Research Unit for Statistical and Empirical Analysis in Social Sciences (Hi-Stat)

Does Political Reservation Affect Voting Behavior? Empirical Evidence from India

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September 2011

Hi-Stat Discussion Paper

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Empirical Evidence from India[1]

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Abstract

Using microdata from the National Election Study of the 2004 parliamentary elections in India, we empirically examine the impact of political reservation for disadvantaged castes and tribes on voting behavior. We find that in a reserved constituency, where only members of the disadvantaged castes can stand for election, voters of the disadvantaged castes are encouraged to vote. On the other hand, the system of constituency reservation does not have any impact on the turnout of voters belonging to other groups, including relatively upper caste voters. These voters, however, tend to change political party to vote for in reserved constituencies. These findings imply that there is a general acceptance of political reservation in the Indian electoral system.

Keywords: political reservation, voter turnout, castes, India

1. Introduction

Affirmative action is an important element in public policies for enhancing the welfares of disadvantaged groups, such as women and racial/religious minorities. Several countries have introduced procedures in their political systems to guarantee the representation of specific groups in the legislature.[3] India, where the hierarchical caste system has led to the economic deprivation of lower castes or tribes, has adopted affirmative action in the form of reserving seats in electoral constituencies since 1950. Constituencies in both federal and state legislatures are reserved for Scheduled Castes (SCs) and Scheduled Tribes (STs). In these reserved constituencies, only candidates belonging to the reserved groups can stand for election while the entire electorate votes, regardless of their social group. Political reservation has been extended to other social groups and to lower levels of public administration in recent years. While such reservations are expected to increase the political consciousness of minorities, it changes the nature of political competition and impinges on the freedom and choices of majorities. It is therefore an important question to examine the impact of political reservation on voting behavior.

There is an emerging empirical literature on the impact of mandated political

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[3] The quota system for women in parliaments is currently employed in more than 30 countries (World Bank 2001).

reservation on policy making in India in the last ten years. Pande (2003) demonstrates that the reservation of seats for scheduled castes and scheduled tribes in the state assembly increased the targeted transfers to disadvantaged groups. Chattopadhyay and Duflo (2004) use village council data from West Bengal and Rajasthan and show that the reservation of one third of the village council head positions for women had a positive impact on public investment in infrastructure that is directly relevant to the needs of women. Duflo (2005) reviews the studies on political reservation, concluding that there is a significant reallocation of public goods in favor of the group in power. In a more recent paper, Iyer et al. (2010) show that political reservation for women in village councils contributed to an increase in the reporting of crimes against women.

In contrast to these studies on the impact of political reservation on policy making, there is a dearth of empirical studies on how political reservation in India affects political participation. [4] The effect of political reservation on political participation could be different depending on voter characteristics. On one hand, while the reservation for disadvantaged castes is likely to encourage voters belonging to the same caste groups to participate in the elections, it discourages other voters who may quietly boycott the elections. On the other hand, when voters not belonging to the

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[4] See Washington (2006) for a related study on US politics. She shows that black candidates increased the turnout rates of both black and white voters.

reserved category form the majority in a reserved constituency, candidates need to appeal to them to win the election. The question as to which effect dominates is an empirical one whose evidence is lacking in the case of India. Thus, this paper focuses on the voter turnout among disadvantaged and other groups to study the impact of political reservation on voting behavior.

The empirical strategy used in this paper takes advantage of microdata of voters collected as part of the National Election Study 2004 (NES04), which is the most comprehensive survey on elections in India. An assessment of the reservation effect on voter turnout requires an estimation of the group-wise differences between voter turnout in a reserved constituency and that in a non-reserved (or general) constituency. To identify the causal effect of political reservation, we need to minimize bias due to omitted variables that vary across constituencies and affect voter turnout. The main identification strategy used in this paper is based on the regression-discontinuity design. The idea is that we compare constituencies where the population share of the disadvantaged group is barely less than the threshold for a reserved constituency on the one hand and constituencies where the population share of the disadvantaged group is barely more than the threshold. In other words, this is the first study on the causal impact of political reservation on voting behavior in India based on econometrically

identified empirical models.

The rest of the paper is organized as follows. Section 2 introduces the institutional background of political reservation in India. Section 3 discusses why the political reservation affects voting behavior. Section 4 explains the data and the methodology. Section 5 shows the results of the empirical analysis. The final section concludes.

2. Institutional Background

Since 1950, the Constitution of India has introduced several affirmative-action provisions to improve the social and economic conditions of disadvantaged groups. These provisions guarantee them seats in the national legislature called *Lok Sabha* (henceforth referred to as 'parliament' to indicate this legislature), in state legislatures called the State Assembly (referred to as 'assembly' below), and in village *Panchayats*, quotas in educational institutions, and posts in a certain proportion of government jobs. Articles 341 and 342 of the Constitution include a list of castes and tribes entitled to such provisions, which are referred to as Scheduled Castes and Scheduled Tribes.[5] The lists of SCs and STs (commonly referred as SC/STs) have been modified over the years.

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[5] A more precise definition of SCs and STs is given by Pande (2003).

According to the 2001 Population Census, the SC/ST population constitutes approximately 16% and 8% of the Indian population, respectively. Article 332 of the Indian Constitution provides for political reservation in the parliamentary and assembly elections for SC/STs. In a constituency reserved for SCs (called 'SC constituency' in the following sections), only individuals belonging to a caste included in the list of SCs can stand for election. Similarly, in a constituency reserved for STs (called 'ST constituency' below), only individuals belonging to a tribe included in the list of STs can stand for election. In both SC and ST constituencies, the entire electorate casts its vote regardless of the individual caste and tribal affiliations.

The procedure for determining reserved parliamentary constituencies is as follows. First, the number of reserved seats is assigned to a state according to the population of SC/STs in the state. Second, within the state, the status of SC/ST constituency is allocated according to their population share. Third, in the case of SC constituencies, the final status is adjusted so that the reserved constituencies are spatially dispersed within the state. The share of population is, therefore, the most important decisive variable on whether a constituency is reserved or not, but the assignment is fuzzy due to the consideration of spatial dispersal (a fuzzy regression discontinuity design using the econometric terminology).

Because the SC population is widely spread within a state, these voters are a minority population in every constituency, irrespective of its reservation status. At the same time, ST voters live in geographic isolation, making them the majority population in roughly half the constituencies reserved in their favor (Galanter 1984).

Despite the affirmative action, the disparity in the living standards between SC/ST households and other households remains stark. For example, Kurosaki (2011) uses microdata on the consumption expenditures in the 61st NSS (2004/05) and shows that the poverty head count index among SC households was 43.8% and that among ST households was 37.9%, much higher than that among non-SC/STs households. At the same time, this figure was 17.0% for OBCs (Other Backward Classes). He also shows that the within-group inequality was substantial among SC and ST households, which is consistent with the view that the benefits of the affirmative action have been distributed unequally within the disadvantaged group.

3. Why Do Reserved Constituencies Affect Voting Behavior?

To support our empirical models, this section briefly surveys the theoretical literature on a rational citizen's decision to vote or not. A rational citizen considers the difference in his/her expected utility in situations when his/her favorite candidate is

elected and when the opponent wins. According to probabilistic voting models (Lindbeck and Weibull 1987; Coughlin 1992; Persson and Tabellini 2000), the voter's utility is a function of ideology and policy. In India, caste ideology has been especially important in politics (Osborn 2001). Consequently, SC constituencies increase the turnout of SC voters by increasing their ideology-driven utility and decrease the turnout of non-SC voters by decreasing their ideology-driven utility since they have to cast their vote among lower caste candidates. However, if we take into account the cost of voting, the prediction could be that the political reservation through the ideology route may decrease the turnout of both groups since the individual's participation does not affect the results; that is, no matter what, the winner belongs to SCs.

On the other hand, if a voter considers not only ideology but also policy, non-SC voters might be encouraged to vote in a SC constituency through the following mechanism. Since non-SC voters are usually the majority in a SC constituency, SC candidates need to appeal to non-SC voters to win the election. For example, when the competition in a SC constituency is between a SC candidate who accommodates with the interests of the majority and another SC candidate who caters to the SC residents, the difference between the utility if the former candidate wins and if the latter candidate wins becomes substantial for non-SC voters. In such a case, non-SC voters are more

encouraged to vote in a SC constituency than in a general constituency. Both SC and non-SC voters can, therefore, be encouraged to vote in reserved constituencies.

There are explanations other than those based on probabilistic voting models that predict the relationship between reservation and voter turnout. For example, political reservation may raise the SC/ST turnout owing to an increase in knowledge or focus on the elections.[6] In reserved constituencies, the press and political parties may give more attention to policies focused on SC/STs.

In summary, how the political reservation affects the turnout of SC, ST, and other voters is theoretically ambiguous. This paper, therefore, empirically investigates how the political reservation affects voter turnout.

4. Data and Methodology

4.1. Data

Our main data source is the National Election Study 2004 (NES04) conducted by the Centre for the Study of Developing Societies (CSDS). It offers the largest and most comprehensive election database in India. Microdata on approximately 27,000 voters spread across 420 randomly selected parliamentary constituencies are available

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[6] Banerjee et al. (2010) show that the campaign with information on qualifications of candidates and the performance of incumbents increased the voter turnout in Delhi.

for our analysis. A sample of voters was interviewed after the 2004 parliamentary elections on their voting behavior, political opinion, and background. Variables at hand include voting behavior (turnout and party to vote), region (parliamentary and assembly constituencies), caste (SC, ST, OBC, or others), and religion (Hindu, Muslim, or others).

Similar to voting surveys in other countries (Silver et al. 1986), NES04 also suffers from the problem of overreporting, that is, while the turnout rate released by the Election Commission of India is 58.1%, the turnout calculated by NES04 is 87.2%. Given this magnitude of over-reporting, we need to investigate whether the use of NES04 microdata enables us a reliable test for the difference in voting behavior among different groups of voters. As shown by Hausman et al. (1998), the misclassification in the dependent variable results in a bias on the regression coefficients but the extent of the bias is proportional across all explanatory variables if the misclassification probability is independent of the explanatory variables. If the extent of the bias is proportional across all explanatory variables, the test for the difference in voting behavior among different groups of voters remains valid, even with the existence of overreporting. Therefore, we run a regression model with the constituency-level turnout rate as the dependent variable and variables used in our empirical analysis as the explanatory variables. As shown in the Appendix, none of these explanatory variables

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have a statistically significant coefficient, confirming the econometric validity of our analysis using the NES04 microdata.

To control for other demographic variables that are likely to have an effect on voter turnout, in the regression, we use the literacy rate, the population share of the rural population, SCs (STs), and workers in ten industrial categories. Data on these variables are not available at the constituency level. Therefore, we compiled this from the 1991 Population Census. Since the boundaries of the census districts are different from those of the constituencies, we generated constituency-level data from census information using weights based on the share each constituency occupies in each of census districts.[7]

4.2. Methodology

The fundamental identification problem in generating an unbiased estimate for a causal effect of reservation on voting behavior arises from the likelihood that whether or not a voter goes for elections in a given constituency can be affected by unobserved characteristics, which may be correlated with the reservation status (endogeneity problem). To deal with this endogeneity issue, our main strategy is to use a regression-discontinuity (RD) design since the dichotomous treatment – reservation

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[7] This methodology was used by Banerjee and Somanathan (2007). Since the weight provided by Rohini Somanathan is only for the 1991 Census, we use the 1991 Population Census. We thank Rohini Somonathan for kindly providing the mapping data.

status – is a deterministic function of a single and observable variable, the SC/ST population share. The idea is that we compare non-SC (non-ST) constituencies where the population share of the disadvantaged group is barely less than the threshold for a reserved constituency on the one hand and SC (ST) constituencies where the population share of the disadvantaged group is barely more than the threshold.

The RD model for the SC reservation impact is described as follows:

$$Y_i^k = f^k(Z_p \mid D_p = 0)*(1 - D_p) + g^k(Z_p \mid D_p = 1)*D_p + X_p \beta^k + State_p^k + \varepsilon_i^k , \qquad (1)$$

where superscript k denotes the group affiliation of voter i (e.g. a SC voter, non-SC voter, OBC voter) and Y_i is a dummy variable that takes on a value of one if voter i went to vote. D_p is a dummy variable that takes on a value of one if constituency p where voter i resides is designated as a SC constituency. Z_p is the population share of SCs in constituency p. $f(.)$ is a continuous function that flexibly controls for constituency-level unobservables when the constituency is a SC constituency and $g(.)$ is a similar function when the constituency is not a SC constituency. X_p represents demographic variables (the literacy rate, the population share of rural citizens, the occupational shares), whose coefficient vector β to be estimated, $State_p$ is the state fixed effect, and ε_i is an error term.

By testing the statistical difference of $f(.)$ and $g(.)$ at the threshold point of Z_p where the probability of $D_p = 1$ goes up discontinuously, we can test the causal effect of reservation on voter turnout. In the context of U.S. House elections, Lee (2008) shows that this strategy provides quasi-random variation from which the RD impact can be properly identified.

Because our sample size is not large in the vicinity of the threshold point, we follow the empirical strategy adopted by Ferreira and Gyourko (2009) in analyzing U.S. mayor elections. Thus, we use the entire sample and employ a parametric approach in specifying functions $f(.)$ and $g(.)$ as a polynomial up to the third order. Furthermore, if the coefficients on the linear, quadratic, and cubic terms of Z_p are the same between the two functions, the RD impact is reduced to coefficient b_d^k in the following specification:

$$Y_i^k = b_0^k + b_d^k D_p + b_1^k Z_p + b_2^k Z_p^2 + b_3^k Z_p^3 + X_p \beta^k + State_p^k + \varepsilon_i^k , \qquad (2)$$

where b's are coefficients to be estimated. Models in equations (1) and (2) are applied to voters excluding those in ST constituencies. These voters are classified into SC and non-SC voters so that separate regressions are implemented. The category of non-SC voters can be further divided. In this paper, we report results when OBCs and other

Hindu voters are distinguished.[8] These two sub-categories are picked up from non-SC

voters because we expect they might hesitate to vote for lower caste candidates given

that they form the majority in almost all constituencies and belong to relatively higher

castes.

To examine the impact of ST reservation on voter turnout, equations (1) and (2)

are adjusted slightly and applied to voters, excluding those in SC constituencies.

Namely, D_p is now a dummy variable that takes on the value of one if constituency p is

designated as a ST constituency and Z_p is the population share of STs in constituency p.

There are two potential problems in applying the RD approach. First, the

forcing variable, Z_p (the population share of SCs/STs in constituency p), is measured

with error. We compiled Z_p from the population census data at the district level, as

mentioned in the previous subsection. For robustness check with respect to this

measurement error, we also use the SC/ST shares calculated from the NES04 microdata.

Second, the relation between the forcing variable and the treatment (D_p) is

fuzzy due to institutional reasons as well. As mentioned in Section 2, the spatial

dispersal is also considered in assigning the reservation status to a constituency. The

identifying assumption under a fuzzy RD design is that the assignment of reservations is

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[8]Other Hindu is defined as Hindu voters other than SCs and OBCs voters. They represent relatively
upper caste voters.

random around the threshold. We assume that this assumption holds.

Considering these potential problems, we also estimate the causal effect of reservation through the difference-in-difference (DID) approach as a method for a robustness check. The DID model for the SC reservation is:

$$Y_i = b_0 + b_1 D_p + b_2 D_i + b_d D_p\, D_i + X_p\, \beta + State_p + \varepsilon_i\,, \quad (3)$$

where b's are coefficients to be estimated, D_p is the dummy variable for a SC constituency and D_i is the dummy variable for a SC voter. Since b_1 controls the unobservable common to all SC constituencies and b_2 controls the unobservable common to all SC voters, the DID coefficient b_d shows the causal impact of SC reservation on the turnout of SC voters. The DID approach identifies the effect of SC reservation on SC voters using the response of non-SC voters as a reference so that we cannot identify separately the effects of SC reservation on SC and non-SC voters. This is one of the reasons we prefer to use RD as our main specification and DID as the robustness check.

5. Results

5.1. Political reservation and turnout

Excluding the union territory, we use 20,938 voters spread over 393 parliament constituencies (60 SC, 33 ST, and 300 general constituencies) in 19 states for regression analysis. Table 1 reports the descriptive statistics. While the sample shares of SCs and STs in the table are 14.7% and 9.9% respectively, the population shares of SCs and STs, according to the 2001 Census, are 16.4% and 7.9% respectively. We regard the NES04 sample to be reasonably representative of the Indian population.

Since we are not able to reject the null hypothesis that the coefficients on the linear, quadratic, and cubic terms of Z_p are the same between function $f(.)$ and $g(.)$ in equation (1),[9] the RD results based on equation (2) are reported in Table 2. The coefficients for the SC/ST constituency dummies are multiplied by hundred for easy interpretation.[10] Column (1) in Table 2(a) indicates that SC voters are encouraged to vote in a SC constituency with the turnout rate of SC voters in a SC constituency is 4.524 percentage points higher than the turnout rate of SC voters in a general constituency. The difference is not only statistically significant but also politically

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[9] For the specification of (1) in Table 2(a), F statistics for the null hypothesis was 1.28 with p-value of 0.28, and for the specification of (1) in Table 2(b), F statistics was 0.17 with p-value of 0.90.
[10] The four coefficients in Table 2(a) on the SC constituency dummy are reported in Mori and Kurosaki (2011).

significant – 4.5 percentage points compared with the national turnout rate of 58.1% in the 2004 parliament election.

As can be seen in column (2), the turnout rate of non-SC voters in a SC constituency is slightly less than that in a general constituency although the difference is statistically insignificant. Examining the possibility of a heterogeneous response among non-SC voters, columns (3) and (4) show the impact of SC reservations on 'other Hindu' and OBC voters. Both the coefficients on the SC constituency dummy are small and statistically insignificant. These findings imply that non-SCs voters are not discouraged to vote in a SC constituency, suggesting a general acceptance of political reservation in the Indian electoral system.

Table 2(b) shows the RD results for the impact of ST reservation. As shown in column (1), the estimated coefficient on the ST constituency dummy is small and statistically insignificant. Columns (2)–(4) demonstrate that the turnout rates of non-ST, other Hindu, and OBC voters in a ST constituency are not significantly different from their turnout rates in a general constituency either.

These results that are based on the RD approach are further confirmed by a robustness check that uses the DID approach. As shown in columns (1) and (2) in Table 3(a), the estimated DID impact of SC reservation is 5.23 and statistically significant.

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Therefore, the turnout rate of SC voters in a SC constituency is 5.23 percentage points higher than that in a general constituency. All other cross terms have insignificant coefficients.

Both RD and DID results robustly demonstrate that SC voters are encouraged to vote in a SC constituency while non-SC voters are neither encouraged nor discouraged by reservations for SCs. On the other hand, voters are not affected much by ST reservation.[11] One of the reasons that we cannot find a significant impact of ST reservations on voter turnout could be the smaller number of ST voters/constituencies and the spatial concentration of ST voters in such fewer constituencies. Another reason could be the lack of political cooperation among ST voters. According to Mehta and Shepherd (2006), the reasons for the lack of political voice for STs could be many, including a fractured ethnicity and lack of leadership. Since statistically significant results are not obtained regarding the impact of political reservations for STs, the subsequent analyses are limited to the impact of SC reservations.

5.2. Political reservation and habit forming

Given that we found that SC reservation increases SC voters' turnout robustly

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[11] Apart from a robustness check, we also re-estimated the RD model using the sample share of SC/STs in a constituency compiled from NES04, instead of that based on the census data. The results (available on request) are qualitatively similar to those reported in Table 2.

in the parliamentary elections, could we expect the impact to be sustained if reservations for SCs were abolished? As is often the case with affirmative action, reservation is not a permanent system and is expected to be withdrawn should the day come when there is no political discrimination against disadvantaged groups. Therefore, it is also important to examine how voters in reserved constituencies change their behavior if the political reservation is abolished. It is of course difficult to directly test the effect of a withdrawal of affirmative action since it is not politically easy to end the reservation system. However, it is possible to test this indirectly, which is the theme of this subsection. What follows is an investigation into this issue indirectly using the spatial configuration of SC reservation in the state legislative assembly.

Since there has been little change in the reservation status of the targeted constituencies since 1977, the analysis in the previous subsection cannot accurately distinguish whether the positive impact on SC voters is permanent (sustainable in the event of de-reservation) or contingent on the reservation in force (not sustainable in the event of de-reservation). As Gerber (2003) shows, voting is habit forming. Therefore, it is possible that SC voters in reserved constituencies have developed a habit of voting, resulting in a permanent impact. Another possibility is that in reserved constituencies, the political organization of SCs has been developed and the political consciousness of

SC voters has been increased. Yadav (1999) demonstrates that, since the 1990s, the number of SC voters who attend election meetings and join the party membership have increased. Therefore, in this subsection, we investigate whether in a general constituency for the parliamentary elections, the turnout rate of SC voters who have experienced a reserved constituency in the assembly elections is higher than that of SC voters who have never experienced the reservation.

Several assembly constituencies are comprised in one parliamentary constituency. The assignment of reserved constituencies for the assembly elections is determined independently from that for the parliament. There are, therefore, voters who belong to a SC constituency for the assembly elections while belonging to a general constituency for the parliament elections. Using this variation, we can identify the indirect effects of the experiment of reserved constituencies in the assembly elections on voter turnout in the parliament elections.

The empirical model under the RD approach is a slightly revised version of equation (2) applied to a part of SC voters. Instead of using all SC voters excluding those in ST constituencies (column (1), Table 2(a)), we now restrict the sample to SC voters residing in a general constituency for the parliamentary elections. Then D_p is replaced by a dummy for a SC assembly constituency, Z_p is replaced by the SC

population share in the assembly constituency calculated from the NES04 data and the

term $X_p \, \beta^k + State_p{}^k$ is replaced by the parliamentary constituency fixed effects.[12] Now,

the RD parameter $b_d{}^k$ shows the difference in voting behavior between those SC voters

who have experienced SC reservation and those who have not. If the parameter is

positive, it indicates a habit-forming effect.

The results are shown in Table 4. Both the RD parameters $b_d{}^k$ are negative,

showing the absence of a habit-forming effect. The coefficients are statistically

insignificant in both columns (1) and (2). Since these are our favorite specifications, we

conclude that the impacts of political reservation are not long-term but tentative.

The negative RD coefficient in Table 4 appears to suggest that once a SC voter

experiences voting in a SC constituency (in the state assembly election), he/she is

discouraged to vote in a general constituency (in the parliament election). This

discouragement effect could be explained by a rational voter's behavior with

ideology-driven utility and fixed voting cost as follows. A SC voter in a SC assembly

constituency and a general parliament constituency compares the benefits of voting in

the state assembly election and the national parliamentary elections. Based on the

comparative benefits, he/she finds the former more attractive, reducing the probability

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[12] Other demographic variable (X_p) cannot be controlled since there is no mapping information to translate the census data into variables at the assembly constituency level.

of voting in the parliamentary elections.

The discouragement effect is also suggested by the DID results reported in Table 5. Equation (3) is extended to include a dummy variable $D_p{'}$ for SC constituency in the state assembly elections and the coefficient on the cross term of D_i and $D_p{'}$ identifies the DID effect. The coefficients are around -7 percentage points and statistically significant.

These results robustly suggest the absence of a habit-forming effect connecting the SC reservations in the state assembly elections to the voting behavior for the parliamentary elections. On the contrary, a discouragement effect is suggested. Although not conclusive, our results suggest a possibility that the positive effects of SC reservation on SC voters' turnout will disappear once the reservation is withdrawn.

5.3. Political reservation and party choice

Both our RD and DID results suggested that the turnout rate of non-SC voters in a SC constituency was not statistically different from that in a general constituency (subsection 5.1). However, this does not imply that political reservation does not affect the voting behavior of non-SC voters at all. This subsection examines another aspect of the voting behavior: party choice.

As discussed in Section 3, when the competition in a SC constituency is between a SC candidate who accommodates the interests of the majority and another SC candidate who caters to the SC residents, a non-SC voter (and especially an upper caste voter) is more likely to vote for the former. In other words, upper caste voters in an SC constituency have stronger incentive to cast their vote in favor of the political party that stands for upper castes than upper caste voters in a general constituency. We thus compare the voter's choice of a political party in a SC constituency and that in a general constituency. If the difference is significant, it shows the effect of political reservation on party choice.

To simplify the analysis, we focus on three parties: Bahujan Samaj Party (BSP), Bharatiya Janata Party (BJP), and Indian National Congress (INC). BSP is a national party mainly supported by SC voters, while BJP's political support is more from among the upper castes. INC supporters are more widely spread across social groups. At the same time, the BSP's geographical coverage is more limited than that of the BJP and INC.

We use a multinomial logit model to investigate the effect of political reservation on party choice. Both RD and DID specifications are attempted. The dependent variable is the index variable of party choice from among the BJP, INC, BSP,

and others. The explanatory variables are the same as those used in subsection 5.1. The

constituencies used in regressions are limited to those in which all three parties fielded

their candidates. ST constituencies are excluded from the analysis. Our final sample

thus constitutes of 9,292 voters (1,553 SC and 7,739 non-SC voters).

RD results are shown in Table 6. Since the base party is the BJP, a positive

(negative) coefficient implies that being in a SC constituency increases (decreases) the

likelihood that a voter casts his/her vote in favor of the INC, BSP, or other parties,

relative to the BJP. By taking the exponential of the coefficient, we can obtain the

relative risk ratio with the choice of BJP as the reference at unity. All the RD

coefficients among SC voters are small and statistically insignificant (column (1)). This

result indicates that the party choice of SC voters in a SC constituency is statistically not

different from that in a general constituency.

In contrast, the RD coefficient among non-SC voters to choose the BSP relative

to the BJP is negative and statistically significant (column (2)). As shown in columns (3)

and (4), most of this negative effect is attributable to the party choice by other Hindu

voters. This finding appears to suggest that non-SC voters in a SC constituency,

especially those belonging to upper castes, attempt to rebel against the party supported

by SCs.

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DID results[13] reported in Table 7 are not very different from the RD results. For SC voters, choosing a party to vote is not affected by the reservation status of their constituency, while the same choice of other Hindu voters turns largely against the BSP if the constituency is reserved for SCs. However, the latter effect is not statistically significant at the conventional level.

This subsection has shown that non-SC voters changed their party choice under the condition of SC reservation. In this sense, political reservation affects the voting behavior of non-SC voters. Extending the analysis of party choice to include other parties and incorporating detailed party alliance relations is left for further research.

6. Conclusion

This paper is the first attempt to quantify how voters belonging to different social groups respond to political affirmative action with respect to voting behavior. Using microdata on voters in an election survey in India, we found several relations unknown in literature. First, political reservation increases the turnout of SC voters in parliamentary constituencies reserved for SCs. This finding indicates that the

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[13] DID multinomial regression results confirm our expectations regarding the general tendency of each group in choosing the political party to vote. Coefficients on the voter's group identity dummies show that SC voters are more likely to vote for BSP, other Hindu voters are more likely to vote for BJP and less for BSP, and OBC voters are more likely to vote for BJP. Since this paper is mainly interested in whether such general tendencies change according to the status of reservation, we only report DID coefficients in Table 7. Full estimation results are available on request.

reservation not only guarantees parliamentary representation but also promotes the mass participation of disadvantaged classes. Second, non-SC voters, including relatively higher caste voters, are not discouraged to vote in SC constituencies but change their vote for the political parties. This implies that they quietly accept political reservation in the Indian electoral system. Third, within non-reserved parliamentary constituencies, the turnout rate of SC voters in a SC-reserved state assembly constituency is not larger than in a non-reserved assembly constituency. The last finding may suggest that the positive impact of SC reservation on the turnout rate of SC voters is likely to disappear if reservation is withdrawn. These findings therefore clarify how the electoral reservation in India affects voting behavior. They provide useful information to other developing countries with ethnic or religious diversity on how upper caste voters accommodate the political reservations system.

However, there are several limitations to generalize our findings. First, the effect of political reservation on voting behavior at lower levels (such as local councils and state assemblies) may be different from the effects witnessed at the national parliamentary level. Since the function and size of governance are different, depending on the level of councils, the utility function of the voter may be also different. Second, since our analysis is static in nature and only exploits the spatial variations in

parliamentary constituencies, we cannot derive a firm conclusion on the changes in

electorate behavior. The dynamics of changes in voting behavior using previous election

surveys is another area for additional extended research. Exploring these issues is left

for further study.

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Table 1. Descriptive Statistics

Variable	Mean	St. Dev	Minimum	Maximum
Voter-level variables:				
Dummy for turnout	0.872	0.334	0	1
Dummy for SC voter	0.147	0.354	0	1
Dummy for ST voter	0.099	0.298	0	1
Dummy for other Hindu voter	0.244	0.430	0	1
Dummy for OBC voter	0.326	0.469	0	1
Constituency-level variables:				
Dummy for SC constituency	0.156	0.362	0	1
Dummy for ST constituency	0.086	0.280	0	1
Population share of rural residents	0.772	0.161	0	0.995
Population share of SCs	0.159	0.070	0.020	0.380
Population share of STs	0.093	0.141	0	0.703
Literacy rate	0.433	0.136	0.184	0.851
Population share by industry:				
Cultivators	0.141	0.062	0.000	0.322
Agricultural laborers	0.085	0.056	0.000	0.546
Livestock	0.009	0.015	0.000	0.110
Mining & quarrying	0.002	0.005	0.000	0.065
Household industry	0.007	0.007	0.001	0.069
Manufacturing	0.024	0.022	0.002	0.122
Construction	0.007	0.004	0.001	0.027
Trade & commerce	0.024	0.012	0.007	0.097
Transport, storage, & communicate.	0.009	0.006	0.001	0.039
Other services	0.034	0.013	0.004	0.097

Notes: The number of observations is 20,938. This table reports the simple average (standard deviation) of 20,938 sample voters. Voter-level variables are compiled from the NES04 microdata while constituency-level variables are compiled from the 1991 Population Census data.

Table 2. Political Reservation and Voter Turnout, 2004 Parliamentary Elections (Regression Discontinuity: RD)

(a) SC Reservation and Voter Turnout

Voter's category:	SC	Non-SC	Other Hindu	OBC
	(1)	(2)	(3)	(4)
SC constituency dummy	**4.524+**	**-0.741**	**-0.836**	**-0.906**
	[2.304]	**[1.361]**	**[2.156]**	**[1.821]**
Population share of SCs	2.508	-0.003	0.337	-0.952
	[1.904]	[0.793]	[1.304]	[1.184]
Square of population share of SCs	-14.335	-0.495	-0.621	3.538
	[10.016]	[4.604]	[7.697]	[7.118]
Cube of population share of SCs	22.128	-0.362	-1.723	-5.441
	[16.023]	[7.780]	[13.800]	[12.890]
Number of observations	2,920	16,218	4,912	6,457
R-squared	0.03	0.02	0.02	0.04

(b) ST Reservation and Voter Turnout

Voter's category:	ST	Non-ST	Other Hindu	OBC
	(1)	(2)	(3)	(4)
ST constituency dummy	**0.824**	**-2.738**	**-3.117**	**-5.018**
	[4.331]	**[2.553]**	**[4.135]**	**[3.817]**
Population share of STs	-0.771	-0.363	-0.606+	-0.432
	[0.559]	[0.224]	[0.362]	[0.317]
Square of population share of STs	3.054	1.300	2.007	1.873
	[1.852]	[0.999]	[1.653]	[1.347]
Cube of population share of STs	-2.876+	-0.991	-1.513	-1.723
	[1.700]	[1.091]	[1.996]	[1.369]
Number of observations	1,899	15,781	4,342	5,856
R-squared	0.05	0.02	0.03	0.03

Notes: RD coefficients to identify the reservation impact are shown in bold fonts. The dependent variable is the dummy for turnout in the 2004 parliamentary elections. Robust standard errors clustered at the parliamentary constituency level are reported in brackets. **, * and + denote statistical significance at the 1%, 5%, and 10% levels respectively. Regressions include state fixed effects, the literacy rate, the population share of rural residents, and the population share of workers in each industrial category. In part (a), sample voters in ST constituencies are excluded from the analysis; in part (b), sample voters in SC constituencies are excluded.

Table 3. Political Reservation and Voter Turnout, 2004 Parliamentary Elections (Difference-in-Difference: DID)

	(a) SC Reservation		(b) ST Reservation	
	(1)	(2)	(3)	(4)
SC constituency dummy	-0.825	-0.815		
	[1.390]	[2.049]		
ST constituency dummy			-2.094	-0.652
			[2.653]	[2.663]
SC voter dummy	-0.617	-0.672		
	[0.893]	[1.101]		
ST voter dummy			-1.425	-1.501
			[1.417]	[1.454]
Other Hindu voter dummy		0.029		0.064
		[0.982]		[0.852]
OBC voter dummy		-0.149		-0.221
		[0.900]		[0.771]
SC const. * SC voter dummy	**5.234****	**5.230***		
	[2.009]	**[2.459]**		
ST const. * ST voter dummy			**2.192**	**0.620**
			[2.859]	**[3.206]**
SC const. * other Hindu dummy		**0.112**		
		[2.530]		
SC const. * OBC voter dummy		**-0.124**		
		[2.677]		
ST const. * other Hindu dummy				**-0.844**
				[2.707]
ST const.* OBC voter dummy				**-3.222**
				[2.254]
Number of observations	19,138	19,138	17,680	17,680
R-squared	0.020	0.020	0.020	0.020

Notes: DID coefficients to identify the reservation impact are shown in bold fonts. The dependent variable is the dummy for turnout in the 2004 parliamentary elections. Robust standard errors clustered at the parliament constituency level are reported in brackets. **, * and + denote statistical significance at the 1%, 5%, and 10% levels respectively. Regressions include state fixed effects, the literacy rate, the population share of rural residents, and the population share of workers in each industrial category. In part (a), sample voters in ST constituencies are excluded from the analysis; in part (b), sample voters in SC constituencies are excluded.

Table 4. Political Reservation in Assembly Elections and Voter Turnout in the 2004 Parliamentary Elections (Regression Discontinuity: RD)

	(1)	(2)
Dummy for a SC constituency in the assembly election	-5.763 [3.327]	-4.607 [3.428]
Parliament constituency fixed effect	No	Yes
R-squared	0.004	0.213

Notes: RD coefficients to identify the reservation impact are reported in this table. Regressions also include the population share of SCs (linear, quadratic, and cubic terms). The dependent variable is the dummy for turnout in the 2004 parliament election. Robust standard errors clustered at the state assembly constituency level are reported in brackets. **, *, and + denote statistical significance at the 1%, 5%, and 10% levels respectively. The population share of SCs at the state assembly constituency level was calculated from the NES04 microdata. Since the sample is restricted to voters in a general constituency in the national parliament election, the number of observations is 2,197.

Table 5. Political Reservation in Assembly Election and Voter Turnout in the 2004 Parliament Election (Difference-in-Difference: DID)

	(1)	(2)
SC const. in assembly elect. *SC voters	-6.267*	-7.209*
	[2.640]	[2.860]
Parliament constituency fixed effect	No	Yes
R-squared	0.002	0.076

Notes: DID coefficients to identify the reservation impact are reported in this table. Regressions also include the dummy for a SC constituency in the state assembly election, the dummy for a SC constituency in the parliament election, the dummy for a SC voter, and three cross terms of these three dummy variables. The dependent variable is the dummy for turnout in the 2004 parliament election. Robust standard errors clustered at the state assembly constituency level are reported in brackets. **, * and + denote statistical significance at the 1%, 5%, and 10% levels respectively. Since voters belonging to a ST parliament constituency and voters belonging to a ST assembly constituency inside a non-ST parliament constituency are excluded, the number of observations is 18,707.

Table 6. Political Reservation and Party Choice

(Regression Discontinuity: RD)

	Voter's category:			
	SC	Non-SC	Other Hindu	OBC
Choosing the party (ref.=BJP)	(1)	(2)	(3)	(4)
INC if in SC constituency	0.128	-0.037	-0.089	-0.187
	[0.310]	[0.181]	[0.320]	[0.226]
BSP if in SC constituency	-0.061	-0.657*	-2.483*	-0.735
	[0.374]	[0.372]	[1.351]	[0.488]
Others if in SC constituency	-0.100	0.222	-2.483*	0.195
	[0.278]	[0.166]	[1.351]	[0.200]
Number of observations	1,553	7,739	2,617	3,121

Notes: RD coefficients to identify the reservation impact are reported in this table. Regressions also include the population share of SCs (linear, quadratic, and cubic terms), state fixed effects, the literacy rate, the population share of rural residents and the population share of workers in each industrial category. The dependent variable is an indicator variable of party choice in the 2004 parliamentary elections and the estimated model is a multinomial logit. Robust standard errors clustered at the parliamentary constituency level are reported in brackets. **, * and + denote statistical significance at the 1%, 5%, and 10% levels respectively. The sample is restricted to voters in a constituency where INC, BJP, and BSP all fielded their candidates.

Table 7. Political Reservation and Party Choice

(Difference-in-Difference: DID)

	(1) Comparison of SC vs. non-SC voters			(2) Comparison of SC, other Hindu, OBC and other voters		
	INC	BSP	Others	INC	BSP	Others
SC const. * SC voter dummy	0.008 [0.296]	0.347 [0.393]	-0.168 [0.257]	0.141 [0.395]	0.770 [0.588]	-0.022 [0.334]
SC const. * other Hindu dummy				0.362 [0.376]	-0.849 [1.136]	0.222 [0.356]
SC const. * OBC dummy				0.056 [0.306]	0.816 [0.622]	0.197 [0.273]

Notes: DID coefficients to identify the reservation impact are reported in this table. Regressions also include the dummy for a SC parliament constituency, the dummy for a SC voter, the dummy for other Hindu voter (spec. (2) only), the dummy for OBC voter (spec. (2) only), state fixed effects, the literacy rate, the population share of rural residents, and the population share of workers in each industrial category. The dependent variable is an indicator variable of party choice in the 2004 parliamentary elections and the estimated model is a multinomial logit (the choice of BJP as the reference). Robust standard errors clustered at the parliamentary constituency level are reported in brackets. **, * and + denote statistical significance at the 1%, 5%, and 10% levels respectively. The sample is restricted to voters in a constituency where the INC, BJP, and BSP all fielded their candidates. The number of observations (NOB) is thus 9,292.

Appendix.

Reporting Bias and Constituency Characteristics

    Hausman et al. (1998) examine the effect of misclassification of the binary dependent variable on statistical inference using discrete-response models. In our context, if the turnout response is subject to over-reporting at the rate of α and the misclassification probability is independent of explanatory variables, then the slope coefficients in the linear probability model have bias, which is proportional to 1-α. However, both of our RD and DID tests are focused on testing the equality of one and another of the slope coefficients. These tests are unbiased if α is independent of all explanatory variables. Therefore, we run a constituency-level regression model where the extent of over-reporting is regressed on explanatory variables used in our RD and DID regression models.

    The results are shown in the Appendix Table (given below). They firmly demonstrate that the magnitude of bias is the same irrespective of the characteristics of a constituency. Therefore, the use of NES04 microdata to investigate the causal impact of reservation on voting behavior is justified.

Appendix Table. Reporting Bias and Constituency Characteristics

	Actual Voter Turnout – NES04 Voter Turnout
Population share of SCs (%)	-0.156
	[0.128]
Population share of STs (%)	0.033
	[0.073]
Dummy for a SC constituency	0.543
	[1.418]
Dummy for a ST constituency	-0.750
	[2.711]
State fixed effect	Yes
Number of observations	393
R-squared	0.35

Notes. Standard errors are reported in brackets. The information on actual voter turnout rates was taken from the Election Commission of India's website [http://eci.nic.in/eci_main/index.asp, accessed on April 10, 2011]. The NES04 voter turnout rates were calculated using NES04 microdata. The regression model also includes the literacy rate, the population share of rural residents, and the population share of workers in each industrial category. None of the coefficients on the explanatory variables are statistically significant.