than the non SC/STs.[4] Given this preference configuration, we test three specific predictions of the model about public spending:

1. Under both election regimes (with and without AA), the average public spending will fall as the population share of non SC/STs rise.

[4]This is possibly driven by the fact that the SC/STs on average are poorer than the rest and consequently, they are disproportionately represented in the people who get jobs under this scheme, and therefore, derive higher benefits from every rupee spent under NREGS.

2. In presence of AA the average spending will fall *less* rapidly compared to open elections, i.e., the slope is flatter with AA than without.

3. There is a critical value of the non SC/ST population share such that for all values below that, AA will lead to a fall in public spending, and for all values above it, AA will result in an increase in public spending. The critical value is larger than 0.5.

The first prediction is primarily driven by the fact that the non SC/ST group derives smaller benefits from public spending than the other group. The second prediction is a result of the main mechanism that we are interested in exploring in our model, and drives all our results. The model assumes that leader is decided in a two candidate election and in an election without the AA restriction, one candidate from each group runs in the election.[5] Now, as we increase the population share of non SC/STs, the equilibrium public spending will fall for two reasons. Firstly, the average preference for public spending will go down which will directly affect the outcome. Also, if the election is open, i.e., without AA restriction, then increasing the population share of non SC/ST group will increase the advantage of its candidate owing to the preference for a "co-ethnic" leader. This will lead to moral hazard problem for the candidate from the non SC/ST group and will cause a fall in the equilibrium announcement. When the population share of non SC/ST group becomes large, the election becomes less competitive as the candidate from that group becomes confident that she can win the election without committing to high public spending. This co-ethnic advantage is removed in elections with AA. Since both candidates are from the same group, voters of both groups treat them symmetrically. Hence, electoral competition tightens between them. The contrast between elections with and without AA becomes especially stark when the non SC/ST group is large, since moral hazard problem for the non SC/ST candidate in open elections is high in such cases. The third result is a consequence of this fact.

All the three predictions listed above are validated in the data. For every 10% increase in the population share of non SC/STs the per capita work generation falls by 12.7% on average in all village councils. The fall is mostly concentrated in village councils where the head was elected in an open election, confirming the second prediction. Also, among the village councils where the non SC/ST population share is less than 0.62, the per capita work generation is lower in OBC reserved village councils, while the for the other village councils,

[5]We fix the number of candidates because of two reasons. Firstly, this is consistent with the literature that models electoral competition between rent-seeking politicians in a probabilistic voting set up. Also, the number of candidates in our context does not vary with the group sizes, or election regime. Finally, in the data when we look at village councils where the non SC/ST population share is more than 70%, we find that the top two candidates in open elections are from two different groups in 60% cases. This justifies our assumption in the model that each group puts up a candidate in the election for all population shares of the groups.

OBC reserved ones had higher per capita work generation. For village councils where the non SC/ST share is close of zero percent, OBC reservation leads to a 22% fall in outcome while for village councils where the non SC/STs are almost 100%, it results in an increase in outcome by about 12%. Importantly, the result remains same if we remove all village councils headed by non OBCs and do the analysis on only those village councils which have OBC heads (either in reserved or in open election councils). This indicates that the result is not driven by differential preferences or abilities of village heads (OBC vs rest); it is due to AA *per se* that the effect is realized.

We then look at the margin of victory in the elections to verify if the mechanism of the result is consistent with what the model would predict. As evident from the earlier discussion, the results are mediated through corresponding effects on electoral competition or win margin. Specifically, the model predicts that there is a critical value of the non SC/ST population share below which AA will result in an increase the win margin (i.e., lower electoral competition), and above which the win margin will fall due to AA. Consistent with this prediction, we find that for village councils with non SC/ST share lower than 0.5, the win margin were higher in OBC reserved areas, while for the rest of the village councils, the win margin was lower with OBC reservation.

This paper, therefore, demonstrates that it is possible to improve efficiency with AA in place. Most of the existing literature on AA in elections, on the other hand, focus heavily on the distributional question (Dunning and Nilekani (2013), Jensenius (2015), Besley, Pande and Rao (2004), Besley, Pande and Rao (2012), Chattopadhyay and Duflo (2004), Bardhan, Mookherjee, and Torrado (2010) etc). There are some papers that look at changes in efficiency in presence of women quota (Gajwani and Zhang (2014), Afridi, Iversen and Sharan (forthcoming)). However, these papers argue that lack of administrative knowledge of women leaders is the reason for the fall in efficiency. In fact, Afridi, Iversen and Sharan (forthcoming) argue that the knowledge gap between men and women leaders is temporary; the women leaders catch up very quickly and by the end of their tenure they are as competent as their male counterparts. Besley et al. (2017) look at party lists in Sweden and argue that women quota on the list positions removed less able men from the list and made the average ability of the winning candidate higher. We, on the other hand, show that outcome can improve even when average ability worsens due to AA. The model in our paper builds on the literature on rent-seeking politicians (Polo (1998); Persson, Roland and Tabellini (1997); Besley, Persson and Strum (2010)). We extend the standard result in the literature about positive equilibrium rents by showing that in presence of groups which have "co-ethnic" preferences, rents are not only positive, but different across the candidates. In fact, the expected winning candidate enjoys higher rents in office in an open election. This result forms the basis for our argument that affirmative action may have positive efficiency consequences.

2 MODEL

2.1 Set Up

2.1.1 Voter Preferences:

There is a continuum of voters of mass 1. They are divided into two groups or ethnicities, A and B. The population shares of the groups are given by α_A and α_B, with $\alpha_A + \alpha_B = 1$. Each voter is denoted by i and $g(i)$ denotes her group membership, i.e., $g(i) \in \{A, B\}$. The voters care about the amount of public resources spent by the elected leader, denoted by r_L, and the group identity of the leader. Specifically, a voter's expected utility from public spending is given by,

$$\hat{u}_i(r_L) = \gamma_{g(i)} r_L + \mathbb{I}\{g(i) = g(L)\}.$$

The first part of the utility function captures the preference for public good spending and the second part captures the benefits of having a co-ethnic leader in power. γ_A and γ_B are the relative preference parameters with $\gamma_A \leq \gamma_B$. They capture how much voters from a group prefer the public good spending relative to having a co-ethnic leader. Higher γ_g implies higher preference for public spending, or lower preference for having a co-ethnic leader.

2.1.2 Selection of Candidates:

The leader is elected in a two candidate election. We fix the number of candidates in the model to focus on the changes in their composition and its consequent impact on electoral competition when election is changed from open to restricted. Also, this modeling assumption is consistent with the literature that looks at behavior of rent-seeking politicians in a probabilistic voting setup (Polo (1998); Persson, Roland and Tabellini (1997); Besley, Persson and Strum (2010)). Moreover, in the context of our study there doesn't seem to be a lot of variation in number of candidates across two types of elections (see Section 6.3 for more details). We later discuss an extension of the model where the number of candidates is endogenized.

For each group, there is a potential candidate pool from which the group (collectively) chooses its candidate(s). Candidates can be either high or low ability, their ability parameters being denoted by θ_H and θ_L respectively ($\theta_H > \theta_L > 0$). The ability of a politician captures her managerial talent or capacity of implementing public projects. The candidate pool for each group consists of two candidates, one of each ability type. We, hence, assume that there is no difference between groups in terms of the talent of the politicians.

Elections are of two types: open and restricted. In open elections each group puts up one candidate. A group chooses its candidate in a way to maximize its payoff, taking into account the other group's choice. In a restricted election both candidates come from one group - the group to which the election is restricted. Therefore, in restricted election the eligible group essentially doesn't have a choice but to put up its two candidates, one of each ability type.

2.1.3 Electoral Competition:

Each candidate, once chosen by a group, announces her platform - the amount of public good spending that she will implement if elected. We assume that the candidates are able to commit to their announced platforms, i.e., their announcements are credible. However, announcing higher level of public spending is costly. The cost of higher spending depends on the ability type of the candidate. Therefore, a candidate c chooses her platform r_c to maximize:

$$v_c(r_c) = \pi_c \left[1 - \frac{r_c}{2\theta_c}\right]$$

where π_c is the probability that candidate c wins, which may depend on both her and her opponent's platforms. The rest of the term is the rent candidate c would enjoy if elected to office. Announcing higher public spending Before voting takes place, each voter gets two preference shocks for each candidate in the following manner. Let the candidates be c and $c^{'}$. Then voter i votes for candidate c if

$$\hat{u}_i(r_c) > \hat{u}_i(r_{c'}) + \mu_i + \sigma$$

where μ_i the relative idiosyncratic preference shock of i for candidate $c^{'}$. μ_i could either be voter i's personal (relative) preference for $c^{'}$'s ideology, or it could be i's preference for the candidate's personal characteristics. We assume that

$$\mu_i \sim U\left[-\frac{1}{2}, \frac{1}{2}\right]$$

σ is the overall level of (relative) popularity of candidate $c^{'}$. We again assume that

$$\sigma \sim U\left[-\frac{1}{2}, \frac{1}{2}\right]$$

2.1.4 Timing of Events:

The sequence of events in the model is as follows:

1. The election type - open or restricted - is decided.
2. The eligible group(s) decide their candidates.
3. The candidates announce their platforms.
4. The preference shocks μ_i and σ are realized.
5. Voters cast their vote.
6. The winner implements her announced platform and payoffs are realized.

2.2 Characterization of the Equilibrium:

2.2.1 Open Election:

In open elections first groups A and B choose their candidates and then they announce their platforms. We first assume that both A and B put up their high ability candidates. Therefore, the candidate profiles are (A, H) and (B, H). We later will show that this indeed is the equilibrium choice of the groups. Let r_{AH} and r_{BH} be the announced platforms of the candidates. When the candidates choose their platforms, they balance the trade-off between increasing their probability of win and the net rent from office. The equilibrium of this choice problem is stated in the following result:

Proposition 1 *Let the candidates of the election are given by (A, H) and (B, H). Then their platform announcement game has a unique Nash Equilibrium and it is given by*

$$r^o_{AH} = 2\theta_H - \frac{(2\alpha_A - 1)}{3\kappa} - \frac{1}{2\kappa},$$

$$r^o_{BH} = 2\theta_H + \frac{(2\alpha_A - 1)}{3\kappa} - \frac{1}{2\kappa},$$

where $\kappa = \alpha_A\gamma_A + \alpha_B\gamma_B$.

Now, if group B instead of putting forward a high ability candidate, had chosen a low ability one, the announced platforms of both candidates would have been different. This is because a low ability candidate from B would have changed the incentive of the high ability candidate from A to announce higher or lower r_{AH}. Therefore, when group $g \in \{A, B\}$ chooses its candidate c it optimizes the following problem:

$$\max_{c \in \{gH, gL\}} \gamma_g \mathbb{E} r^o + \pi_c^o$$

where π_c^o is the probability that candidate c wins an open election and $\mathbb{E}r^o$ is the expected public spending given the choice of the candidates. We now have the following result:

Proposition 2 *The open election game has a unique Nash Equilibrium where both groups choose their high ability candidates and the candidates announce platforms as specified in Proposition 1. The expected public spending in open election regime is given by*

$$\mathbb{E} r^o = 2\theta_H - \frac{2(2\alpha_A - 1)^2}{9\kappa} - \frac{1}{2\kappa}.$$

2.2.2 Restricted Election:

We assume through out the paper that election is restricted to group A candidates. Therefore, the candidate profiles in the election are (A, H) and (A, L). Hence, for voters from both groups the candidates are symmetric from the point of view of being co-ethnic. For group A both candidates are co-ethnic while for group B none are so. Hence, a voter from group g would vote for candidate (A, H) if

$$\gamma_g(r_{AH} - r_{AL}) - \sigma > \mu_i$$

Following the same logic as before we can compute the probability of win for (A, H) to be

$$\pi_{AH} = \frac{1}{2} + \kappa(r_{AH} - r_{AL}).$$

Candidates choose r_{AH} and r_{AL} to maximize their expected rents from office. We now have the following result characterizing the equilibrium public spending in restricted election regime:

Proposition 3 *In the restricted election, the announcement game has a unique Nash Equilibrium. Candidates (A, H) and (A, L) announce*

$$r_{AH}^* = \frac{2(2\theta_H + \theta_L)}{3} - \frac{1}{2\kappa}$$

$$r^*_{AL} = \frac{2(\theta_H + 2\theta_L)}{3} - \frac{1}{2\kappa} \ ,$$

and the expected public spending is given by,

$$\mathbb{E}r^* = \theta_H + \theta_L + \frac{4\kappa(\theta_H - \theta_L)^2}{9} - \frac{1}{2\kappa} \ .$$

2.3 Comparative Statics

We look at comparative static results for expected public spending and win margin, the two observables in the data, with respect to population share of a group and election regimes. One set of results will compare the outcomes at the two extremes of the population share distribution. Then we will see the behavior of the two variables under the two election regimes when population share moves between the two extreme ends.

2.3.1 Expected Public Spending

We have the following result on the effect of election regime on public spending:

Proposition 4 *If* $\gamma_A < \frac{0.25}{\theta_H - \theta_L} < \gamma_B$ *then,*

$$\mathbb{E}r^* < \mathbb{E}r^o \quad at \ \ \alpha_A = 0 \quad and \quad \mathbb{E}r^* > \mathbb{E}r^o \quad at \ \ \alpha_A = 1.$$

The result above states that provided the relative preferences of the groups are different enough, restricting candidate entry to one group would reduce public good spending when the restricted group is sufficiently small in size. However, the restriction would improve outcome when the eligible group is sufficiently large. Also, we need $\gamma_B > \frac{0.25}{\theta_H - \theta_L}$ for the first part of the statement and $\gamma_A < \frac{0.25}{\theta_H - \theta_L}$ for the second part.

The intuition for this result is as follows: suppose that group A is large. Therefore, the candidate (A, H) has a large co-ethnic advantage to begin with, which reduces competition. Hence, she can get away by announcing relatively low public good spending, i.e., $r^o_{AH} < r^o_{BH}$. Now, in case of restricted election, both candidates are from group A and therefore, the co-ethnic advantage of (A, H) is now removed. From the voters' point of view, both candidates are either from the same group or both are from a different group. This intensifies the competition between the candidates. However, this higher electoral competition comes at the cost of allowing a low ability candidate to run. Therefore, the outcome improves when the co-ethnic preference is sufficiently important relative to the ability gap between the candidates, or stated otherwise, γ_A is small enough.

The following result shows how the expected public spending will change under the two election regimes when population share of group A is changed.

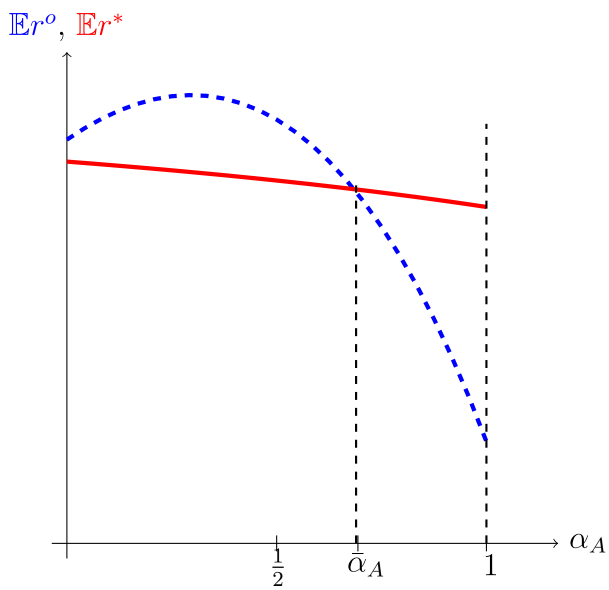
Proposition 5 *(i) If $\gamma_A = \gamma_B$, then* $\frac{\mathbb{E}r^*}{\partial \alpha_A} = 0$ *for all* $\alpha_A \in [0, 1]$.
(ii) If $\gamma_A < \gamma_B$, then $\frac{\mathbb{E}r^*}{\partial \alpha_A} < 0$ *for all* $\alpha_A \in [0, 1]$.
(iii) If $\gamma_A \leq \gamma_B$, then for some $\hat{\alpha}_A \in (0, 1)$

$$\frac{\partial \mathbb{E}r^o}{\partial \alpha_A} < 0 \text{ for all } \alpha_A \in (\hat{\alpha}_A, 1].$$

(iv) If $\gamma_A < \frac{0.25}{\theta_H - \theta_L}$ then there exists $\tilde{\alpha}_A \in [\hat{\alpha}_A, 1)$ such that,

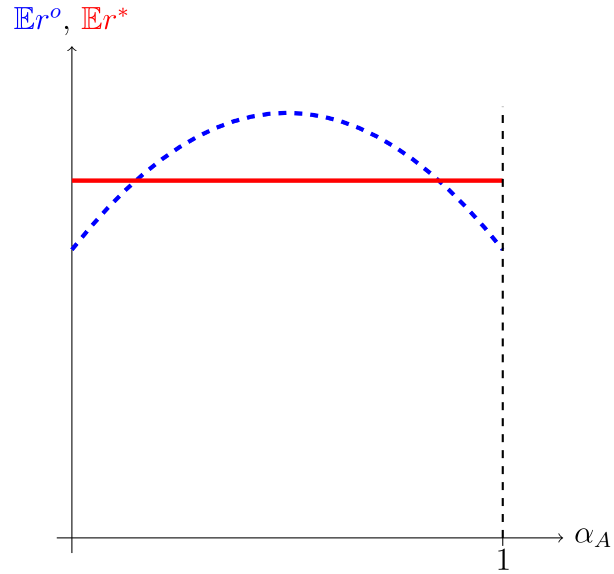
$$\frac{\partial(\mathbb{E}r^* - \mathbb{E}r^o)}{\partial \alpha_A} > 0 \quad \text{for all } \alpha_A \in (\tilde{\alpha}_A, 1].$$

Figure 1: Expected Policy and Population Share when $\gamma_A < \frac{0.25}{\theta_H - \theta_L} < \gamma_B$



The result states that when group A prefers public goods relatively less than group B, then increasing the population of group A (eventually) reduces expected public spending under both election regimes. When both groups prefer public goods equally, there is no effect of changing population shares in restricted election. Combining Propositions 4 and 5 we can say the following:

Figure 2: Expected Policy and Population Share when $\gamma_A = \gamma_B < \frac{0.25}{\theta_H - \theta_L}$



Proposition 6 *If $\gamma_A < \frac{0.25}{\theta_H - \theta_L} < \gamma_B$ then there exists $\bar{\alpha}_A \in (0.5, 1)$ such that for all $\alpha_A < \bar{\alpha}_A$, $\mathbb{E}r^*(\alpha_A) < \mathbb{E}r^o(\alpha_A)$, for all $\alpha_A > \bar{\alpha}_A$, $\mathbb{E}r^*(\alpha_A) > \mathbb{E}r^o(\alpha_A)$, and at $\alpha_A = \bar{\alpha}_A$, $\mathbb{E}r^*(\alpha_A) = \mathbb{E}r^o(\alpha_A)$.*

This result is depicted in the Figure 1. The dashed and smooth curves plot the expected public spending under open and restricted elections, respectively, as a function of the population share of group A. The parameter values are taken to be: $\theta_H - \theta_L = 0.2$, $\gamma_A = 0.9$ and $\gamma_B = 1.1$. As the figure shows, for low values of α_A, the dashed curve is above the smooth one, implying that AA will lead to a fall in public spending for those values of α_A. However, the dashed curve drops faster relative to the smooth one as α_A increases and for high values of α_A, the smooth curve comes above the dashed one. Figure 2 plots the same curves for the case when $\gamma_A = \gamma_B = 0.7$. This shows that for both high and low values of α_A, expected public spending with AA is higher than the one without. However, in the context where we test our model, we have $\gamma_A < \gamma_B$ and therefore, we can not test this specific prediction. Hence, we focus on Proposition 6.

2.3.2 Margin of Victory

We now look at how margin of victory behaves as we change α_A. We define win margins under the two election regimes as

$$m^o \equiv V^o_{AH} - V^o_{BH} \quad \text{and} \quad m^* \equiv V^*_{AH} - V^*_{AL}$$

We have the following result:

Proposition 7 *The difference between margin of victory in two types of elections,* $(m^o - m^*)$ *is falling in* α_A*, i.e.,*

$$\frac{\partial(m^* - m^o)}{\partial \alpha_A} < 0.$$

Moreover, if $\gamma_A < \frac{0.5}{\theta_H - \theta_L}$ *then there exists* $\mathring{\alpha}_A \in (0,1)$ *such that for all* $\alpha_A < \mathring{\alpha}_A$*,* $(m^* - m^o) > 0$*, for all* $\alpha_A > \mathring{\alpha}_A$*,* $(m^* - m^o) < 0$ *and at* $\alpha_A = \mathring{\alpha}_A$*,* $(m^* - m^o) = 0$*.*

This result implies that we should expect the exact opposite pattens on win margin compared to the result on public spending. This is because that higher public spending in this model comes about due to tightening of electoral competition which means that the win margins should be lower in such cases. Therefore, the result on win margin provides us a mechanism through which we get the effects on public spending. We now move to our empirical setting to test these predictions.

3 BACKGROUND AND INSTITUTIONAL DETAILS

3.1 Village Councils and AA in Village Elections in India

The village council or Gram Panchayat (GP from now on) is the lowest tier of governance in India. It is part of a three tier governance system that all Indian states adopted after the 73^{rd} Constitutional amendment in 1993. In this system each state is divided into districts which are run by district councils headed by a President. The districts are further divided into blocks which are divided, in turn, into village councils. The GPs are comprised of councilors who are elected from single member wards within GPs. Each council has a president or Sarpanch, analogous to a mayor in a municipality. Depending on the state, the Sarpanch may or may not be directly elected. We focus on the election of Sarpanches for our study and, therefore, choose as our context the state of Rajasthan which holds direct elections for that position.

The positions of Sarpanches, along with the ward councilor positions are subjected to affirmative action policies, in the form of quotas, for various groups, such as women, SCs, STs, and OBCs. We focus on caste based quotas for the Sarpanch elections. These policies selects certain fraction of such positions where only members of the relevant caste group can run as candidates. The rules followed by the state government in determining which positions will be reserved for what group varies from state to state. We study the context of Rajasthan because it gives us an exogenous determination of these positions for the case of OBC group. We detail the algorithm for OBC reservation in Rajasthan in the Identification section (Section 5.1).

The primary responsibility of a GP is to provide local public goods, such as village roads, drinking water facilities (hand pumps, wells etc), primary schools, health centers, irrigation facilities (such as public canals, water sheds) etc. The GPs, however, have minimal taxation power. Their expenditure is met by resources received from higher tier governments. Literature has shown that the Sarpanch enjoys significant discretionary power in deciding budgetary allocations in a GP, including the number of public projects to be implemented and their composition (see, for example, Besley, Pande and Rao (2004), Besley, Pande and Rao (2012), Chattopadhyay and Duflo (2004)). The source of this discretion is possibly the fact that the Sarpanch heads the planning and finance subcommittee within a GP and therefore signs off on all the public good expenditures. In the recent years, owing to increasing decentralization in the delivery of public goods and services, the resources available at the GPs have increased manifold. Therefore the extent of work done by a GP depends a lot on the organizational capacity of the GP which, in turn, is heavily influenced by the Sarpanch's managerial ability and efforts.

3.2 NREGS

National Rural Employment Guarantee Scheme (NREGS) is the largest running public works program in the world that was initiated by the Indian Government in 2006. By the year 2008, it was made universal, i.e., the program was running in all districts of India. As part of the program, any adult member of a rural household is entitled to 100 days of employment in a year. The employment is generated by implementing various public projects in the villages, such as construction of roads, watershed, irrigation canal, wells, sanitation etc. The GPs are the implementing agencies of this program and by the time of our study, 2012-1'3, NREGS had become the largest expenditure head in the annual budgets of GPs, comprising of a significant majority of their annual expenditure. Though in principle the program is demand driven, there is now growing evidence that a significant part of the expenditure under NREGS is determined by supply side factors such as bottlenecks in bureaucratic procedures during fund allocation, or capacity of local GPs to plan for new projects and execute them on time. Hence, the managerial efforts of the Sarpanch is an important determinant of the level of public goods that's provided through this program.

4 DATA

4.1 Sources and Compilation

This study is based on data for 5002 GPs in the northern Indian state of Rajasthan. The sample is constructed by triangulation of three different administrative data sets: that for the public policy outcome, data on demographic characteristics as well as the infrastructure development of the village councils and village council election records. While descriptions of each data set used follow below, it is important to note at the outset, that barring cases of missing administrative records, this is a census of all village councils eligible for having the position of Sarpanch reserved for a member of the "Other Backward Classes" (OBC). We will return to the eligibility criterion for being in the pool for potential reservation in the section on empirical methodology (Section 5).

As pointed out before, the public policy we focus on the National Rural Employment Guarantee Scheme (NREGS). For each village council, we use data on the total days of work generated[6] under the National Rural Employment Guarantee Scheme (NREGS) for the financial year 2012-2013.[7] This information is sourced from the official portal for the scheme (www.nrega.nic.in) and is available for the whole village council as well as for each major social group in the village: Scheduled Castes (SC), Scheduled Tribes (ST) and other groups ("Others"). For most of our analysis we will use the aggregate while we only turn to group wise outcomes in a section on distributional consequences. We deflate the total days of work by the population of the village council to arrive at the main outcome variable of interest, the per capita number of days of work ($Days\,pc$). Another variable of interest that is obtained from the NREGS portal is demand for NREGS work. The official procedure for a household to get work under NREGS involves a written or oral request from the household to be given work. This is noted down by village council NREGS officials and is available in administrative records.

Data on population of the village councils as well as it's other demographic characteristics are obtained from the 2011 census records.[8] Each village council consists of multiple villages. This mapping from village to village council is available in the local government directory maintained by government of India. Using this mapping, we aggregate information on villages belonging to a village council to calculate the total population of the village council. The census also provides information on the number of individuals who belong to each of the following social groups: SC, ST and "Others". It is important for our empirical

[6] This is recorded as person-days of work in the administrative data.

[7] April 2012-March 2013.

[8] We use primary census abstracts from the census.

analysis to note that the population in the social group OBC is part of the "Others" and is not recorded separately. While we will show in a later section that our results are robust to imputation of the OBC population using other data sources, for our main results, we will use the census population recorded for "Others." For the sake of clarity and reasons described below, we will refer to "Others" as "Non SC/ST". Along with the aggregate population and its distribution among different social groups, the other variables of interest that are obtained from the census are the total number of literates and the total number of females in the village council, after suitable aggregation of the village data.

We also construct a village-council development index using infrastructure data from the 2011 census.[9] For each village, the census records the access to a set of amenities. Let $I_{jiv} = 1$ indicate that the village i in village council v has access to the amenity j (0 if it doesn't). We construct the village council access to the amenity j as $I_{jv} = \sum w_i I_{ijv}$ where w_i is the population weight of each village i in the village council. We construct such village council level indicators for access to a set of amenities.[10]Next, these indicators are combined to a village-council level development index using principle component analysis. As in conventional in the literature, we use the first factor and generate development quartiles using data on all village-councils ($DEV\,Q1 - DEV\,Q4$) with $DEV\,Q4$ being the most developed village council.

The third source of data are election records. We use the results of elections that were held in 2010 for the position of the village council head. For all information related to this election- the caste category of the council head, whether the position was reserved for any caste category, vote share of the candidates, the total number of candidates who stood for election and which caste they belonged to- the source was the Rajasthan state election commission. While data on the former two variables were available from online records of the election commission (http://www.rajsec.rajasthan.gov.in), information on the latter variables were based on manual input of detailed official records of election results, as reported by district administrations to the election commission. Some of these sheets had been misplaced causing a loss of 631 observations.[11]Hence, in our empirical work, while

[9]This is obtained from the village directories in census records.

[10]We divide amenities into two groups. Since some facilities do not need to be inside a village to provide services, we take into account the distance to Primary Healthcare Centre, Post Office, All Weather (Pucca) Road, State Highway, Wholesale Market (Mandi), Assembly Polling Station, Government Primary School, Private Primary School, Government Senior Secondary School. We define the village to have access to these amenities if they are within 5 kms of the the village. For other amenities which need to be inside the village to benefit households, we define the village to have access if the village as any access to Treated Tap Water, Closed or Covered (permanent) Drainage facilities.

[11] In the case of manually recorded data, election records for 2 districts had gone missing by 2016 when we input the data. Some of the information was missing in some sheets. For example, while in all cases, the total number of candidates were recorded, the votes were not recorded for all candidates for some village

in the main specification the number of observations are 5002, in a subsequent sub-section that looks at data from these manual records, our sample size drops a little (the actual drop depends on what variable we look at).

4.2 Descriptive Statistics

In our sample, the number of days of NREGS work per household is 19. However, households typically have differing number of members, which vary systematically with the community they belong to. Hence we deflate the total days of work in the village council by the population of the village council.[12] The per capita number of days of NREGS work is 3.2. We report this statistic as well as those for other variables in Table 1.

The amount of work provided through NREGS is typically dependent on characteristics of the village councils. Hence we describe next the setting of our sample. The demographic characteristic that matters most for our study is the share of population that belongs to the Other Backward Classes. As pointed out above, we don't have data for this. Instead, for each village council, we have the share of non SC/STs in the population $\left(S^O\right)$. This share is 0.7 for our sample with standard deviation of 0.2. As Figure 3 shows, our sample covers the full range of Non SC/ST shares. Data from a large representative sample (National Sample Survey, round on employment, 2011, referred hereafter as NSS (2011)) show that 85 percent of the Non SC/STs are in fact OBCs. In addition, OBCs and the residual "general" category that make up the non SC/ST are lower demanders of NREGS work in contrast to the SCs and STs. According to household survey data collected by NSS (2011), while 80 percent of SC/ST households demanded NREGS work[13][14], the proportion of OBC households who demanded work was 66 percent, while the corresponding proportion for the general caste category was 54 percent. Hence, in the spirit of the model, the group Non SC/ST clubs together relatively low demanders of NREGS.

Other demographic characteristics may also matter for NREGS demand. For example, the size of the village council may offer different opportunities for private work. The average population per village council is $5,500$. A good measure of demand for NREGS work is also given by the level of education of the population. The literacy rate among those who are 6 years old and above is only 62 percent (this matches the overall literacy rate for rural

councils, causing a further loss of observations. But this additional drop is small (56 observations).

[12]Another reason for doing so is that the census reports the total number of persons who belong to a social group, instead of the total number of households.

[13]Based on the questions asked in the household survey, a household is said to have demanded NREGS work if it either worked in an NREGS project, or it applied for work but did not get any work.

[14]The proportion of households who demanded work among ST and SC households is 86 and 75 percent respectively.

Rajasthan). Another common feature of the scheme is that women, who have relatively lower outside job opportunities, work more on the projects provided under the scheme. Thus the proportion of females is an important determinant of the amount of NREGS work provided. This proportion is 0.48 in our sample which matches the figure for the whole of rural Rajasthan. NREGS demand may also depend on the infrastructure development index of the village council. The proportions of the lowest two development quartiles in our sample is 0.23 each while those of the third and fourth quartiles are 0.25 and 0.27 respectively.[15]

5 EMPIRICAL METHODOLOGY

To begin with, let us summarize the main result of the theoretical model that will underpin the empirical analysis. The main insight of the model, as stated in Proposition 6, is that restricting candidates who can stand for elections to one particular group can be better for public provision, as compared to a situation when elections are unrestricted, if the population share of that group is large. However, if the population share of the group is small, the restriction will reduce public goods provision.

In the particular context of our sample, village councils heads are chosen in an unrestricted election directly by voters.[16] For a subset of village councils however, the position of the head is reserved for a candidate from a particular social group. To elaborate further, the reservation of the head of the village council for a particular social group (OBC in the case we examine) puts restrictions on the caste identity of the contestants thus leading to a scenario when only a subset of candidates can potentially stand for election. More formally, let D_{vb}^{RES} be equal to 1 if the election for the village head in a village council v, situated in an administrative block b is reserved for OBC candidates. The first result posits that the marginal effect of an increase in population share of the Non SC/ST group on the outcome, namely $Days\,pc$, will be larger when the elections are reserved for the group. Hence, the relevant empirical model to examine this claim is:

$$Days\,pc_{vb} = \alpha_b + \beta_1 * S_{vb}^{O} + \beta_2 * D_{vb}^{RES} + \beta_3 * S_{vb}^{0} D_{vb}^{RES} + \gamma' Z_{vb} + \varepsilon_{vb} \quad (1)$$

where Z represents a vector of characteristics: total population, literacy rate, the proportion of the population who are female, three village development quartiles (with the first quartile as the reference category) and α_b are block specific intercept terms (block fixed effects). In this specification, we expect that β_1 would be negative. This is because the non SC/ST

[15] The quartiles are constructed based on all village councils, including those that were not eligible for OBC reservation.

[16] This is in contrast to some other states of India, where the village council head is chosen by an elected council of representatives and not directly by the voters.

group has a lower demand for NREGS work (as in group A in the theoretical model). The first proposition can be examined by looking at

$$\frac{\partial E\left[Days\,pc|D^{RES}=1,S^{O},Z\right]}{\partial S^{O}} - \frac{\partial E\left[Days\,pc|D^{RES}=0,S^{O},Z\right]}{\partial S^{O}} = \beta_3 \quad (2)$$

posits that β_3 is positive.[17]

Further, to validate the claim made in proposition **, we use estimates of equation ** to calculate

$$\mathbb{E}\left[Days\,pc_{vb}|D^{RES}=1,S^{O},Z\right] - \mathbb{E}\left[Days\,pc_{vb}|D^{RES}=,S^{O},Z\right] = \beta_2+\beta_3 S^{O} \quad (3)$$

The proposition claims that for very low values of S^O, this difference is negative where as for large values of S^O, this difference is positive.

5.1 Identification

In estimating equation 1, a natural concern would be that the village councils that are reserved for the OBC have characteristics that are different from those where is no reservation. However, the context we have chosen for our analysis makes this unlikely. The reservation for seats for the OBC are fixed for each election according to the following algorithm. The position for the head of a village council are subject to three reservations. First the total number of positions to be reserved for the SC and ST communities are fixed based on the population of these groups in each block. Once these numbers are fixed, the list of village councils which are subject to each of these reservations is drawn after arranging the villages in descending order of the group's population share. So, in the case of SC reservation, the village councils that have the largest SC population share are reserved first, unless they had been reserved in the previous election. Once the village councils that have been chosen for SC and ST reservation are picked, the remaining village councils form the potential pool on which OBC reservation is exercised. Moreover, and crucially for this empirical work, the village councils to be reserved for a OBC head are chosen at random from this residual pool. Hence for our empirical work, we focus on the sample of all village councils that remain in the pool after SC and ST reserved village councils have been decided for each block. For ease of presentation, we refer to village councils where the head position has been reserved

[17]The first proposition in fact posits this positive marginal effect for group shares that are higher than a threshold, which in turn can vary depending on underlying parameters. This would suggest a specification which interacts D^{RES} with a term quadratic in S^O. However, in no specification does the quadratic term play an important role, implying that the underlying threshold for group share for the positive marginal effect is very low.

for the OBC community as OBC reserved village councils. Randomization ensures that, ex ante, OBC reserved village councils should not differ in characteristics from those that are not reserved, within each block.[18]

While randomization ensures there is no reason for the OBC reserved village councils to be apriori different from those not reserved, ex post there may be differences in characteristics. To allay such fears, we conduct balance tests where each characteristic is regressed on D^{RES} (Table 2). We compare the OBC reserved and unreserved village councils in terms of non SC/ST population share, registered demand for NREGS and other correlates of demand for NREGS work: total population, female share, literacy rate and village quartiles. Apart from non SC/ST shares, none of the variables are different between the OBC reserved and unreserved village councils. In the case of non SC/ST shares, though the difference is significant, the point estimate indicates that the non SC/ST share in unreserved village councils is 70 percent, while that in OBC reserved village councils it is only 1 percent lower.

While the small difference in non SC/ST group size exists between the reserved and unreserved village councils, we run all specifications with non SC/ST group share as a control. In fact, what is more crucial for us is that there should be no difference in characteristics of demand between OBC reserved and unreserved village councils, at each level of non SC/ST group share. Table 3 shows that this is indeed the case when we divide the non SC/ST group share into smaller intervals. A joint test of difference in covariates between the unreserved and reserved village councils, within each bin, reveals that we cannot reject the null that there is no difference (Wilk's lamda).

6 RESULTS

6.1 Main Results

Our theoretical model predicts that the impact of restricting candidates to a particular group depends on the group's share in the total population. While our empirical model sets up a specification with that prediction in mind, we begin by discussing the results of two standard exercises which would be suggested by an a-theoretic approach to the problem: one that asks what is the average impact of reservation on the per capita days of work on NREGS (Column (1) of Table 4). In the second exercise, we control for S^O in case the small difference in Non SC/ST confounds our results (Column (2)). Both estimating exercises yield insignificant results[19], as our model would predict, thus leading to a correct though uninteresting verdict

[18] In our sample, on average, there are about 20 GPs within each block.

[19] The coefficients of D^{RES} are very similar to each other (and statistically the same). In addition, even after we include all the other controls (results not reported), the coefficient remains statistically the same,

that restricting elections to OBC candidates has no average effect on provision of public work.

However, as model points out, this average effect is misleading as the the effect of reservation can depend crucially on the relative size of the group. These are immediately apparent as soon as we allow an interaction term (Column (3)). The coefficient of D^{RES} (β_2) becomes negative and is significant at 5 percent. Moreover, the coefficient of the interaction term β_3 is positive (and significant), which is consistent with the first proposition. These results stay the similar in our main specification, wherein we control for other covariates of demand (Column (4)). Note that the second proposition, which measures the impact of reservation, requires one to calculate the expression given in equation 3. Using coefficients estimated in column (4), we find that the model predictions based on this proposition indeed bear out. Figure 5 plots the marginal effects of OBC reservation at various values of non SC/ST population shares. The impact of restricting elections to OBC candidates improve per capita days of NREGS work when the group share S^0 is high. On the other hand, when the group share of non SC/STs is low, reservations lead to a lower per capita days of NREGS work. Following the result described in Proposition 6, we can in fact calculate the threshold S^0 around which the effect changes sign. Based on our estimated coefficients, for non SC/ST population shares lower than 62 percent (the difference is 0 at $\frac{0.98}{1.56}$), the impact of OBC reservation is negative. Taking into account the precision of the estimates, this negative effect is significantly different from zero when S^0 is less than 35 percent (we use a 10 percent significant level as the default)[20]On the other hand, the per capita days of NREGS is statistically larger in OBC reserved village councils at 75 percent group population share.[21]

The size effect of the impact of reservation is not small. When S^0 is at 0.75, the reserved village councils have 5.1 percent more work (a difference of 0.18 days given a base of around 3.5). The impact rises with higher Non SC/ST group share, with OBC reserved village councils having 11 percent more work when S^0 is around 90 percent. The negative impact of OBC reservation is also large with reserved village councils having almost 20 percent less work when S^0 is less than 35 percent.

Before we move on to explore the mechanism driving our result, it is important to make a note of the results regarding other covariates (not reported in the main Table). An argument can be made that greater days of NREGS work does not reflect welfare improving outcomes: that the greater number of public work reflects systematic mis-reporting or corruption. While we cannot rule this out completely, our argument is that if the public

implying that the insignificant result is unlikely to be driven by differences between reserved and unreserved village councils.

[20]This threshold drops to 20 percent if we choose a 5 percent significance level.

[21]The analogous threshold for a positive effect of reservation is 80 percent for a 5 percent significance level.

provision of work under NREGS correlates positively with natural covariates of demand, then part of it reflects real transfer to households. To begin with, we know that the demand from SC and ST households for NREGS work is larger than from others. In line with that, the *pc Days* is negatively correlated with S^0. Large village councils (POP) have lesser per capita NREGS work, in line with the idea that they have more private economic activities to engage people. *pc Days* is positively correlated with the proportion of population that is female, reflecting the well know preference of women in the state to work on local NREGS projects. NREGS work is negatively correlated with literacy rates, which is expected as this is work done by the poorly educated. Village councils that are very developed in terms of infrastructure ($DEV\,Q4$) show lower NREGS work per capita, re-affirming the idea that the need for NREGS is lower in developed village councils. Thus our results show that the village council level provision of NREGS work is consistent with some obvious correlates of the demand.

6.2 Mechanism

To explore further why we obtain the results that we do, we delve into testing the mechanics of our model that drive the theoretical results. The main force at play is political competition in the face of co-ethnic preferences. The model predicts that as S^0 rises, the difference between win margins in restricted elections and open elections falls. In other words, restricted elections get more competitive relative to open elections as S^0. To test this, we estimate the following equation:

$$WinMargin_{vb} = \delta_b + \delta_1 * S^O_{vb} + \delta_2 * D^{RES}_{vb} + \delta_3 * S^0_{vb} D^{RES}_{vb} + \eta' Z_{vb} + \epsilon_{vb} \quad (4)$$

The model posits that δ_3 is negative.

While the average win margin is 10 percent, the reserved elections have, on an average 1 percentage point lower win margin than open elections (Table 1; Columns (1) and (2) in Table 5). However, what is of particular interest is how this difference in win margin varies with S^0. We find that δ_3 is indeed negative and significant at 10 percent level of significance. Further note that

$$\mathbb{E}\left[WinMargin_{vb}|D^{RES}=1,S^O,Z\right] - \mathbb{E}\left[WinMargin_{vb}|D^{RES}=,S^O,Z\right] = \delta_2 + \delta_3 S^O \quad (5)$$

Using the estimated coefficients, we find that this difference is negative and significant at 5 percent for all S^0 greater than 0.7. The difference is positive below a non SC/ST group share of 0.5; however it is estimated with large standard errors and we cannot reject the null of no differential win margin (Figure 7).

In the mechanism suggested in the model, we underplay the possibility that the number of candidates responds to the election format. The number of electoral candidates can also increase the political competition and if it was the case that the total number of candidates was larger in reserved elections, at high values of S^0, this would have a similar effect on win margins. However, that this is unlikely to be the mechanism can be seen in columns (5)-(8) of Table 5 where we find that the number of candidates are no different across the two election formats; nor do they differ across the two types of elections for any value of S^0.

6.3 Robustness

There can be two threats to our results. The first threat comes from the fact that there may still be differences across the reserved and unreserved village councils. We have been parsimonious with our list of covariates that determine demand. A better proxy would be to include labour market characterization of the village councils, which determine the demand for NREGS work. While data for the number of cultivators, the number of agricultural labourers and industrial workers are available from the census for 2011, the occupation profile is itself determined by the work offered under NREGS. Hence we have excluded the potentially endogenous characterization of the occupation profile from our baseline specification. However, a natural question beckons on whether our results remains similar when we control for these covariates. We present results after including all these occupation variables in Table 6 (Column (2); Column (1) reproduces the baseline result). Our results remain unchanged.

In an alternate robustness exercise, we explore the possibility that our results are driven by another plausible mechanism. It can be argued that when a group is large and the leader is aligned to the group, then public provision improves. In our context, the result that OBC reservation produces better public provision when S^0 is high enough could be driven by similar alignment issues. Reservation would always guarantee an OBC leader while open elections could produce non OBC heads even when S^0 is large. Hence there could be more cases of alignment when there is reservation as compared to open elections, thus giving rise to better provision. We test this hypothesis in two ways. In one specification, we add to our main specification a dummy variable for an OBC leader (whether reserved or open election) and it's interaction with S^0. If all the results are driven by such alignment, then the coefficient of D_{vb}^{RES} and $S_{vb}^0 D_{vb}^{RES}$ should become insignificant after the inclusion of these variables. However, as Column (3) in Table 6 shows, this is not the case. The variables stay significant and retain their sign. Another exercise that brings this out more clearly is if we keep only the subset of village councils where some OBC headman came to power, irrespective of whether this was through open elections or reservations. We run our main regression on this sample. In this exercise, the comparison group for OBC reserved village councils is all village councils where an OBC has been elected in open elections. As evident from column (4) of the same table, we find a similar result as our main specification, thus pointing out that the results have nothing to do with OBC leaders coming into power. It has to do with the reservation per se.

7 CONCLUSION

One persistent concern with affirmative action policies, in general, is that it intends to promote equity at the cost of efficiency. We shed some light on this debate by focusing on the world of politics where such policies have become very popular across the world. We, in this paper, examine the efficiency consequences of affirmative action policies in election. We build a model to study the effects of AA on electoral competition and public spending and then test the predictions in the context of election of presidents in village councils in the state of Rajasthan in India.

The insight from the model is that presence of "co-ethnic" preferences reduces electoral competition between candidates from two groups. This presents a moral hazard problem for the expected winning candidate. This is especially so when the population share of the groups are skewed, i.e., one group is relatively large in size. Therefore, in such a situation imposing a restriction on candidate entry in the form of an AA policy removes this friction from election and hence, electoral competition may go up leading to improvement in public goods provision. We exploit randomized reservation of president positions for a caste group (OBCs) in Rajasthan to show that AA indeed improves outcome in the relevant village councils. We then show that the effect is not driven by changes in preference or ability of the elected leader, and in fact, the effects on win margin are consistent with the model's prediction about how it is mediated through tightening of electoral competition.

Our results present novel evidence that it is possible to improve efficiency by imposing restriction on candidate entry. Though we ignore in our model the distributional consequences of such policies, the results imply that, at least in the world of politics, we need to reevaluate the equity vs efficiency trade-off of AA policies.

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Tables and Graphs

Figure 3: Distribution of non SC/ST population share

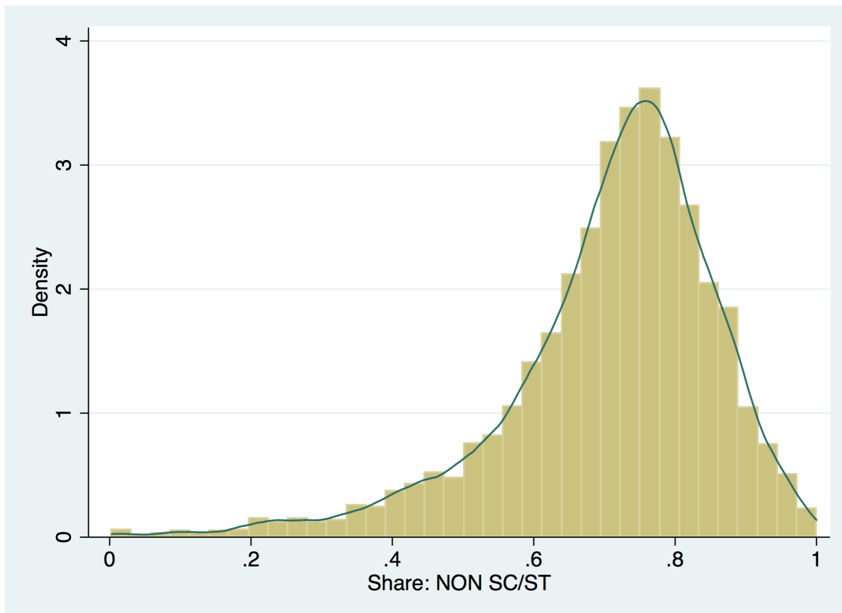

Figure 4: Demand for NREGS work different across groups

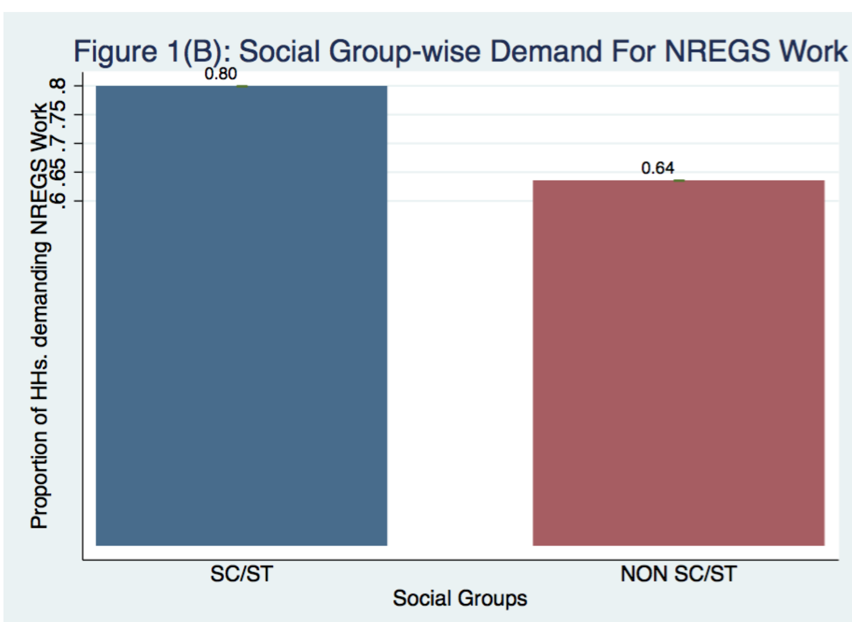

Figure 5: Differential Effects of OBC Reservation on NREGS Work Generation

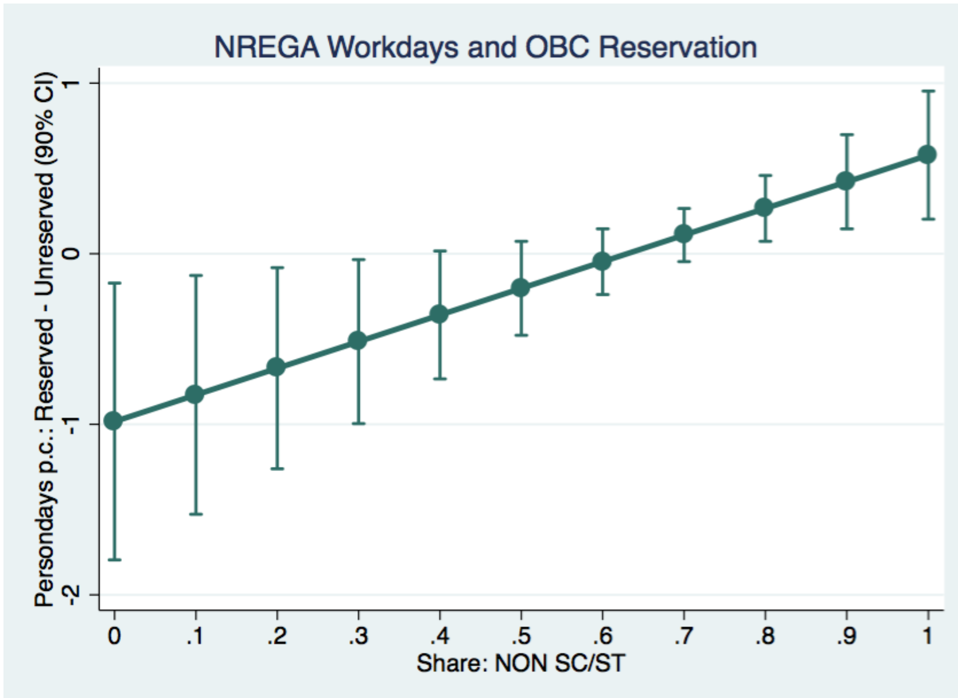

Figure 6: No Distributional Consequences of OBC Reservation

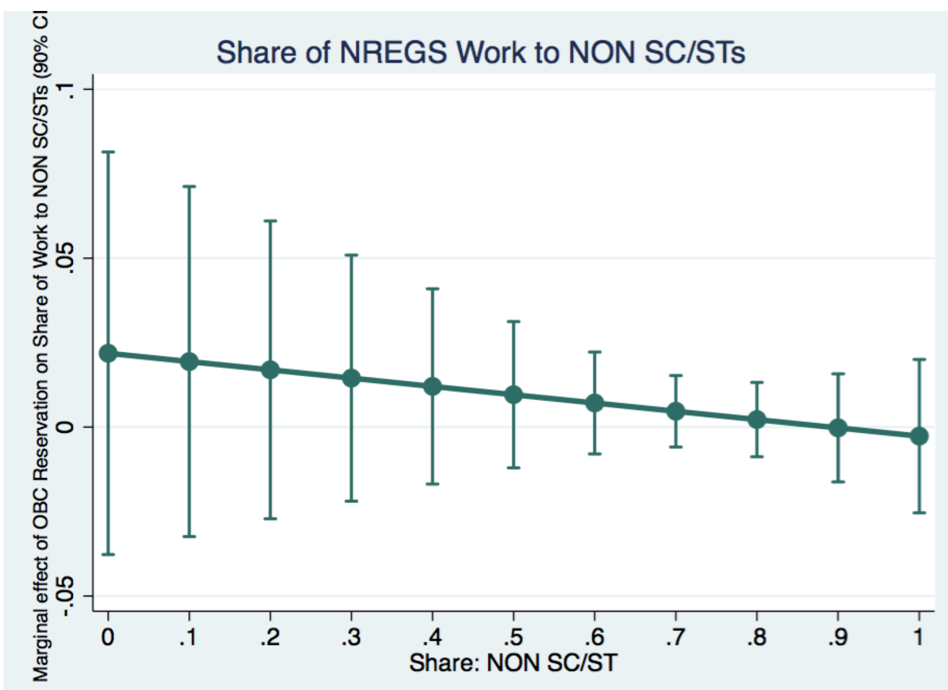

Figure 7: Differential Effects of OBC Reservation on Margin of Victory

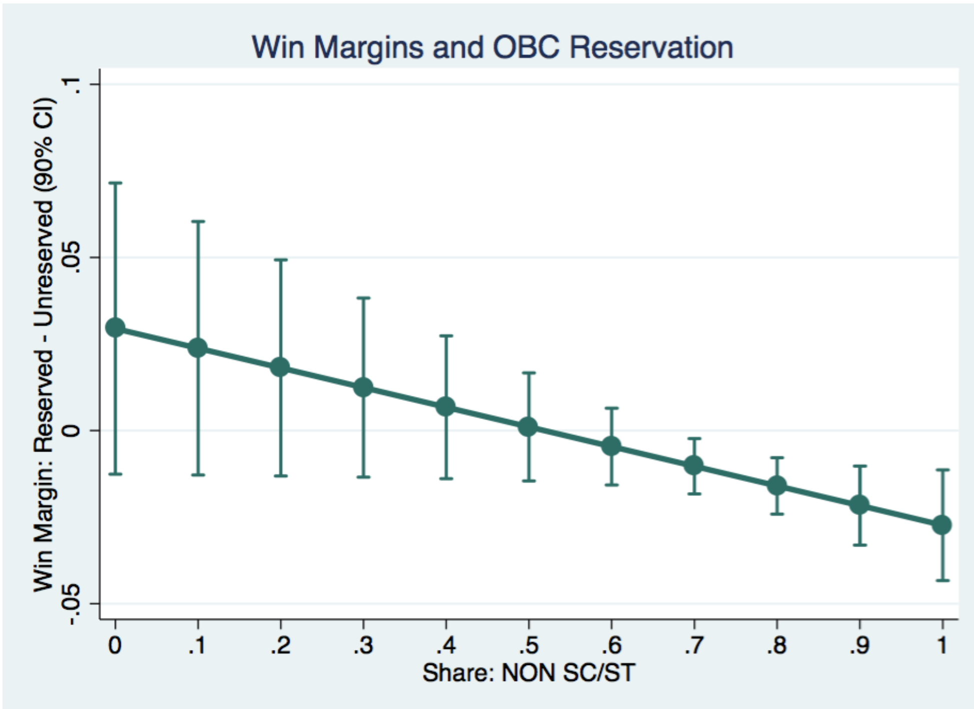

Table 1: Summary statistics

Variable	Mean	Std. Dev.	N
Number of NREGS Days Per Capita (Days p.c.)	3.6	4.2	5002
Number of NREGS Days per Household (Days p.H.)	19.4	23	5002
Number of NREGS Days per Job Card (Days p.JC)	16.5	16.2	4994
Win Margin	0.1	0.1	4319
Total Number of Candidates	6.18	3.75	4352
Share of population: NON SC/ST	0.7	0.2	5002
OBC Sarpanch reservation	0.2	0.4	5002
NON SC/ST Share * OBC Res	0.2	0.3	5002
Total Population (in thousands)	5.5	1.9	5002
Share of population: Females	0.5	0	5002
Share of population: Literates	0.5	0.1	5002
Dummy: Development Quartile 2 (DEV Q2)	0.2	0.4	5002
Dummy: Development Quartile 3 (DEV Q3)	0.3	0.4	5002
Dummy: Development Quartile 4 (Most Developed) (DEV Q4)	0.3	0.4	5002

Table 2: Balance Table

	Non SC/ST Share (1)	Demand (2)	Population (3)	Fem. Share (4)	Lit. Share (5)	Dev Q2 (6)	Dev Q3 (7)	Dev Q4 (8)
OBC Res	-0.01**	4.05	-0.00	-0.00	0.00	-0.01	0.02	0.00
	(0.00)	(12.32)	(0.06)	(0.00)	(0.00)	(0.01)	(0.01)	(0.01)
Constant	0.71***	1,077.31***	5.51***	0.48***	0.52***	0.23***	0.26***	0.27***
	(0.00)	(2.93)	(0.02)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Observations	5,002	5,002	5,002	5,002	5,002	5,002	5,002	5,002
R-squared	0.439	0.427	0.145	0.582	0.604	0.068	0.079	0.156
Block FE	YES	YES	YES	YES	YES	YES	YES	YES

Notes: The dependent variables (column-wise) are (i) population share of non SC/ST, (ii) NREGA demand, (iii) population, (iv) female population share, (v) share of population that's literate, (vi - viii) Village Asset Index second quartile to fourth quartile. All regressions include block fixed effects and cluster the standard errors at the block level. *** p<0.01, ** p<0.05, * p<0.1.

Table 3: Balance by Non SC/ST Share

	Demand (1)	Popultion (2)	Fem. Share (3)	Lit. Share (4)	Dev Q2 (5)	Dev Q3 (6)	Dev Q4 (7)	Wilks' Lamda (8)
Non SC/ST Share								
0-20 %	-59.54	-0.16	0.00	0.04	0.00	0.23	-0.38	0.78
	(75.92)	(0.60)	(0.01)	(0.07)	(0.00)	(0.34)	(0.32)	(p val. : 0.38)
20-40 %	82.57	0.38	0.00	-0.00	0.01	0.17	0.00	0.95
	(54.41)	(0.33)	(0.00)	(0.01)	(0.20)	(0.12)	(.)	(p val.: 0.52)
40-60%	-17.70	-0.07	-0.002**	0.01	0.04	0.04	0.02	0.99
	(41.82)	(0.15)	(0.001)	(0.01)	(0.06)	(0.06)	(0.05)	(p val.: 0.38)
60-80%	12.62	0.00	-0.00	-0.00	-0.01	0.00	0.01	0.99
	(18.30)	(0.09)	(0.00)	(0.00)	(0.02)	(0.02)	(0.02)	(p val. : 0.85)
80-100%	23.25	0.04	-0.00	0.00	-0.02	0.05	-0.02	0.99
	(28.40)	(0.15)	(0.00)	(0.00)	(0.03)	(0.03)	(0.03)	(p val.: 0.92)

Notes: Each cell in the table is the coefficient on OBC reservation dummy estimated from a separate regression. The columns (except column (8)) represent the dependent variables of the regression and the row specifies the sample on which the regression is done. For example, column (1) - row (1) reports the result of regressing NREGA demand on OBC reservation for GPs with non SC/ST population share between 0 and 20 %. All regressions include block fixed effects and cluster the standard errors at the block level. *** p<0.01, ** p<0.05, * p<0.1.

Table 4: Differential Effect of OBC Reservation on NREGA Work

	Person-days generated per capita			
	(1)	(2)	(3)	(4)
OBC Res (β_2)	0.13	0.12	-1.14**	-0.98**
	(0.10)	(0.10)	(0.51)	(0.49)
NON SC/ST Share (β_1)		-1.26***	-1.61***	-0.90**
		(0.40)	(0.44)	(0.41)
OBC Res * NON SC/ST Share (β_3)			1.75**	1.56**
			(0.72)	(0.69)
Observations	5,002	5,002	5,002	5,002
R-squared	0.577	0.578	0.579	0.599
Block FE	YES	YES	YES	YES

Notes: The dependent variable is the total person-days generated per capita under the NGREGS program in 2012-13 in the state of Rajasthan. The variable "NON SC/ST Share" is the proportion of GP population that belongs to the non SC/ST groups. "OBC Res" is a dummy that takes value one when the GP sarpanch election is reserved for the OBC group. The first three columns do not have any village level controls. In column (4), village level characteristics such as population, population share of women, literacy rate, village asset index etc have been included as controls. Standard errors are clustered at block level. *** p<0.01, ** p<0.05, * p<0.1.

Table 5: Differential Effect of OBC Reservation on Win margin and Number of Candidates

	Win margin				Number of candidates			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
OBC Res	-0.01**	-0.01**	-0.01**	0.03		-0.04	-0.08	-1.00
	(0.00)	(0.00)	(0.00)	(0.03)		(0.11)	(0.11)	(0.65)
NON SC/ST Share		-0.03	-0.04*	-0.03	0.27	0.27	-0.47	-0.73
		(0.02)	(0.02)	(0.02)	(0.46)	(0.46)	(0.45)	(0.48)
OBC Res * NON SC/ST Share				-0.06*				1.27
				(0.03)				(0.87)
Observations	4,319	4,319	4,319	4,319	4,352	4,352	4,352	4,352
R-squared	0.084	0.085	0.089	0.090	0.362	0.362	0.385	0.385
Block FE	YES	YES	YES	YES	YES	YES	YES	YES

Notes: The dependent variable for columns (1)-(4) is win margin and that for columns (5)-(8) is the number of candidates running in the 2010 Sarpanch elections in the state of Rajasthan. The variable "NON SC/ST Share" is the proportion of GP population that belongs to the non SC/ST groups. "OBC Res" is a dummy that takes value one when the GP sarpanch election is reserved for the OBC group. In all regressions village level characteristics such as population, population share of women, literacy rate, village asset index etc have been included as controls. Standard errors are clustered at block level. *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Table 6: Comparing OBC Sarpanches with the Same in Reserved GPs

	Person-days generated per capita			
	(1)	(2)	(3)	(4)
OBC Res	-0.98**	-0.98**	-1.33**	-1.50**
	(0.49)	(0.49)	(0.65)	(0.68)
NON SC/ST Share	-0.90**	-0.84**	-0.86*	-1.57**
	(0.41)	(0.41)	(0.44)	(0.75)
OBC Res * NON SC/ST Share	1.56**	1.56**	1.95**	2.11**
	(0.69)	(0.69)	(0.89)	(0.92)
OBC Sarpanch			0.45	-
			(0.46)	-
OBC Sarpanch * NON SC/ST Share			-0.44	-
			(0.64)	-
Observations	5,002	5,002	5,002	3,186
R-squared	0.599	0.600	0.600	0.620
Block FE	YES	YES	YES	YES

Notes: The dependent variable is the total person-days generated per capita under the NGREGS program in 2012-13 in the state of Rajasthan. The variable "NON SC/ST Share" is the proportion of GP population that belongs to the non SC/ST group. "OBC Res" is a dummy that takes value one when the GP sarpanch election is reserved for the OBC group. "OBC Sarpanch" is a dummy indicating whether the sarpanch is from the OBC group. Column (2) specification includes occupational patterns as additional controls. Column (4) runs the column (1) specification on the sample of GPs with OBC sarpanches only. In all the columns village level characteristics such as population, population share of women, literacy rate, village asset index have been included as controls. Standard errors are clustered at block level. *** p<0.01, ** p<0.05, * p<0.1.

A Theoretical Results

A.1 Proof of Proposition 1

Suppose the candidates (A, H) and (B, H) announce r_{AH} and r_{BH} as their platforms. Then voters from group A would vote for candidate (A, H) if

$$\gamma_A(r_{AH} - a_{BH}) + 1 - \sigma > \mu_i$$

where μ_i is voter i's idiosyncratic (relative) preference for the candidate (B, H) and σ is the overall (relative) popularity of the same candidate. Therefore, the vote share of candidate (A, H) from group A is given by,

$$V^A_{AH} = \mathbb{P}[\gamma_A(r_{AH} - r_{BH}) + 1 - \sigma > \mu_i] = \frac{1}{2} + [\gamma_A(r_{AH} - r_{BH}) + 1 - \sigma].$$

Similarly, the vote share of candidate (A, H) from group B is given by,

$$V^B_{AH} = \mathbb{P}[\gamma_B(r_{AH} - r_{BH}) - 1 - \sigma > \mu_i] = \frac{1}{2} + [\gamma_B(r_{AH} - r_{BH}) - 1 - \sigma].$$

Notice that the vote shares are random because the overall (relative) popularity of the candidates are random, which makes the preference of the median voter random. Therefore, the probability that candidate (A, H) wins is non-trivial and is given by,

$$\pi_{AH} = \mathbb{P}\left[\alpha_A V^A_{AH} + \alpha_B V^B_{AH} > \frac{1}{2}\right]$$

$$\Rightarrow \quad \pi_{AH} = \frac{1}{2} + \kappa(r_{AH} - r_{BH}) + (2\alpha_A - 1),$$

$$\text{where} \;\; \kappa = \alpha_A\gamma_A + \alpha_B\gamma_B$$

$$\Rightarrow \quad \pi_{BH} = 1 - \pi_{AH} = \frac{1}{2} + \kappa(r_{BH} - r_{AH}) - (2\alpha_A - 1)$$

Candidate (A, H) now solves the following problem:

$$\max_{r_{AH}} \pi_{AH}\left[1 - \frac{r_{AH}}{2\theta_H}\right]$$

which yields the following best response function:

$$r_{AH} = \theta_H + \frac{r_{BH}}{2} - \frac{(2\alpha_A - 1)\beta}{2\kappa} - \frac{1}{4\kappa}.$$

Similar optimization by candidate (B, H) results in the following best response function:

$$r_{BH} = \theta_H + \frac{r_{AH}}{2} - \frac{(2\alpha_A - 1)\beta}{2\kappa} - \frac{1}{4\kappa}.$$

As evident from the two equations, they entail a unique Nash Equilibrium given by,

$$r^o_{AH} = 2\theta_H - \frac{(2\alpha_A - 1)}{3\kappa} - \frac{1}{2\kappa},$$

$$r^o_{BH} = 2\theta_H + \frac{(2\alpha_A - 1)}{3\kappa} - \frac{1}{2\kappa}.$$

A.2 Proof of Proposition 2

Suppose that candidate from group B is (B, H). Now, group A is considering whether to put up the high or low ability candidate. If it puts up the candidate (A, L) then the equilibrium announcements by the candidates will be,

$$\tilde{r}^o_{AL} = 2(\frac{1}{3}\theta_H + \frac{2}{3}\theta_L) - \frac{(2\alpha_A - 1)}{3\kappa} - \frac{1}{2\kappa},$$

$$\tilde{r}^o_{BH} = 2(\frac{2}{3}\theta_H + \frac{1}{3}\theta_L) + \frac{(2\alpha_A - 1)}{3\kappa} - \frac{1}{2\kappa}.$$

Clearly, the expected public spending is lower in this case compared to the case where candidate (A, H) was put up since $\tilde{r}^o_{AL} < r^o_{AH}$ and $\tilde{r}^o_{BH} < r^o_{BH}$. Candidate (A, L) announces a lower public spending because she is less competent. Candidate from group B responds to that by announcing in equilibrium a lower public spending. Also, the probability that the candidate from group A wins is now,

$$\tilde{\pi}_{AL} = \frac{1}{2} + \kappa(\tilde{r}^o_{AL} - \tilde{r}^o_{BH}) + (2\alpha_A - 1) = \frac{1}{2} + \frac{2\kappa}{3}(\theta_L - \theta_H) + \frac{1}{3}(2\alpha_A - 1).$$

Therefore, $\tilde{\pi}_{AL} < \pi^o_{AH} = \pi_{AH}(r^o_{AH}, r^o_{BH})$. Hence, group A's payoff is unambiguously worse under candidate (A, L). Therefore, group A will choose the high ability candidate. Notice that this will be true even if group B had picked its low ability candidate for election. It is, therefore, a dominant strategy for A to pick its high ability candidate. By similar logic, it is also a dominant strategy for group B to choose its high ability candidate. Hence, both groups picking their high ability candidate is a unique Nash Equilibrium.

Equilibrium expected public spending is calculated using the formula

$$\mathbb{E}r^o = \pi^o_{AH} r^o_{AH} + (1 - \pi^o_{AH}) r^o_{BH}$$

which gives us the necessary result.

A.3 Proof of Proposition 3

Proof follows similar logic as in the proof of Proposition 1.

A.4 Proof of Proposition 4

We calculate the difference between $\mathbb{E}r^o$ and $\mathbb{E}r^*$ at $\alpha_A = 0$ and 1.

$$(\mathbb{E}r^o - \mathbb{E}r^*)\mid_{\alpha_A=0} = \frac{1}{\gamma_B}\left[\gamma_B(\theta_H-\theta_L)\left\{1-\frac{4}{9}\gamma_B(\theta_H-\theta_L)\right\}-\frac{2}{9}\right],$$

and

$$(\mathbb{E}r^o - \mathbb{E}r^*)\mid_{\alpha_A=1} = \frac{1}{\gamma_A}\left[\gamma_A(\theta_H-\theta_L)\left\{1-\frac{4}{9}\gamma_A(\theta_H-\theta_L)\right\}-\frac{2}{9}\right].$$

Therefore, $\gamma_B(\theta_H-\theta_L) > 0.25$ implies that $(\mathbb{E}r^o - \mathbb{E}r^*)\mid_{\alpha_A=0} > 0$ and, $\gamma_A(\theta_H-\theta_L) < 0.25$ implies that $(\mathbb{E}r^o - \mathbb{E}r^*)\mid_{\alpha_A=1} < 0$.

A.5 Proof of Proposition 5

Results (i), (ii) and (iii) follow from differentiating equilibrium expected public spending with respect to α_A. For (iv), observe that

$$\mathbb{E}r^* - \mathbb{E}r^o = \theta_H - \theta_L + \frac{4\kappa(\theta_H-\theta_L)^2}{9} + \frac{2(2\alpha_A-1)^2}{9\kappa}$$

$$\Rightarrow \quad \frac{\partial(\mathbb{E}r^* - \mathbb{E}r^o)}{\partial\alpha_A} = \frac{4(\theta_H-\theta_L)^2(\gamma_A-\gamma_B)}{9} - \frac{2(2\alpha_A-1)^2(\gamma_A-\gamma_B)}{9\kappa^2} + \frac{8(2\alpha_A-1)}{9\kappa}$$

$$\Rightarrow \quad \frac{\partial(\mathbb{E}r^* - \mathbb{E}r^o)}{\partial\alpha_A} = \frac{4(\theta_H-\theta_L)^2(\gamma_A-\gamma_B)}{9} + \frac{2(2\alpha_A-1)}{9\kappa^2}[2\kappa+\gamma_A+\gamma_B]$$

It is clear that

$$\frac{\partial(\mathbb{E}r^* - \mathbb{E}r^o)}{\partial\alpha_A}\mid_{\alpha_A=\frac{1}{2}} < 0 \quad \text{and} \quad \frac{\partial(\mathbb{E}r^* - \mathbb{E}r^o)}{\partial\alpha_A}\mid_{\alpha_A=1} > 0$$

given that $\gamma_A \leq \gamma_B$ and $\gamma_A < \frac{0.25}{\theta_H-\theta_L}$. Hence there exists $\tilde{\alpha}_A \in (0,1)$ such that the derivative is zero at $\tilde{\alpha}_A$ and positive for all $\alpha_A > \tilde{\alpha}_A$. Also, given that $\frac{\partial\mathbb{E}r^o}{\partial\alpha_A} < 0$ for $\alpha_A > \hat{\alpha}_A$, we get that $\tilde{\alpha}_A \geq \hat{\alpha}_A$.

A.6 Proof of Proposition 6

Given the assumption $\gamma_A < \frac{0.25}{\theta_H - \theta_L} < \gamma_B$, we have $\mathbb{E}r^* < \mathbb{E}r^o$ at $\alpha_A = 0$ and $\mathbb{E}r^* > \mathbb{E}r^o$ at $\alpha_A = 1$, by Proposition 4. Therefore, they must cross each other at least once. Since $(\mathbb{E}r^* - \mathbb{E}r^o)$ is increasing in α_A in the range $[0, \tilde{\alpha}_A]$, the curve $\mathbb{E}r^o$ remains above $\mathbb{E}r^*$ in that range. Therefore, they cross each other only once, say, at $\bar{\alpha}_A$. Evidently, $\bar{\alpha}_A > \tilde{\alpha}_A$ and $\tilde{\alpha}_A > \frac{1}{2}$.

A.7 Proof of Proposition 7

We calculate that

$$m^o = V^o_{AH} - V^o_{BH} = \frac{1}{2} + \kappa(r^o_{AH} - r^o_{BH}) + 2\alpha_A - 1 = \frac{1}{2} + \frac{1}{3}(2\alpha_A - 1)$$

$$m^* = V^*_{AH} - V^*_{BH} = \frac{1}{2} + \kappa(r^*_{AH} - r^*_{AL}) = \frac{1}{2} + \frac{2}{3}\kappa(\theta_H - \theta_L)$$

$$\Rightarrow \quad \frac{\partial(m^* - m^o)}{\partial \alpha_A} < 0.$$

Also,

$$m^* - m^o = \frac{2}{3}\kappa(\theta_H - \theta_L) - \frac{1}{3}(2\alpha_A - 1)$$

which implies that for $m^* > m^o$ to be true at $\alpha_A = 1$ we need $\gamma_A < \frac{0.5}{\theta_H - \theta_L}$. At $\alpha_A = 0$, we have $m^* < m^o$. Hence, $\mathring{\alpha}_A$, as specified in the Proposition, exists.