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Largest Democracy?**

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Redrawing the Lines: Did Political Incumbents Influence Electoral Redistricting in the World's Largest Democracy?*

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Abstract

In 2008, the boundaries of national and state electoral constituencies in India were redrawn for the first time in three decades. We use detailed demographic and electoral data to construct measures of the extent of redistricting in a given constituency. We find the redistricting process to be politically neutral for the most part, though a few politicians who were advisory members for the redistricting process were able to avoid unfavorable redistricting outcomes for their specific constituencies. Incumbents whose constituencies became reserved for members of specific communities are significantly less likely to run for re-election following redistricting.

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1. Introduction

Most democratic countries undergo a process of redrawing their electoral boundaries every few years, usually with the goal of equalizing population sizes across constituencies. While this is important in maintaining the principle of one-person-one-vote, there is a concern that the redistricting process can be influenced by political incumbents to create safe seats, where incumbents are unlikely to face strong electoral challenges (“gerrymandering”). In the United States, the 2003 redistricting in Texas is often cited as an example of a politically motivated process, though it was largely upheld by the courts. The 2012 redistricting announced by the state of Florida has come under legal challenge for creating gerrymandered electoral constituencies. Partisan redistricting can also have consequences for public policy outcomes, as documented by Besley and Preston (2007) and Baqir (2002), though Friedman and Holden (2009) find that partisan gerrymandering is not a significant determinant of the increasing incumbency advantage in the United States.

India, the world’s largest democracy, redrew the boundaries of national and state electoral constituencies in 2008 after a gap of three decades. These new boundaries are expected to be in place until 2031 at least. We examine the influence of political incumbents on this redistricting process, using detailed demographic and electoral data at the constituency level from two states, Andhra Pradesh and Rajasthan. The redistricting was conducted by a non-partisan commission, but several incumbent politicians were part of an advisory committee for the commission, suggesting that there might have been avenues for incumbents to influence the process.

Our first major finding is that the influence of political incumbents is present, but fairly limited. The constituencies of advisory committee members are less likely to experience large demographic changes, or be redistricted in unfavorable ways such as being demarcated for contestants of specific social groups under India’s affirmative action programs.¹ However, this effect is restricted to members of the advisory

¹ The Constitution of India provides for political reservations for certain historically disadvantaged groups, namely the Scheduled Castes and Scheduled Tribes. In such reserved constituencies, only members of these communities can contest elections. Scheduled Castes refers to communities which were traditionally at the

committee, and does not extend to members of the ruling party (or any specific party) as a whole. In this sense, the redistricting process was not particularly partisan. Incumbents who were ministers also do not appear to have benefited by this process, despite the observed ministerial “premium” in asset accumulation documented in other studies (Fisman et al, 2013).

In keeping with the previous literature, we also estimated seats-votes curves for these states based on the methodology developed by Gelman and King (1994a). The levels of partisan bias are very low, while the responsiveness of the seats-votes curve is similar to that in the US electoral system.² We find that the redistricting process led to very little change in the seats-votes curves, in terms of either the partisan bias or the responsiveness parameters. This is consistent with our previous results, which suggest that the redistricting process in India was politically neutral to a large extent. The most likely reasons for this are that the process was conducted by an explicitly non-political commission, there was a very high level of transparency throughout, and extensive efforts were made to involve political parties and voters to give their inputs to the process. As a result, there has been relatively little controversy over the process as a whole.

Our second finding is that the redistricting process appears to place few restrictions on the ability of political incumbents to contest re-election. If a politician’s constituency became subject to reservation for disadvantaged groups, then s/he is significantly less likely to run for re-election after redistricting. Over and above this effect of reservations, which explicitly limit politicians’ ability to contest, measures which proxy for increased cost of campaigning or future electoral prospects do not have a significant effect on the propensity of incumbent politicians to run for re-election, though they do seem to matter for politicians who did not win in the previous election. This

bottom of the Hindu caste hierarchy, while Scheduled Tribes have been largely outside the Hindu caste system.

² This methodology has been applied to numerous elections in the United States, most recently to analyze the 2006 and 2008 elections (Kastellec, Gelman and Chandler, 2008a, 2008b). To the best of our knowledge, this is the first time such indices have been computed for the Indian political system.

suggests some degree of incumbency advantage in Indian elections, contrary to earlier studies which have documented significant incumbency disadvantages.³

This paper contributes to the empirical literature on electoral redistricting in three significant ways. First, we examine the pattern of redistricting in detail, especially the relationship of redistricting patterns with pre-existing demographic and political characteristics. This is in contrast to most of the literature on other advanced democracies, which takes the process of redistricting to be given and examines its consequences for future electoral outcomes. Conclusions about the pattern of redistricting are therefore based primarily on ex-post outcomes rather than ex-ante analysis. Second, in order to conduct this ex-ante analysis, we construct new measures of the extent of redistricting in each constituency. Again, this is in contrast with the most of the existing literature which focuses primarily on constructing seats-votes curves for the entire state or country, rather than examining constituency-level changes in any detail.⁴ The measures we compute are based on close comparison of the old and new constituencies using GIS and other maps, and can be easily generalized to other settings. Third, to our knowledge, this is the first paper which examines the process and consequences of electoral redistricting in a developing country with a relatively young democracy, where one might expect voter information and accountability mechanisms to be less widespread than in more established democracies.

The rest of the paper is structured as follows: Section 2 describes the process of electoral redistricting in India, Section 3 describes our data, and Section 4 discusses our key hypotheses and empirical specifications. Section 5 presents empirical tests of our key hypotheses and Section 6 concludes.

³ Incumbent candidates who won by a narrow margin are significantly more likely to lose elections in both national elections (Linden, 2004), and state legislative elections (Uppal, 2009), though these studies do not focus on the incumbents' decision to run for re-election, a crucial margin in India. Such an anti-incumbency effect is however not detected for incumbent parties (Barooah, 2006), though incumbents from ruling parties are more likely to lose elections after controlling for a "honeymoon" period (Ravishankar, 2009).

⁴ A notable exception is Ansolabehere, Snyder and Stewart (2000), who use county-level variation induced by redistricting to estimate the incumbency advantage.

2. Electoral Redistricting in India

2.1 The Indian Political System

India is the world's largest democracy with more than 700 million voters and more than 100 recognized political parties. The political system is a parliamentary democracy with elections being held to national and state legislature every five years. Elections are held on a first-past-the-post basis in single-member electoral constituencies. State elections have an average of ten candidates contesting from each constituency. Voter turnout is quite high, around 58% in the 2009 general election. The Constitution of India provides for political reservations for certain historically disadvantaged groups, namely the Scheduled Castes and Scheduled Tribes, since 1950. In such reserved constituencies, only members of these communities can contest elections.⁵ In 2001, SCs and STs accounted for 24.4% of the population, and 22.1% of national parliamentary seats were reserved for these communities.

Elections in India are conducted by the Election Commission, which is staffed by career bureaucrats who are required to be politically neutral. For instance, they may not join political parties or otherwise engage in partisan political activity. The Election Commission of India has established a reputation for conducting free and fair elections and has undertaken many measures to safeguard the integrity of elections (McMillan, 2010). Voting in India is completely electronic after 2004, and elections are often held in several phases to ensure adequate security arrangements. All political candidates are required to file public affidavits stating their education, assets and any pending civil and criminal charges.

As in many other democracies, electoral redistricting (or "redelimitation" as the process is known in India) was initially undertaken after each decennial census. However, this process was halted in 1977, after complaints from several states that the process

⁵ There are several other affirmative action programs for these groups, such as quotas in government employment and educational institutions. Research by Pande (2003) and Krishnan (2007) shows that such mandated political representation increases minority influence on policy. In particular, having an additional SC legislator significantly increases spending on SC and ST welfare programs, and leads to greater provision of schools and health centers in the areas where SCs live. The impact of an additional ST legislator is, however, very small.

undermined the incentives of states to implement population control policies, since a bigger population would result in more state representatives to the national parliament. A law was passed which specified that all electoral boundaries as of 1977 would be frozen in place until after the 2001 census.

2.2 Redistricting After the 2001 Census

In 2002, India began the process of redrawing of electoral constituencies based on the census of 2001.⁶ In response to the earlier concerns about distorting incentives for state governments, this redistricting exercise specified that the total number of electoral constituencies would remain the same, both for the national legislature as well as for state legislatures. Further, each state would continue to have the same number of representatives in the national legislature, i.e. there would be no reallocation of seats across states. The goals of this redistricting exercise were therefore two-fold: First, to equalize the population across electoral constituencies *within* each state, and second, to re-demarcate the electoral constituencies to be reserved for the Scheduled Castes (SC) and the Scheduled Tribes (ST) in proportion to their increased population share. The decision not to increase the number of state representatives in line with increases in state population, and the decision to not reallocate parliamentary seats across states, have both come under heavy criticism (Yadav, 2008; McMillan, 2001).

Since this was the first redrawing of electoral boundaries in three decades, this resulted in widespread changes to the electoral boundaries. Rural-urban migration had resulted in much faster growth of urban population compared to rural population: 19.9% of India's population lived in urban areas in 1971, compared to 27.8% in 2001. The redistricting exercise therefore resulted in a greater allocation of electoral seats to urban areas. For instance, in the state of Andhra Pradesh, Hyderabad city and its surrounding areas were represented by 19 seats until 2008, and by 29 legislators from 2009 onwards.⁷

⁶ The process was officially begun by the enactment of the Delimitation Act, 2002 and the Delimitation (Amendment) Act 2003. These Acts were in turn made possible by the Constitution (Eighty-fourth Amendment) Act, 2001 and the Constitution (Eighty-seventh Amendment) Act, 2003 which, inter alia, amended Articles 81, 82, 170, 330 and 332 of the Constitution of India.

⁷ Districts of Hyderabad and Rangareddy.

The population of this predominantly urban area increased by 30% between 1991 and 2001, while the population of the state overall increased only by 14.5%.

The redistricting exercise in India was carried out by an independent (non-political) three-member Delimitation Commission, comprised of a former Supreme Court judge, the Chief Election Commissioner of India and the State Election Commissioner of the state concerned. Despite politicians lacking formal power over the decisions of bureaucrats, political influence cannot be ruled out (see Iyer and Mani (2012) for an analysis of the influence of politicians on bureaucrats' career concerns in India). Further, ten elected representatives from the state (five from the state legislature and five from the national parliament) acted as "associate members" to advise the Delimitation Commission in each state, though they had no voting power on the final decisions of the Commission. Since these individuals are closely involved in the process of redistricting, we examine whether members of these committees were able to influence the redistricting process.⁸

After examining data from the 2001 census and local maps, consulting with district officials, and meeting with these associate members, the Delimitation Commission prepared a detailed draft proposal with the proposed boundaries of each electoral constituency. This draft proposal was widely published, public comments were invited, and public meetings in one or more places were held to hear the view of the public. Political parties in the state scrutinized these proposals and submitted their views for consideration, often proposing new boundaries for certain constituencies. For instance, the associate members of the advisory committee in Andhra Pradesh proposed changes to more than 15 state assembly constituency boundaries after the draft proposals were published, and requested that their dissent be published along with the proposal (Delimitation Commission of India, 2007). After taking all these views into account, final reports were published for each state, all of which were approved by the President of India in August 2008, and came into effect in subsequent elections. By law, the new electoral boundaries cannot be changed until the first census after the year 2026. Given the decennial census schedule, these boundaries will be in place till 2031 at least.

⁸ Analysis of the United States shows that redistricting exercises conducted by non-partisan or bipartisan commissions are very similar to those conducted by legislatures (Thomas, 2011).

The explicit goal of the Delimitation Commission was to redraw constituencies such that “the population of each parliamentary and assembly constituency in a State shall, so far as practicable, be the same throughout the State” (Delimitation Commission of India, 2004). This was subject to the constraints that the constituencies should be geographically compact and contiguous, every state assembly constituency should lie wholly within a national parliamentary constituency, and all assembly constituencies should lie wholly within administrative districts. Factors such as physical features, facilities of communication and public convenience are also to be considered, such that areas divided by rivers or hilly ranges or forests or ravines and other such natural barriers were not be put in the same constituency. This consideration is mainly related to the logistics of conducting elections within the constituency. Since these constraints make the exact equalization of population across constituencies difficult, the Delimitation Commission agreed that the population in a specific constituency could vary up to 10 percent above or below the district average. This guideline has been criticized for being arbitrary, and for being violated in many cases (Kumar, 2009).

After these constituencies are mapped out, constituencies which are to be reserved for the Scheduled Castes (SCs) and Scheduled Tribes (STs) are demarcated. The overall number of constituencies to be reserved for the SCs and STs are based on their population share in the state, and the exact constituencies chosen for reservation are the ones which have the largest population shares of these communities. For the Andhra Pradesh state assembly, the number of constituencies reserved for SCs increased from 39 to 48, and the number reserved for STs increased from 15 to 19. For Rajasthan, there was an increase of one reserved seat each for SCs and STs.

The electoral redistricting and politician reactions generated significant media attention, but little empirical analysis. There was media speculation that the two largest national parties, the Indian National Congress (INC) and the Bharatiya Janata Party (BJP), might even join hands to delay the national implementation of the final report, although this did not come to pass (Das, 2006). Some media reports claimed that many politicians’ electoral prospects were harmed by this process (*The Hindu*, 2009; Rahman, 2013), but other commentators cited the Delimitation Commission’s work as being “without any obvious political partisanship” (*Economic and Political Weekly*, 2008).

3. Data on Redistricting and Electoral Outcomes

The analysis in the current paper is for the states of Andhra Pradesh and Rajasthan. These states were chosen for two main reasons. The first was the availability of maps and/or GIS data required to match up the boundaries of the old and new electoral constituencies, and match these boundaries to census variables, so as to enable us to construct numerical measures of the extent of redistricting.⁹ Second, both these states feature electoral competition between two large parties, with third parties playing only a small role, leading to ease of analysis (for instance, in generating seats-votes curves using methodologies developed for the United States).

We should note that these states exhibit significant variation along several different political dimensions, so that the results generated from this analysis are likely to be generalizable. Rajasthan is in north India, while Andhra Pradesh is in the south. States in the north and south are often cited to be different along many dimensions of political and economic culture, such as the role of caste (Varshney, 2012). The incumbent party during the redistricting process was the Indian National Congress (Congress) in Andhra Pradesh and the Bharatiya Janata Party (BJP) in Rajasthan. The main opposition party in Andhra Pradesh was a regional party (Telugu Desam Party) which has almost no presence outside the state, while the main opposition party in Rajasthan was the Congress, a national party. The states are also on different electoral calendars: Rajasthan held its first post-delimitation elections for the state legislative assembly in December 2008, while Andhra Pradesh had its first post-delimitation state election in April 2009, coinciding with elections for the national parliament. Our main results hold for each state analyzed separately, as well as for the pooled sample with state fixed effects.

We gathered information on the geographical boundaries of the different state electoral constituencies using information in the Delimitation Commission Reports of 2008 and 1976, followed by matching up the old and new constituencies using GIS maps and maps provided on state government web sites. These old and new boundaries were then matched up to village-level census data so that we could compute demographic

⁹ Such maps are increasingly available for other states as well, so that it may be feasible to extend the analysis to other states in the future.

characteristics of the old and new constituencies. As mentioned before, the urban population growth has outstripped rural population growth in both these states, and the number of constituencies assigned to large cities has increased considerably. However, we were not able to map the changes in electoral constituency boundaries within cities, since the number and boundaries of wards within cities has changed considerably across time.¹⁰ This means that we are able to compute the extent of redistricting for 283 constituencies out of 294 in Andhra Pradesh, and 184 out of 200 constituencies in Rajasthan. Further, we kept track of which constituencies were demarcated (reserved) for SCs and STs, both before and after redistricting.

In terms of political variables, we collected data on the candidates' decision to run for re-election for the first post-delimitation election, as well as two pre-delimitation elections for each state. By manually checking the names of candidates against the list of competing candidates in the next election, we created a dummy which equals one if the candidate decides to run for election in the following election cycle.¹¹ We also kept track of who won each election. We have information on the party affiliation and the gender of each candidate, and the number of votes obtained by them, as well as constituency-level variables such as electoral turnout and the total number of candidates.

In order to assess the propensity of local areas to vote for specific parties, we gathered data on voting in local elections prior to the post-delimitation election. This was the 2006 election in Andhra Pradesh and 2005 election in Rajasthan. In Rajasthan however, the demarcation of constituencies for local elections is very different from those

¹⁰The exception is Hyderabad, where we were able to obtain detailed maps of old and new constituencies from the Andhra Pradesh state government website.

¹¹ Names of Indian politicians are often spelt very differently across different elections, necessitating a manual match. Since politicians may choose to contest in different parts of a redistricted constituency, our measure tracks whether a politician contested for re-election in any constituency in the administrative district (usually consisting of 9-10 constituencies). It is rare for politicians to contest elections outside their local area.

for state and national elections and it is difficult to match local bodies to electoral constituencies.¹² Hence, we employ local voting data for Andhra Pradesh alone.

4 Electoral Redistricting at Constituency Level: Testable Hypotheses

In this section, we consider the factors which might affect the extent to which a constituency is redistricted, and what the impact on politicians might be. We consider a simple framework in which a politician's decision to contest the next election depends on his costs of campaigning if he chooses to contest the next election (COST) and his future electoral prospects (ELECPROS), including his probability of obtaining the party nomination and his expected vote share if he is a candidate.¹³ Redistricting has the potential to change both of these dimensions independently, as detailed below. Politicians will naturally try to prevent COST from rising and ELECPROS from falling, and the empirical question is whether they are able to influence the redistricting process to achieve these goals.

4.1 Redistricting and Constituency Size

We should note that the official procedures and goals of the program suggest that constituencies with populations that are extremely small or large with respect to the district average are the most likely to experience large changes in their population during the redistricting process. We will therefore begin by testing whether this basic rule was followed:

Hypothesis 1: Since very small or very large constituencies are more likely to be redistricted, we expect to observe a U-shaped relationship between the change in size of

¹² This misalignment of national and state assembly constituencies with the local election constituencies in many states has been criticized by Yadav (2008), who calls it a “ridiculous situation of two unconnected political maps for the entire country.”

¹³ Political candidates in India are usually men. Over the period 1980-2007, only 4.4% of state election candidates were women (Bhalotra et. al., 2013). We therefore use the male pronoun to denote politicians in this paper.

the constituency and the initial population size of the constituency. We test this hypothesis by running the following regression:

$$EXTENT_REDISTRICK_j = constant + a_1POP_j + a_2POP_j^2 + \delta X_j + \varepsilon_j \quad (1)$$

$EXTENT_REDISTRICK_j$ measures the extent of population change in constituency j , and POP_j represents the original population of the constituency. We will measure the extent of redistricting by the percentage change in the population of the constituency (absolute value) and the fraction of voters in the new constituency who were also part of the old constituency ($F_OLDVOTER$). *Hypothesis 1* implies that a_1 will be negative and a_2 will be positive ($a_1 < 0$, $a_2 > 0$) for the percentage change in population as the dependent variable, and the opposite (i.e. $a_1 > 0$, $a_2 < 0$) for $F_OLDVOTER$ as the dependent variable.¹⁴ X_j is a vector of other constituency characteristics including fixed effects for each state, and demographic characteristics of the old constituency (% rural, literacy rate, % male, %SC and %ST in the population).

4.2 Redistricting and the Costs of Campaigning

The costs of campaigning (COST) are likely to be higher if the population of the constituency increases a lot due to redistricting, or if the demographic profile of the population changes considerably, or if former voters form a smaller share of the new constituency. Influential politicians will try to avoid such increases in the cost of election campaigns, formalized in the following hypothesis:

Hypothesis 2: Controlling for the initial population size, influential incumbents will have smaller increases in population size, a smaller degree of change in the demographics of their constituency, and a greater proportion of original voters remaining in the constituency after redistricting. We will run the following regression to assess the degree of politician influence:

¹⁴ All our results, in this and following hypotheses, remain similar if we include the population deviation from the district average mandated by the Delimitation Commission instead of POP_j and POP_j^2 as the explanatory variable. For brevity, we do not show these results for the later hypotheses.

$$COST_j = constant + b_1POP_j + b_2POP_j^2 + b_3INFLUENTIAL_j + \delta X_j + e_j \quad (2)$$

$COST_j$ is proxied by three variables: (i) the percent increase in constituency population,¹⁵ (ii) a measure of demographic change, and (iii) the fraction of voters in constituency j who were part of the old constituency ($F_OLDVOTER_j$). Our index of demographic change is computed as $\sum_j (D_{j,old} - D_{j,new})^2$, where $D_{j,old}$ represents the demographic characteristic j for the old constituency, and $D_{j,new}$ represents the same for the new one.¹⁶ Since all the characteristics are between 0 and 1, the theoretical maximum value of this index is 5. In practice, this never attains values above 0.26 (Table 1). Appendix Table A.1 documents the correlations among these different proxies of campaign costs. While constituencies which grew larger are substantially less likely to retain a bigger fraction of old voters (correlation = -0.588), both of these measures are only moderately correlated with the index of demographic change (correlations less than 0.3 in absolute value).

$INFLUENTIAL_j$ is a dummy which captures whether the incumbent politician in constituency j is particularly influential. We will measure such influence in three ways: (i) whether the incumbent politician (state legislator from that constituency) was a member of the advisory committee during the redistricting process, (ii) whether the incumbent politician was a minister in the state government, and (iii) whether the politician belongs to the ruling party in the state. Since the advisory committee consisted of state legislators and members of national parliament from the state, we consider a further measure of influence as (iv) whether the member of parliament (MP) from the area was part of the advisory committee. Table A.2 in the Appendix documents the correlations among these different measures of influence. We see that they are mostly uncorrelated with each other, except for the unsurprising fact of members of the ruling

¹⁵ Note that this measures only *increases* in constituency population (decreases are coded as zero), and is therefore different from the measure of $EXTENT_REDISTRICT$ in equation (1) which measures both increases and decreases. Politicians could have other reasons to avoid increases in constituency size, since politicians from larger constituencies are less likely to obtain ministerial positions (Bhavnani, 2013b).

¹⁶ The demographic characteristics included in our index are: % rural population, % literate, % male, % Scheduled Castes, % Scheduled Tribes.

party being more likely to be ministers. We should note that the advisory committees included members from opposition parties in addition to the ruling party in the state, which explains the lack of correlation between committee membership and ruling party membership.

4.3 Redistricting and Changing Electoral Prospects

In addition to potentially raising campaign costs, redistricting can also change the politician's chances of obtaining the party nomination in the next election, and his expected vote share if he contests. We expect that incumbent politicians would prefer to avoid changes which result in decreases in these electoral prospects (ELECPROS). The hypothesis we take to the data is the following:

Hypothesis 3: Controlling for initial population size, influential incumbents will have better electoral prospects after redistricting. We will run the following regressions to test this:

$$ELECPROS_j = constant + d_1POP_j + d_2POP_j^2 + d_3INFLUENTIAL_j + \delta X_j + u_j \quad (3)$$

A natural way to measure ELECPROS is to assess the expected vote share for the incumbent after the redistricting has taken place. If incumbent politicians have influence over the redistrict process, we would expect to see $d_3 > 0$. We estimate the expected change in vote share for the incumbent (ECVS) in three different ways. The first is to estimate the change in vote share based on a weighted average of the incumbent's party vote share in the previous elections, weighted according to the composition of the new constituencies from pieces of different old constituencies. This, however, assumes that all voters in the old constituencies were equally likely to vote for the incumbent's party, i.e. that voting patterns were homogenous throughout the constituency.

Since this is a fairly strong assumption, we construct a second measure of ECVS as the expected change in vote share as predicted by the change in demographics. To compute this, we first regressed the vote share for a given party on the demographic characteristics, using voting data from the pre-redistricting period. After regressing the

vote share on demographics, we predict how much it would change, given the changed demographic characteristics after the redistricting. Somewhat surprisingly, the initial regression of party vote shares on demographic characteristics is not statistically significant for the state of Andhra Pradesh, i.e. demographic characteristics do not predict voting behavior in a strong way. We therefore construct the ECVS based on demographics only for the state of Rajasthan.

The previous two measures are constructed using voting data from the previous state election. Since these occur only once in five years, the incumbent politician might want to use information from voting patterns in local elections which occur after the previous state election to assess their prospects in the next election. For the state of Andhra Pradesh, we are able to match up local election areas to state electoral constituencies. We use the information for local elections to construct a third measure of ECVS as the change in vote share based on aggregations of votes in local elections over old and new boundaries.

All of these ECVS measures are relevant only if the incumbent is able to contest the next election. However, they are not guaranteed to obtain the party nomination. In our data, a quarter of incumbents (25%) did not run for re-election in the two election cycles prior to redistricting. Redistricting creates a particularly extreme barrier for incumbents when a previously unreserved constituency becomes reserved for either Scheduled Castes (SCs) or Scheduled Tribes (STs). Since most politicians from non-reserved constituencies do not belong to these specific sections of society,¹⁷ having your constituency reserved is likely to cause significant difficulties for an incumbent in contesting the next election (such as finding a new constituency to contest from, where he might be seriously disadvantaged). We therefore consider two further measures of electoral prospects as (iv) whether a constituency is reserved for Scheduled Castes in the post-redistricting period and (v) whether a constituency is reserved for Scheduled Tribes in the post-redistricting

¹⁷ For instance, in the national elections of 2004, only 3.5% of winners and 15.6% of party candidates in unreserved constituencies were from the Scheduled Castes or Scheduled Tribes. Bhavnani (2013a) shows that quotas for SC/ST do not lead to permanent increases in political representation after they are withdrawn.

period. For these measures, we expect $d_3 < 0$ if the incumbent has influence over the redistricting process.

4.4 Politician Outcomes After Redistricting

Once the opportunity to influence the redistricting process has passed, and the process is completed, we consider whether the incumbents' decisions to run for re-election are significantly changed. In our cost-benefit framework, we expect that politicians will be more likely to run after redistricting if their cost of campaigning (COST) has not increased too much and/or their electoral prospects (ELECPROS) are better after redistricting. We run the following regression:

$$CONTEST_j = constant + f_1 COST_j + f_2 ELECPROS_j + \delta X_j + v_{ij} \quad (4)$$

where $CONTEST_j$ is a dummy which equals one if the incumbent politician in constituency j decides to contest the election after redistricting. If redistricting makes a big difference to the cost of campaigning, we expect $f_1 < 0$ for the % increase in constituency size and demographic distance measures, and $f_1 > 0$ for the fraction of old voters retained in the new constituency. Similarly, if electoral prospects are changed due to redistricting and this significantly affects politicians' decision to run for re-election, we expect $f_2 > 0$ for the ECVS measures, and $f_2 < 0$ for the measures based on reservation of constituencies.

On the other hand, it is possible that politicians are able to find ways to overcome adverse redistricting outcomes. For instance, even if the constituency size increases considerably, a politician might still choose to run for re-election if he can raise the additional resources required to campaign in a larger constituency. In this case, we do not expect to find any significant relationships when estimating equation (4).

5. Empirical Tests of Key Hypotheses

5.1 Impact on Constituency Sizes

We see that the redistricting exercise significantly equalized the population sizes of the different electoral constituencies, fulfilling the primary goal of the exercise. Figures 1 and

2 show that there was a high degree of variation in constituency population sizes before the redistricting exercise, while the variation is much less after the redistricting exercise takes place. The distribution of other characteristics, such as the extent of urbanization, the average literacy, or the proportion of disadvantaged minorities, does not show such stark differences before and after the redistricting exercise, though we do see a slight increase in the fraction of urban-majority constituencies. This relative stability in the distribution of demographics is most likely a consequence of the fact that the redrawing of boundaries was largely a local exercise, with contiguity being one of the required properties. This does not rule out potentially large changes in specific constituencies.

As predicted in *Hypothesis 1*, we find a U-shaped relationship between the change in population of a constituency and its initial population, in line with our expectations that constituencies which were too large or too small are the ones most likely to experience changes in population size (Table 2, Column 1). This U-shaped relationship is present in both the states (Columns 2 and 3), suggesting that the Delimitation Commissions in both states were following the specified rules. If we use the population deviation from the district average as the explanatory variable, we see that constituencies whose populations were very far from the district average are much more likely to have a bigger change in their population (Column 4). All of these patterns are very similar (with the opposite signs) when we use the fraction of old voters retained in the new constituency as the measure of population change (Columns 5-8). The process of redistricting thus followed the explicit rules, and made considerable progress towards attaining the goal of equalizing population across constituencies.

5.2 Costs of Campaigning

Since the change in population size is strongly mandated by the rules of the redistricting procedure, we expect little effect of influential members on restricting the size of their constituencies even if their costs of campaigning are likely to rise. In line with this expectation, we find that members of the advisory committee (MLAs or MPs), state ministers or ruling party members do not have significantly smaller increases in constituency size (Table 3, Columns 1-3).

We find evidence that influential incumbents were able to prevent their costs of campaigning from rising too much, but that such influence is restricted to the members of the advisory committee. Membership in the advisory committee is associated with a significantly lower degree of demographic change (Table 3, Column 4), and a higher proportion of original voters remaining in the electoral constituency of the politician in question (Table 3, Column 5). Constituencies whose members of parliament are advisory committee members are also able to retain a greater fraction of their original voters (Table 3, Column 5). This is important since it suggests some political influence on the redistricting process. However, it is also clear that such influence is not widespread. Being a minister does not lead to significantly better redistricting outcomes; in fact, it is associated with a somewhat higher demographic distance between old and new constituencies (Columns 4 and 7). There is also no wider pattern of influence for specific parties. In particular, constituencies where the incumbent politician is from the ruling party do not have a significantly lower degree of demographic change or a higher chance of retaining their old voters. Our conclusion is that political influence over the redistricting process was limited.¹⁸

5.3 Incumbent Influence on Electoral Prospects

We find that some influential incumbents are able to preserve their future electoral prospects following redistricting. In particular, constituencies where incumbent politicians are members of the advisory committee are significantly less likely to have their constituencies reserved either for Scheduled Castes or for Scheduled Tribes, after controlling for the population percentage of such groups which is, as one would expect, a strong predictor of which constituencies become reserved (Table 4, Columns 1-6). Members of parliament appear to exert influence only in Rajasthan, while state politicians are influential in both states. As in Table 2, this effect of avoiding unfavorable redistricting outcomes is limited to members of the advisory committee, and does not extend to other influential incumbents (such as ministers) or the ruling party as a whole.

¹⁸ Appendix Table A.2 shows that the results do not vary much when the different measures of influence are added one by one rather than all together.

We also considered the expected change in vote share (ECVS) as another measure of potentially favorable redistricting. We find that ECVS measures based on the voting patterns of the prior state election are significantly higher for members of the advisory committee in Rajasthan, but lower in Andhra Pradesh, leading to an overall insignificant relationship (Columns 7-9). Similarly, constituencies of ruling party politicians have a higher ECVS after redistricting in Rajasthan, and a lower ECVS in Andhra Pradesh.¹⁹ ECVS measures based on local election results or demographics do not show any statistically significant relationship with any of our measures of political influence (Columns 10-11). One possible explanation for this is that local voting outcomes or demographic variables are weak predictors of voting behavior at the state level.

The conclusion about relatively uninformative voting signals is also bolstered when we consider the implications for a state-wide partisan seat-maximizing party. Friedman and Holden (2008) model such a process of redistricting in which a party seeks to maximize the total number of seats it wins in a first-past-the-post system. They find that in the optimal scheme, the voters most likely to vote for the party are grouped with those most likely to vote for the opposition (i.e. matching from the extreme ends of the voting distribution), in such a way that the extreme supporters just outnumber the extreme non-supporters. The assumption of informative signals is a crucial one for this result, and such strategic patterns of optimal redistricting may not hold when voting intentions are measured noisily (Gul and Pesendorfer, 2010). Empirically, this means that if the ruling party has informative signals about voter leanings, we would observe a positive relationship between the vote margin of an incumbent in the prior election and the expected change in the vote share of ruling party. We do not find any significant relationship between our measures of ECVS and the vote margin of the ruling party in the previous election, consistent with the idea that voting signals are not very informative (results available upon request).

¹⁹ Interestingly, despite the post-redistricting advantage for ruling party constituencies in Rajasthan, the incumbent party (the BJP) lost the post-redistricting election, while the incumbent party in Andhra Pradesh (the Congress) won the first post-redistricting election.

5.4 Impact on Seats-Votes Curves

Most of the prior literature on electoral redistricting in the U.S. has focused on estimating seats-votes curve. The seats-votes curve defines the expected relationship between the seat share and vote share of a given party, and is estimated from observed political outcomes by simulating a range of possible vote share distributions and associated seat shares, under certain assumptions. Gelman and King (1994a) pioneered this methodology, which is now widely used and also coded into a computer program (Gelman, King and Thomas, 2007).

Two quantities of interest are typically estimated from these simulations. The first is the partisan bias i.e. the extent to which a given party's seat share always exceeds their vote share, above what would be expected for the opposing party. For instance, if the Congress is able to translate 55% of the average district vote into 75% of the seats, but the BJP is able to translate a similar vote share into only 70% of the seats, we would conclude that the electoral system has a partisan bias towards Congress of about 5%. For the U.S., Gelman and King (1994b) find an increasing trend in partisan bias towards Democrats in the 1980s, while Coate and Knight (2007) find an overall partisan bias towards Republicans when they use data from the 1990s.

The other quantity of interest is the responsiveness of the seats-votes curve. This is the change in the expected seat share for a small change in the overall vote share. In electoral systems with proportional representation, where seat share is strictly proportional to vote share, the responsiveness is 1. For first-past-the-post systems, this can be greater or less than 1. For the US, responsiveness has been found to be greater than 1 in most states; Coate and Knight (2007) estimate an overall value of 2.7 in the 1990s. Electoral redistricting is associated with a decline in partisan bias, and an increase in responsiveness (Gelman and King, 1994b).

We estimated seats-votes curves for the two states of Andhra Pradesh and Rajasthan, both before and after the redistricting process, using the JudgeIt program and the methodology of Gelman and King (1994a).²⁰ We report two important findings. First,

²⁰ To apply this in the Indian context, we had to adjust for electoral alliances in computing the vote and seat share of the Indian National Congress. We also computed the two-party vote share by assuming a vote share of zero for Congress whenever the Congress candidate was not among the top two. Our set of

there is very little partisan bias and a high degree of responsiveness in both these states prior to the redistricting process. The partisan bias is 1.2% towards Congress in Andhra Pradesh and less than 0.5% towards the BJP in Rajasthan. The responsiveness of the seats-votes curves is 2.8 for Andhra Pradesh and 2.7 for Rajasthan, similar to that observed in the US. Second, the seats-votes curves look very similar before and after the redistricting process (Figures 3 and 4). The partisan bias in favor of Congress increases slightly in Rajasthan (from -0.003 to 0.007), and decreases slightly in Andhra Pradesh (from 1.2% to 0). The responsiveness of the seats-votes curves also shows very small changes, increasing by 0.34 in Andhra Pradesh and decreasing by 0.14 in Rajasthan. This suggests that there was little political influence on the redistricting process as a whole, and that the characteristics of the electoral system were largely unchanged as a result. In this sense, we find the Indian redistricting process to be politically neutral, while succeeding at the primary goal of providing more equal representation across constituencies.

5.5 Politician Outcomes after Electoral Redistricting

In the Indian political system, many politicians do not run for re-election. In the two elections prior to the redistricting process, about 75% of incumbents ran for re-election. This fraction declined to 65% in the post-redistricting election. Among non-incumbents, the probability of contesting the next election was only 11% in the two elections prior to redistricting, and this increased to 20% after redistricting.

Is the decision of the incumbent politician to run for re-election systematically related to his costs of campaigning and/or his future electoral prospects? Table 5 shows the results from regression specification (4). We do not find a systematic link between measures of the costs of campaigning - the increase in constituency population, changes in demographic composition, or the fraction of old voters retained-- and the incumbent politician's decision to run for re-election (Table 5, Panel A, Columns 1-3). They are significantly less likely to contest re-election when their constituency becomes reserved

regressors included the vote share in the previous election, demographic characteristics of the constituency, a dummy for whether the Congress won the seat in the previous election, and a dummy for whether the incumbent politician was contesting the election.

for members of specific social groups, which would make them ineligible to run in most cases (Column 4). The expected change in vote share does not significantly predict the probability of contesting the post-redistricting election (Column 5).

In contrast, when we examine the decisions of non-incumbents to contest the next election, we find that they are significantly more likely to do so when a greater fraction of old voters are retained in the new constituency (Table 5, Panel B, Column 3). The impact of explicit reservations for specific social groups does not predict changes of running again for non-incumbents, while a higher expected vote share for incumbents leads to non-incumbents being less likely to contest (Table 5, Panel B, Column 4). Our results suggest that political constraints are different for different types of politicians. Incumbents appear to be better able to overcome increases in their cost of campaigning, and are deterred from running for re-election only by explicit constraints on their ability to contest elections in certain places, while campaign costs and expected vote shares are more likely to matter for non-incumbents.

6. Conclusions

We studied the recently completed electoral redistricting process in India, which substantially changed the boundaries of both state and national electoral constituencies. We find that, by and large, the process achieved its primary goal of equalizing population sizes across constituencies. More importantly, the redistricting process does not appear to have been influenced by incumbent politicians to a great extent, although we find some evidence that the constituencies of specific politicians (advisory committee members) were less likely to undergo unfavorable changes.

Our study constitutes a methodological advance in proposing simple measures of the extent of redistricting of specific constituencies, which can be easily computed with the availability of GIS data to match up the boundaries of old and new constituencies. As such, this methodology is generalizable to other countries and electoral systems. The results from this analysis are consistent with those found using the earlier methodology of estimating seats-votes curves. In both cases, we find that the redistricting process did not make a large difference to either the advantage enjoyed by the incumbent party or the electoral prospects of incumbent politicians. An important policy conclusion of our study

is that it is possible to implement politically neutral redistricting plans in a developing country, provided that a non-political body is in charge of the process, and that the process is transparent and inclusive of all relevant stakeholders.

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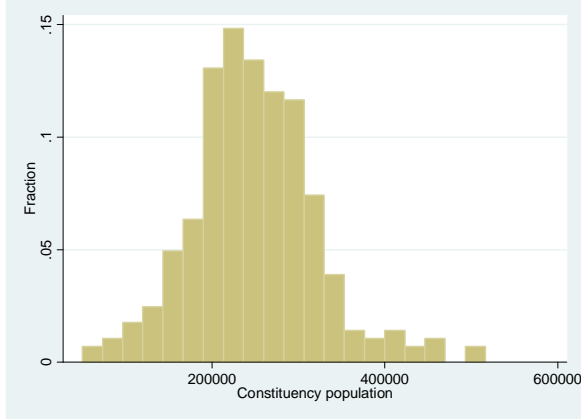
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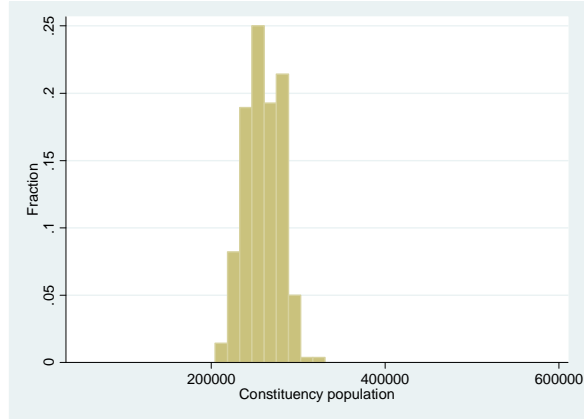
Figure 1: Distribution of Demographic Characteristics (Andhra Pradesh)

Constituency Population

A. Before Redistricting

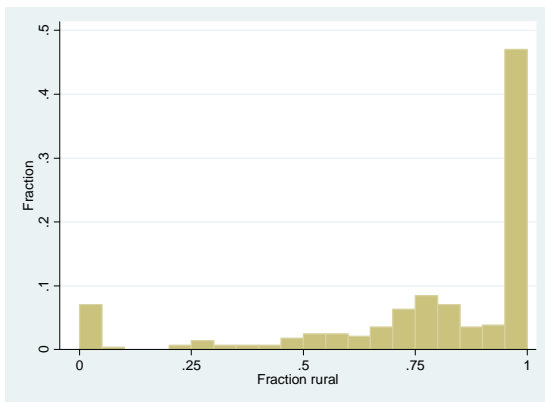


B. After Redistricting

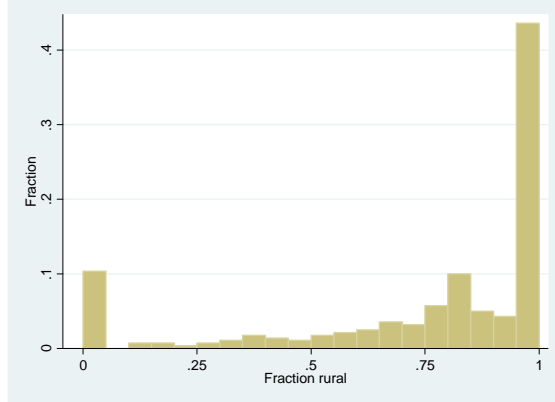


Proportion Rural Population

C. Before Redistricting

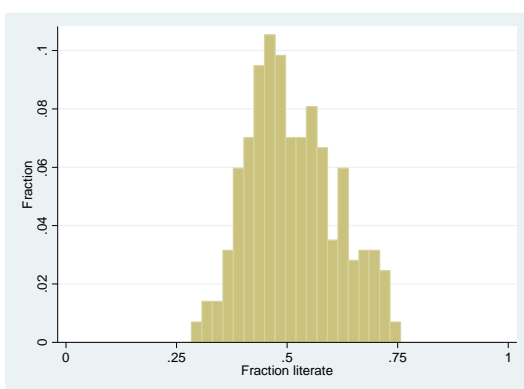


D. After Redistricting



Proportion Literate

E. Before Redistricting



F. After Redistricting

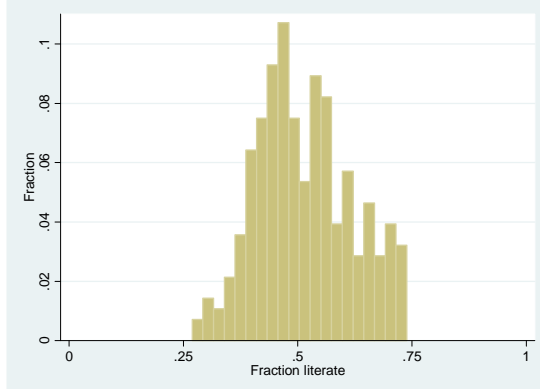
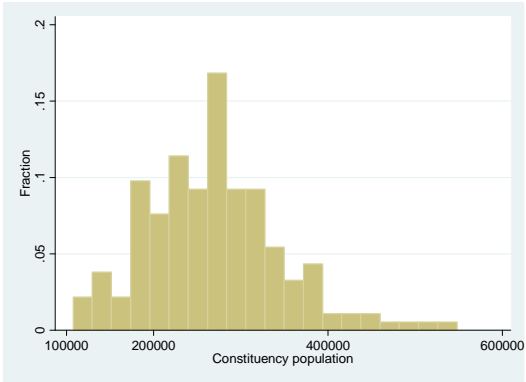


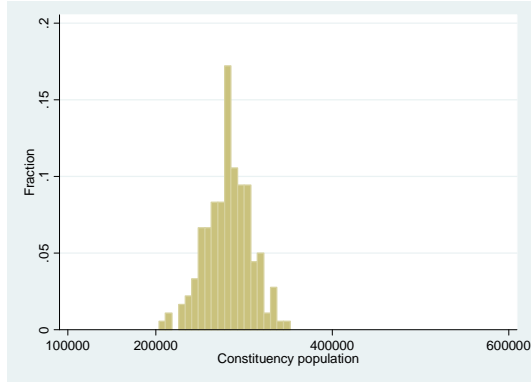
Figure 2: Distribution of Demographic Characteristics (Rajasthan)

Constituency Population

A. Before Redistricting

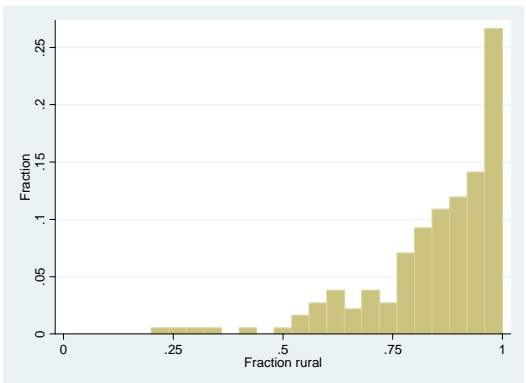


B. After Redistricting

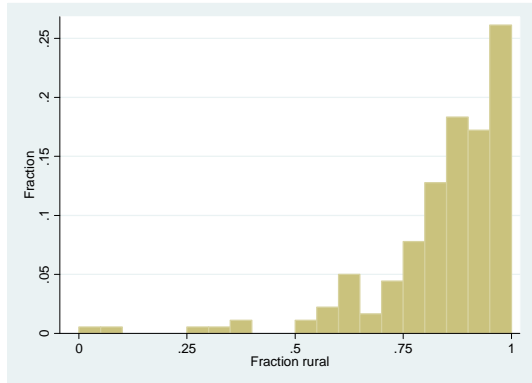


Proportion Rural Population

C. Before Redistricting

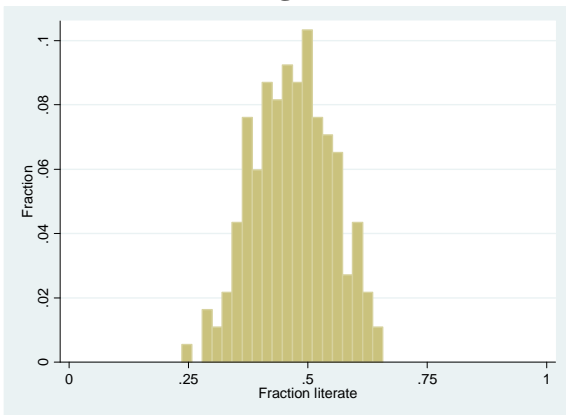


D. After Redistricting



Proportion Literate

E. Before Redistricting



F. After Redistricting

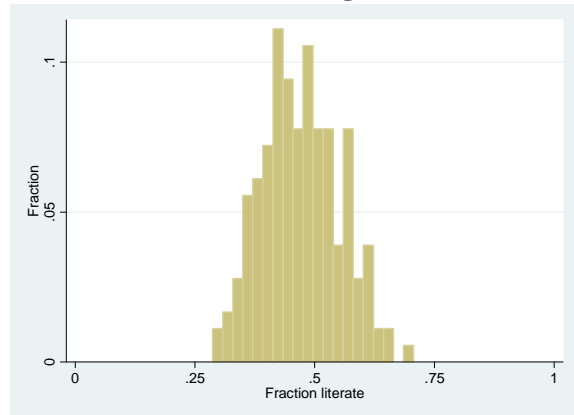
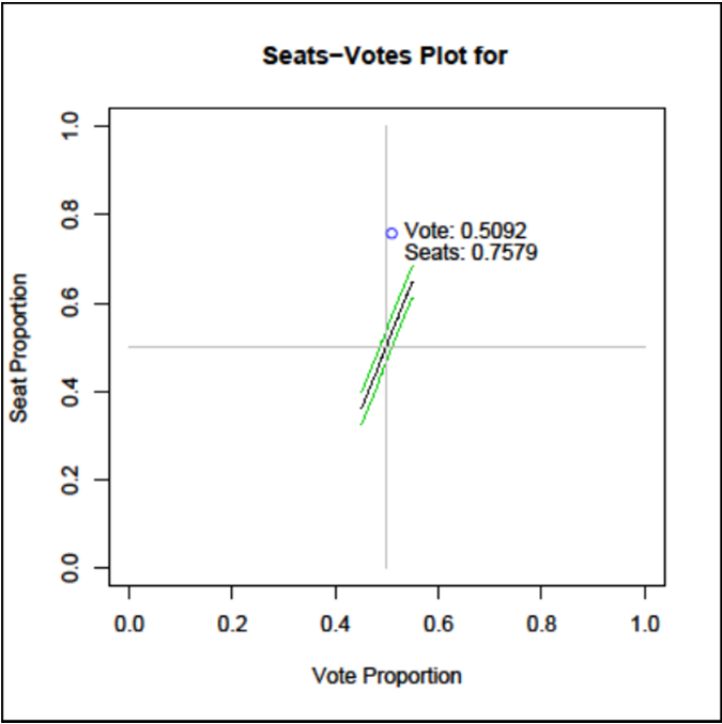


Figure 3: Seats-Votes Curves before and after Redistricting (Andhra Pradesh)

A. Before redistricting



B. After redistricting

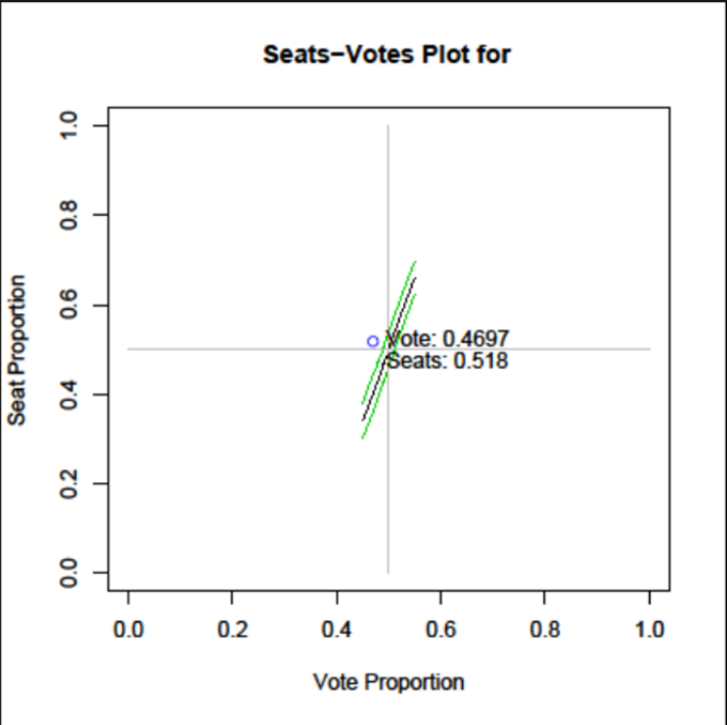
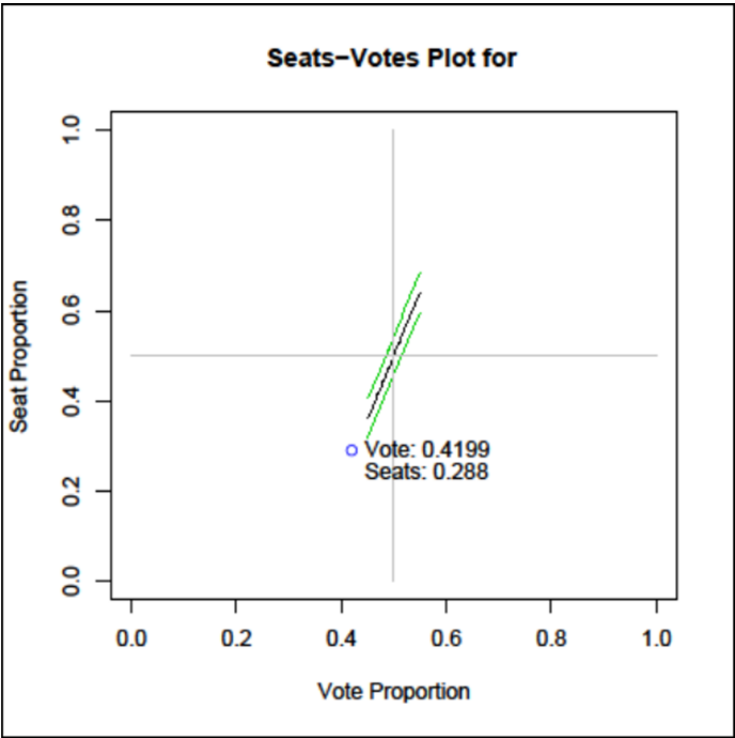


Figure 4: Seats-Votes Curves before and after Redistricting (Rajasthan)

A. Before redistricting



B. After redistricting

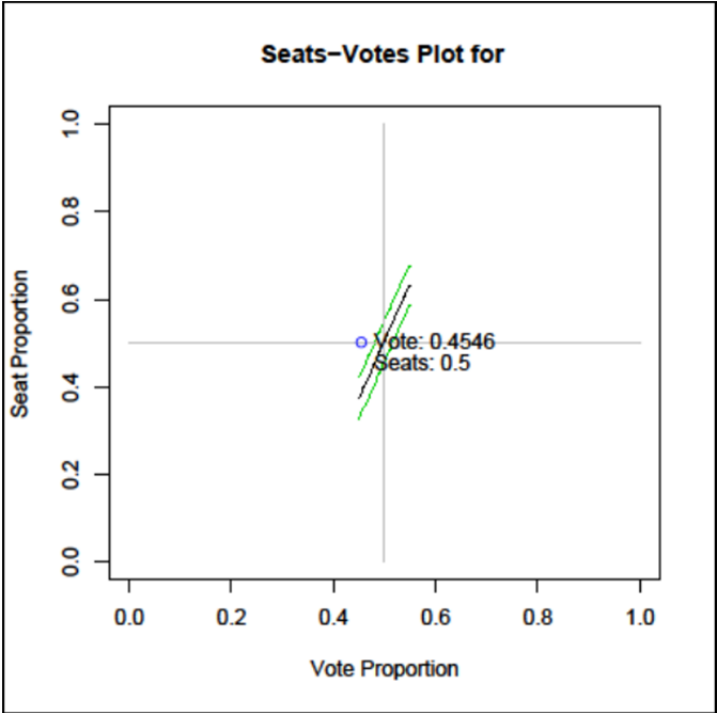


Table 1: Summary Statistics

Variable	Overall				Andhra Pradesh				Rajasthan			
	Obs	Mean	Min	Max	Obs	Mean	Min	Max	Obs	Mean	Min	Max
<u>Demographics (pre-redistricting)</u>												
Constituency population	467	256227	52852	547910	283	248343	52852	516526	184	268353	107537	547910
Fraction Scheduled Castes	467	0.172	0.007	0.407	283	0.169	0.007	0.334	184	0.175	0.016	0.407
Fraction Scheduled Tribes	467	0.097	0.000	0.915	283	0.069	0.003	0.915	184	0.140	0.000	0.885
Fraction literate	467	0.494	0.236	0.757	283	0.511	0.284	0.757	184	0.469	0.236	0.657
Fraction rural	467	0.817	0	1	283	0.795	0	1	184	0.851	0.200	1
Fraction male	467	0.510	0.475	0.551	283	0.505	0.475	0.524	184	0.519	0.481	0.551
<u>Costs of campaigning</u>												
% change in constituency population (absolute value)	467	0.287	0	3.910	283	0.286	0	3.910	184	0.289	0.000	1.902
Fraction of old voters in new constituency	467	0.720	0.191	1	283	0.734	0.191	1	184	0.700	0.242	1
% increase in constituency population (decreases=0)	467	0.226	0	3.910	283	0.225	0	3.910	184	0.227	0	1.902
Demographic change index	467	0.012	0	0.256	283	0.014	0	0.208	184	0.010	0	0.256
<u>Redistricting outcomes</u>												
New constituency reserved for SC	467	0.171	0	1	283	0.163	0	1	184	0.185	0	1
New constituency reserved for ST	467	0.090	0	1	283	0.064	0	1	184	0.130	0	1
Expected change in incumbent's vote share												
Based on vote shares in previous election	467	0.0019	-0.581	0.818	283	0.0229	-0.575	0.818	184	-0.030	-0.581	0.115
Based on vote shares in local elections	229	-0.0023	-0.170	0.145	229	-0.0023	-0.170	0.145				
Based on demographics	184	0.0016	-0.062	0.112					184	0.0016	-0.062	0.112
<u>Measures of politician influence</u>												
Incumbent is a committee member	467	0.0150	0	1	283	0.014	0	1	184	0.016	0	1
Incumbent is a state minister	467	0.0985	0	1	283	0.081	0	1	184	0.125	0	1
Incumbent belongs to ruling party	467	0.6210	0	1	283	0.622	0	1	184	0.620	0	1
Local MP is a committee member	467	0.1606	0	1	283	0.124	0	1	184	0.217	0	1

Table 2: Does Redistricting Equalize Constituency Sizes?

	% change in constituency population				Fraction of old voters in new constituency			
		Andhra Pradesh	Rajasthan			Andhra Pradesh	Rajasthan	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Population of constituency	-1.880 *** (0.194)	-2.148 *** (0.258)	-1.486 *** (0.152)		0.448 *** (0.043)	0.464 *** (0.043)	0.390 *** (0.090)	
Population of constituency ²	0.290 *** (0.034)	0.343 *** (0.047)	0.220 *** (0.027)		-0.051 *** (0.008)	-0.056 *** (0.008)	-0.041 *** (0.016)	
Population deviation from district average				0.550 *** (0.073)				-0.109 *** (0.028)
% Scheduled Castes	0.224 (0.181)	0.597 ** (0.269)	-0.122 (0.202)	0.157 (0.295)	-0.161 (0.137)	-0.083 (0.189)	-0.224 (0.223)	-0.166 (0.181)
% Scheduled Tribes	-0.032 (0.067)	-0.005 (0.109)	-0.110 (0.081)	-0.092 (0.096)	-0.013 (0.051)	0.040 (0.092)	-0.034 (0.068)	0.000 (0.069)
% literate	-0.296 ** (0.119)	-0.447 ** (0.187)	-0.277 * (0.161)	0.263 * (0.150)	-0.113 (0.114)	-0.251 (0.153)	0.197 (0.148)	-0.383 *** (0.138)
% male	-0.202 *** (0.046)	-0.227 *** (0.074)	-0.101 (0.076)	0.207 *** (0.066)	-0.131 *** (0.039)	-0.186 *** (0.052)	-0.016 (0.081)	-0.325 *** (0.048)
% rural	0.547 (1.016)	3.145 (2.090)	-0.570 (0.962)	-1.391 (1.348)	-0.591 (0.803)	-0.560 (1.647)	-0.813 (0.920)	1.127 (0.973)
Observations	0.75	0.78	0.76	0.48	0.44	0.47	0.40	0.17
R-squared	467	283	184	467	467	283	184	467

Robust standard errors in parentheses; * significant at 10%; ** significant at 5%; *** significant at 1%.

Columns (1), (2), (5) and (6) include state fixed effects.

Table 3: Incumbent Influence on Costs of Campaigning

	% increase in constituency population			Demographic change index			Fraction of old voters in new constituency		
	Andhra		Rajasthan	Andhra		Rajasthan	Andhra		Rajasthan
	Pradesh			Pradesh			Pradesh		Rajasthan
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Incumbent is a committee member	0.022 (0.021)	0.042 * (0.024)	-0.032 (0.030)	-0.006 *** (0.002)	-0.008 *** (0.003)	-0.006 ** (0.003)	0.060 ** (0.027)	0.076 *** (0.026)	0.035 (0.067)
Incumbent is a state minister	-0.010 (0.018)	-0.013 (0.029)	-0.006 (0.024)	0.010 * (0.006)	0.010 (0.010)	0.010 * (0.006)	0.011 (0.027)	0.036 (0.033)	-0.020 (0.042)
Incumbent belongs to ruling party	0.010 (0.019)	-0.002 (0.029)	0.015 (0.021)	-0.002 (0.003)	-0.000 (0.003)	-0.004 (0.004)	0.020 (0.015)	0.041 ** (0.021)	0.007 (0.024)
Local MP is a committee member	0.015 (0.020)	0.030 (0.034)	-0.019 (0.019)	-0.000 (0.003)	0.002 (0.004)	-0.002 (0.003)	0.045 ** (0.018)	0.037 (0.026)	0.054 ** (0.025)
Observations	0.81	0.82	0.85	0.16	0.16	0.18	0.45	0.49	0.42
R-squared	467	283	184	467	283	184	467	283	184
Controls	Y	Y	Y	Y	Y	Y	Y	Y	Y
State fixed effects	Y			Y			Y		

Robust standard errors in parentheses; * significant at 10%; ** significant at 5%; *** significant at 1%.

Controls include population of constituency and its square, % Scheduled Castes, % Scheduled Tribes, % literate, % rural and % males in the population.

Table 4: Incumbent Influence on Electoral Prospects

	New constituency reserved for SC			New constituency reserved for ST			ECVS--Based on previous elections			ECVS--Local elections	ECVS--Demographics
	Andhra		Rajasthan	Andhra		Rajasthan	Andhra		Rajasthan	Andhra	Rajasthan
	Pradesh			Pradesh			Pradesh			Pradesh	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Incumbent is a committee member	-0.157 *** (0.036)	-0.190 *** (0.049)	-0.133 ** (0.062)	-0.049 ** (0.021)	-0.026 (0.019)	-0.091 *** (0.034)	-0.059 (0.053)	-0.135 * (0.074)	0.061 ** (0.028)	0.015 (0.011)	-0.007 (0.006)
Incumbent is a state minister	0.059 (0.067)	0.040 (0.088)	0.095 (0.103)	0.026 (0.039)	-0.060 * (0.032)	0.112 (0.073)	-0.020 ** (0.010)	-0.031 ** (0.014)	-0.012 (0.012)	0.001 (0.007)	0.010 (0.006)
Incumbent belongs to ruling party	0.039 (0.035)	0.019 (0.045)	0.061 (0.062)	-0.001 (0.023)	0.008 (0.028)	0.019 (0.044)	-0.005 (0.015)	-0.043 ** (0.021)	0.056 *** (0.019)	0.000 (0.006)	0.002 (0.003)
Local MP is a committee member	0.049 (0.051)	0.006 (0.064)	0.095 (0.080)	-0.044 ** (0.022)	0.000 (0.036)	-0.109 *** (0.034)	-0.013 (0.014)	-0.011 (0.016)	-0.019 (0.023)	0.002 (0.008)	-0.003 (0.003)
Observations	0.08	0.15	0.07	0.33	0.32	0.38	0.08	0.08	0.12	0.02	0.07
R-squared	467	283	184	467	283	184	467	283	184	229	184
Controls	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
State fixed effects	Y			Y			Y				

Robust standard errors in parentheses; * significant at 10%; ** significant at 5%; *** significant at 1%.

Controls include population of constituency and its square, % Scheduled Castes, % Scheduled Tribes, % literate, % rural and % males in the population.

ECVS is the expected change in incumbent politician's vote share.

Table 5: Electoral Redistricting and the Probability of Contesting the Next Election

Panel A: Previous election winners (incumbents)					
	(1)	(2)	(3)	(4)	(5)
% increase in constituency population	-0.033 (0.056)				
Demographic change index		0.396 (0.592)			
Fraction of old voters in new constituency			0.067 (0.109)		
New constituency reserved for SC				-0.136 ** (0.068)	
New constituency reserved for ST				-0.094 (0.138)	
ECVS--Based on previous election					-0.081 (0.169)
Observations	0.03	0.03	0.03	0.04	0.03
R-squared	467	467	467	467	467
Panel B: All non-incumbents					
	(1)	(2)	(3)	(4)	(5)
% increase in constituency population	0.008 (0.022)				
Demographic change index		-0.078 (0.250)			
Fraction of old voters in new constituency			0.087 ** (0.038)		
New constituency reserved for SC				-0.014 (0.022)	
New constituency reserved for ST				0.058 (0.055)	
ECVS--Based on previous election					-0.095 * (0.055)
Observations	0.02	0.02	0.03	0.02	0.02
R-squared	2724	2724	2724	2724	2724
Controls	Y	Y	Y	Y	Y
State fixed effects	Y	Y	Y	Y	Y

Robust standard errors in parentheses; * significant at 10%; ** significant at 5%; *** significant at 1%.

Controls include population of constituency and its square, % Scheduled Castes, % Scheduled Tribes, % literate, % rural and % males in the population.

ECVS is the expected change in incumbent politician's vote share.

Appendix Table A.1

Correlations among proxies of campaign costs

	Fraction of old voters in new constituency	% increase in constituency population	Demographic change index
Fraction of old voters in new constituency	1		
% increase in constituency population	-0.5883*	1	
Demographic change index	-0.2660*	0.2151*	1

Correlations among measures of politician influence

	Incumbent is a committee member	Incumbent is a state minister	Incumbent belongs to ruling party	Local MP is a committee member
Incumbent is a committee member	1			
Incumbent is a state minister	-0.0408	1		
Incumbent belongs to ruling party	-0.0126	0.2434*	1	
Local MP is a committee member	-0.054	0.012	0.0051	1

Correlations among redistricting outcomes

	New constituency reserved for SC	New constituency reserved for ST	EVCS--Based on vote shares in previous election
New constituency reserved for SC	1		
New constituency reserved for ST	-0.1429*	1	
EVCS--Based on vote shares in previous election	-0.0165	-0.0018	1
EVCS--Based on vote shares in local elections	-0.0668	-0.0256	-0.0393
EVCS--Based on demographics	0.066	-0.0498	-0.0402

* indicates significance at 5% level.

Appendix Table A.2
Examining the Effects of Influence Measures One by One

Panel A: % increase in constituency population				
	(1)	(2)	(3)	(4)
Incumbent is a committee member	0.020 (0.020)			
Incumbent is a state minister		-0.006 (0.017)		
Incumbent belongs to ruling party			0.009 (0.018)	
Local MP is a committee member				0.014 (0.020)
Observations	0.81	0.81	0.81	0.81
R-squared	467	467	467	467
Panel B: Demographic change index				
Incumbent is a committee member	-0.007 *** (0.002)			
Incumbent is a state minister		0.009 (0.006)		
Incumbent belongs to ruling party			-0.000 (0.003)	
Local MP is a committee member				0.000 (0.003)
Observations	0.15	0.16	0.15	0.15
R-squared	467	467	467	467
Panel C: Fraction of old voters in new constituency				
Incumbent is a committee member	0.049 * (0.028)			
Incumbent is a state minister		0.017 (0.026)		
Incumbent belongs to ruling party			0.021 (0.015)	
Local MP is a committee member				0.044 ** (0.018)
Observations	0.45	0.45	0.45	0.45
R-squared	467	467	467	467
Controls	Y	Y	Y	Y
State fixed effects	Y	Y	Y	Y

Robust standard errors in parentheses; * significant at 10%; ** significant at 5%; *** significant at 1%.

Controls include population of constituency and its square, % Scheduled Castes, % Scheduled Tribes, % literate, % rural and % males in the population.