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# The Disadvantaged Incumbents: Estimating Incumbency Effects in Indian State Legislatures

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## Abstract

This paper estimates the effect of a candidate's incumbency status on his or her chances of winning using a large dataset on state legislative elections in India during 1975-2003. I use an innovative research design, called Regression Discontinuity Design (RDD), that provides unbiased estimate of the effect due to incumbency by comparing the candidates in closely fought elections, and find that incumbency has a significant negative effect on the fortunes of incumbent candidates

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in India and the incumbency effect has decreased further in the last decade. Also, the variation in the incumbency effects across Indian states depends on the differences in levels of public good provision such as the health facilities, rates of employment and poverty, and state per capita income.

## 1 Introduction

On average, incumbent candidates in the United States win more votes and are more likely to win than non-incumbent candidates. (Cover (1977); Erikson (1971, 1972); Gelman and King (1990); Cox and Katz (1996); Ansolabehere, Snyder and Stewart (2000)).<sup>1 2</sup> However, much anecdotal evidence suggests a disadvantage to incumbency in Indian elections. To quote the words of a losing Chief Minister (highest ranked executive) of Karnataka after the state assembly elections in 2004.<sup>3</sup>

I think it (economic reforms) was ahead of its time, and therefore, the people did not understand it. But this time, it was plain anti-incumbency. Look at what happened to Digvijay Singh in MP (Madhya Pradesh), Ashok Gehlot in Rajasthan, or for that matter, Naidu in AP (Andhra Pradesh). They have

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<sup>1</sup>Jacobson (1985, 1987) contended the finding by other researchers that incumbency advantage increased in the United States after the mid-1960s. He agreed that House incumbents, on average, won higher vote share in the 1960s as compared to the 1950s. But the probability of losing for the incumbents had not declined rendering incumbents as likely to lose in the 1960s as earlier.

<sup>2</sup>Among various factors given for the incumbency advantage are incumbents' control over redistricting plans (Tuftes (1973)), increased franking privileges (Mayhew (1974)), increased identification with the candidate rather than the party (Erikson (1971, 1972); Cover (1977); Ferejohn (1977)), increased bureaucratic resources available to incumbents (Fiorina (1977)), reputation effects (Bernhardt and Ingberman (1985)) and ability to raise more campaign money (Baron (1989)).

<sup>3</sup>Chakravarty, S. (2004). "This is anti-incumbency, people just want change." The Economic Times, India, May 14.

all followed different growth paths. Naidu has done excellent work. Gehlot, for one, was very rural-focused. I think people just want change every five years.

The view that an anti-incumbency bias is present in Indian elections is also reflected in the following quote.<sup>4</sup>

The Bharatiya Janata Party had constructed an American-style presidential campaign around Mr. Vajpayee's perceived popularity, adopting a slogan of "India Shining". But their strategy ran aground on the realities of the Indian parliamentary system, in which voters turned on incumbent legislators who they felt had done little to deliver. Indian voters are known for their anti-incumbent attitudes, and the majority of sitting legislators were rejected in the three-week election.

Using data on state legislative election of 25 states, this paper goes beyond the casual evidence presented above and provides a systematic investigation of the incumbency effects in India. More specifically, I am interested in whether the incumbency status of a candidate in Indian state legislatures raises or decreases his or her chances of winning. The importance of a study of Indian elections lies in India being the largest democracy in the world and, hence, in working with a large dataset. As will be discussed below in detail, the original data collected for this study has over 200,000 observations. Moreover, a finding that the incumbency effects are negative there provides a dramatic contrast to what we find in many other democratic countries such as the United States and the United Kingdom, and thus, may enhance our understanding of the incumbency effects in general.

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<sup>4</sup>Waldman, A. (2004). "Premier of India is forced to quit after vote upset." The New York Times, USA, May 14.

This paper also improves upon the existing methodologies (discussed below) that do not address the issues related to a nonrandom assignment of the incumbency status of a candidate and, hence, provide biased estimates of the incumbency effect. The assignment of incumbency status may be nonrandom due to intrinsic differences between incumbents and non-incumbents. For example, only those candidates who are better in quality than losers may win, and become incumbents. As a result, the effect that we attribute to incumbency might include the effects due to intrinsic characteristics of a candidate such as quality.

I use an innovative methodology, called the regression discontinuity design (RDD), that approximates a natural experiment and gives us an unbiased estimate of the incumbency effect. The RDD considers closely fought contests, and premises that candidates in such contests (bare winners and bare losers) are *ex ante* comparable, on average, in all characteristics which may be candidate specific such as experience and district-specific such as the partisan effects, number of candidates contesting the election and so on. The only difference between candidates in such contests is in their incumbency status. The winning candidates become incumbents and the losing candidates are non-incumbents. Moreover, the outcome of such contests is highly unpredictable and may depend on some chance factor, which coupled with the comparability of candidates, brings about a random assignment of the incumbency status. So, any difference in their outcome in the next election will identify what is essentially an unbiased estimate of the true incumbency effect.

The RDD has been used in other fields to isolate the effect of a binary treatment variable on the response variable from the effect of other contemporaneous factors. Thistlethwaite and Cambell (1960) applied the RDD to study the effect of student scholarships on career aspirations, given that students are awarded scholarships only if their test score exceeds a certain threshold. Hahn, Todd and Van Der Klaauw (2001) and Porter (2002) provide a more formal treatment of RDD technique. Lee et al (2004) use RDD on roll-call data for the United States House of Representatives during 1946-1995 to investigate whether there is a partial convergence or complete divergence between the announced policies of candidates.

Lee (forthcoming) uses RDD to estimate partisan incumbency effects in the United States House of Representatives and finds that the incumbent party is 40-45 percentage points more likely than the non-incumbent party to win the next election. However, Lee estimates the incumbency advantage at the party level, where as estimating the incumbency effects at the candidate level is more prevalent in the existing literature. Linden (2003) uses RDD to estimate the incumbency effects in the national elections in India. He finds that incumbents in the national elections are at an advantage of about 6.5-9.75 percentage points of probability as compared to non-incumbents between 1980 and 1989, and starting in 1991, they suffer a disadvantage of 14 percentage points.

My results at the state level (Vidhan Sabha) are different from Linden's results at the national level and are an improvement over his in the following ways. First, the state level elections provide a much larger dataset consisting of over 200,000 candidate-level observations. The source of the

data is the Election Commission of India (ECI) which is a constitutional body overseeing elections in India. The data was not directly readable by statistical software and was converted in a format suitable for empirical analysis using an elaborately written software program.

Second, both the pre-1991 and the post-1991 periods have a negative incumbency effect (incumbency disadvantage). In the pre-1991 period, incumbent candidates are about 15 percentage points less likely than non-incumbent candidates to win the next election. The corresponding figure for the post-1991 period is about 22 percentage points. As mentioned above, Linden, however, finds evidence of a positive incumbency effect in the pre-1991 period and a negative incumbency effect in the post-1991 at the national level. He attributes this switch in the incumbency effects in India to a decline in the dominance of the Indian National Congress (INC). However, the decline of the INC began much earlier at the state level. Wallace notes that by 1967, much of the organizational excellence, which helped her become such a "catch-all" party in the first place, had started to wane (Wallace (2003, pp 2)). INC lost power in many state legislative assemblies and, for the first time, faced competition from other parties, in particular regional parties whose popularity was limited to a specific state.

Third, the magnitude of the incumbency effect at the state level is lower than that found by Linden at the national level. This implies a greater incumbency disadvantage in state elections than in national elections. This finding is in line with the findings in US elections where the incumbency effects are smaller at the state level than at the federal level. Fourth, this paper provides a much stronger case for the validity of RDD which requires

that characteristics other than the incumbency status of a candidate be a continuous function of margin of victory. I compare incumbents and non-incumbents on a greater number of characteristics and employ additional tests to check for the robustness of my estimates.

Lastly, the comparative analysis across states suggests that the incumbency disadvantage is driven by variation in the state governments' inability to provide public goods such as health facilities, in the rates of employment and poverty, and the per capita income levels. This confirms what Mitra and Singh (1999) find in a post-election voter survey that voters care about the provision of public goods by the government. The survey finds that four out of ten major problems facing the country are related to physical and social infrastructure such as drinking water, education, health, transport, communication and electricity. Chhibber, Shastri and Sisson (2004) also find survey evidence that voters perceive the government, especially state governments, to be the provider of goods such as education facilities, electricity, drinking water and so on. I find that the incumbency effect is higher, the higher the per capita number of health facilities, the rate of employment and per capita income in a state, and higher is the rate of poverty. The result that poorer states have higher incumbency effects suggests capture of local democracies by local elites in such states. Crook and Manor (1998), and Bardhan and Mookherjee (2000, 2005, 2006) argue that local governments are especially prone to capture by the local interest group and this tendency increases with poverty and inequality. The tendency is reduced if there are checks and balances in terms of equally strong opposition parties. But that is precisely what is missing from such poor



societies captured by the elites, which prevents them from throwing them out of power.

The outline of the remainder of the paper is as follows. The next section briefly lays out the empirical methodology. Section 3 discusses various data issues. Section 4 talks about the empirical results of the paper. Section 5 performs robustness checks on the estimates of the incumbency effects. Section 6 seeks an explanation for variation in the incumbency effect across Indian states. The final section concludes the paper.

## **2 Methodology**

The sophomore surge and the retirement slump are the two most widely used measures of the incumbency effect. The sophomore surge is the average vote gain enjoyed by freshman candidates running as incumbents for the first time and the retirement slump is the average falloff in the party's vote when the incumbent retires (Cover and Mayhew 1977). However, Gelman and King (1990) show that the sophomore surge underestimates and the retirement slump overestimates the effect due to incumbency. They use a regression-based approach in which they control for the national partisan swings that were missing from the previous measures. The main limitation of Gelman and King's approach, acknowledged by them, is that their measure does not account for candidate quality. Levitt and Wolfram (1997) argue that a failure to control for candidate quality may bias the incumbency effect. They modify the sophomore surge measure by considering the same pair of candidates overtime to control for candidate quality and

find that the increased incumbency advantage in the US House elections could be attributable to increasing ability of incumbents to deter high quality challengers.

The RDD, however, disentangles the effect due to incumbency from a mix of idiosyncratic candidate characteristics and district-specific characteristics by comparing candidates in closely contested elections. The main identification strategy is that the incumbency status of a candidate changes discontinuously at the margin of victory of zero. Candidates who have a positive margin of victory become incumbents and who have a negative margin of victory become non-incumbents. The RDD exploits this property of elections and compares incumbents and non-incumbents in elections in which margin of victory is close to the threshold level of zero margin of victory. The intuition is that candidates in such elections are, on average, similar in all other observable or nonobservable characteristics and differ only in their incumbency status. The assignment of incumbency status is approximately random because the outcome of such elections is a toss-up and depends on some chance factors such as the weather conditions that particular day or traffic jams etcetera. As a result, a comparison of the next period electoral outcome (probability of winning or vote share) of candidates in such contests gives us an unbiased estimate of the true incumbency effect.

More formally, consider a simple linear probability model for the ease of exposition:

$$win_{i,t+1} = \alpha_{i,t+1} + \beta * I_{i,t+1} + \varepsilon_{i,t+1} \quad (1)$$

where  $win_{i,t+1}$  is an indicator variable which is one if candidate  $i$  wins in election  $t + 1$  and zero otherwise,  $I_{i,t+1}$  is an indicator variable for the incumbency status of a candidate such that  $I_{i,t+1}$  equals one if  $mov_{i,t} > 0$  and zero if  $mov_{i,t} < 0$ ,  $mov_{i,t}$  is the margin of victory of candidate  $i$  in election  $t$  and  $\varepsilon_{i,t+1}$  is the stochastic error term.

$$E\{win_{i,t+1} = 1 \mid I_{i,t+1} = 1\} - E\{win_{i,t+1} = 1 \mid I_{i,t+1} = 0\} = \beta \quad (2)$$

In the ideal case when the assignment of incumbency status is random,  $\beta$  is the difference in the probability of winning of the winners and losers or the true incumbency effect.

However, the assignment of incumbency status is likely to be nonrandom because incumbents and non-incumbents have some idiosyncratic differences. In this case, the probability difference includes the effect due to differences in these characteristics ( $BIAS_{i,t+1}$ ) in addition to the incumbency effect.

$$E\{win_{i,t+1} = 1 \mid I_{i,t+1} = 1\} - E\{win_{i,t+1} = 1 \mid I_{i,t+1} = 0\} = \beta + BIAS_{i,t+1} \quad (3)$$

$$BIAS_{i,t+1} = E\{\varepsilon_{i,t+1} \mid I_{i,t+1} = 1\} - E\{\varepsilon_{i,t+1} \mid I_{i,t+1} = 0\} \quad (4)$$

The equations (3) and (4) can alternatively be written as follows.

$$E\{win_{i,t+1} = 1 \mid mov_{i,t} > 0\} - E\{win_{i,t+1} = 1 \mid mov_{i,t} < 0\} = \beta + BIAS_{i,t+1} \quad (5)$$

$$BIAS_{i,t+1} = E\{\varepsilon_{i,t+1} \mid mov_{i,t} > 0\} - E\{\varepsilon_{i,t+1} \mid mov_{i,t} < 0\} \quad (6)$$

In closely fought elections, we can expect the candidates to be fairly similar. The RDD exploits this idea by comparing candidates in election  $t$  who are marginally above the threshold where the margin of victory equals zero (bare winners) and who are marginally below the threshold (bare losers).

$$E\{win_{i,t+1} = 1 \mid 0 < mov_{i,t} \leq \psi\} - E\{win_{i,t+1} = 1 \mid -\psi \leq mov_{i,t} < 0\} = \beta + BIAS_{i,t+1}^* \quad (7)$$

where

$$BIAS_{i,t+1}^* = E\{\varepsilon_{i,t+1} \mid 0 < mov_{i,t} \leq \psi\} - E\{\varepsilon_{i,t+1} \mid -\psi \leq mov_{i,t} < 0\} \quad (8)$$

and  $\psi$  represents the closeness of the elections. As  $\psi$  gets smaller or as we examine closer elections,  $BIAS_{i,t+1}^*$  goes to zero and  $\beta$  gives us the true incumbency effect:

$$\lim_{\psi \rightarrow 0^+} E\{win_{i,t+1} = 1 \mid 0 < mov_{i,t} \leq \psi\} - \lim_{\psi \rightarrow 0^-} E\{win_{i,t+1} = 1 \mid -\psi \leq mov_{i,t} < 0\} = \beta \quad (9)$$

Though RDD is a clean research design, its validity depends on the intuition that candidates around the threshold are similar. This implies that only incumbency status changes discontinuously and all other (observable and unobservable) characteristics change smoothly as a function of margin of victory. This intuition may or may not be supported by the data and must be checked. The continuity of observable characteristics can be readily checked with the data. The only assumption made here is that unobservable characteristics are continuous functions of the margin of victory, which is a

much weaker restriction on the stochastic error term and means  $g(\varepsilon|mov)$ , the conditional density function of  $\varepsilon$ , is continuous.

### 3 Data Description

The source of election data is the Statistical Reports on General Election to Legislative Assembly of States published by the Election Commission of India (ECI).<sup>5</sup> Due to the huge task of collecting and cleaning up the data, I only used data on elections held between 1975 and 2003. Another reason for using this time period is that district boundaries were constitutionally fixed between 1976 and 2001, and the data prior to 1975 suffered from frequent redistricting. I consider all the states except the state of Jammu and Kashmir, where elections were disrupted during much of the sample period. Table 1 provides information on years of elections and total number of seats for each state in my data.<sup>6</sup> Uttar Pradesh has the most seats (425) and Sikkim the lowest (32). There are on average 5 elections per state and 4,230 constituencies for all states taken together.<sup>7</sup> In all, I have data on 24,592 elections over the period 1975-2003. This amounted to a dataset of

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<sup>5</sup>The Election Commission was established under the Constitution as a semi-autonomous permanent body with advisory jurisdiction and quasi-judicial powers. The Commission is responsible for preparation, maintenance and periodic revision of the electoral roll, supervising the nomination of candidates, registering political parties, monitoring the election campaign including candidates' funding, facilitating coverage of the election process by the media, organizing the polling booths, and undertaking the counting of votes and the declaration of results (Source: [www.eci.gov.in](http://www.eci.gov.in)).

<sup>6</sup>In 2000, three more states were created out of some existing states. Uttarakhand was formed out of Uttarpradesh, Jharkhand out of Bihar and Chhattisgarh out of Madhyapradesh. The new states are not included here because they held only one election at the time of collection of this data. Also, the elections in the original states after this reorganization are not considered

<sup>7</sup>There were no elections held in the following seventeen constituency codes in the state of Assam in 1983: 32-35, 65-66, 71-72, 75-78, 81, 99 and 118-120.

220,726 candidate-level observations. The unit of observation is a candidate in an election.

The dataset provides information on candidates' names, their respective vote shares, gender and party affiliation. There is also information on the rate of voter turnout, and the number of constituencies reserved for the scheduled casts (SC) and the scheduled tribes (ST) candidates.<sup>8</sup> A major problem with the data is that the ECI does not always record the names of candidates correctly. First, a candidate might be reported as last name followed by his or her first name or vice versa in one election. The order of first and last names is switched in a subsequent election. Second, the middle names are omitted in some elections and included in others. Third, the full names and initialled names are used interchangeably over different elections. Lastly, the spellings of the names are incorrectly reported in some elections. This made it extremely difficult to track candidates over time given the size of the dataset.

I overcome this problem in two ways. First, I drop the observations that have a vote share of less than 5% in any election. The Indian elections feature a large number of candidates, many of whom perform poorly and are not expected to have any effect on the eventual outcome.<sup>9</sup> Moreover, a large number of these candidates do not belong to any recognized party and, thus, it is difficult to track them overtime. Second, I match the remaining

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<sup>8</sup>In India, some seats are reserved for scheduled casts (SC) and scheduled tribes (ST) in an effort to safeguard the interest of certain disadvantaged minority groups, who might otherwise find themselves unrepresented.

<sup>9</sup>There is a large number of "non-serious" candidates standing for elections. In a constituency named Modakurichi in the southern state of Tamilnadu, 1033 candidates stood for election in 1996. Out of 1033, 1030 candidates won a combined vote share of 5.81.

candidates overtime within a constituency checking for different placement of first and last names, missing middle names, spelling mistakes, and so on. Though the data avoids any major redistricting issues, district boundaries were reset in some small states like Arunachal Pradesh, Delhi, Goa, and Mizoram in 1983-1984. As a result, I exclude these years from the analysis.

Due to multi-candidate races as found in India, margin of victory of a candidate is defined as follows. The winner's margin of victory is the difference between his or her vote share and the vote share of the second-place candidate. Similarly, the margin of victory of a loser is the difference between his or her vote share and the vote share of the winner. This construct allows the margin of victory to be positive for winning candidates, and negative for losing candidates. The biasing effects of seats in which margin of victory is large or so called uncontested seats are well known in the literature (Gelman and King (1990), Cox and Morgenstern (1993)). As a result, I consider elections in which margin of victory is within 70 percent of the votes.

## **4 Estimation of the Incumbency Effects**

Incumbents in India fare much worse than their counterparts in the United States as can be seen from the following descriptive statistics. The average vote share and the average margin of victory of a winner are about 48% and 15%, respectively, in India. The same for the United States are 60% to 70% and 20% to 30% (Lee (*forthcoming*)). The proportion of incumbents running for reelection is 0.55 in India (0.88 in the United States). Among

the incumbents who rerun, the proportion winning the next election is 0.5 (0.9 in the United States). The proportion of losers who rerun in the next election is 0.21 (0.2 in the United States). Among the losers who rerun, the proportion winning the next election is 0.38 (0.15 in the United States). Though these casual estimates suggest that incumbents are disadvantaged in India, I turn now to more formal estimation of the incumbency effects.

Figure 1 plots the probability of winning in election  $t + 1$  against the margin of victory ( $mov$ ) in election  $t$ . The scatter plot is the plot of raw probability of winning (proportion of winners over 0.5 percent interval of margin of victory) against the margin of victory. The solid curve called the polynomial fit is the predicted probability of winning estimated using a logistic regression of the indicator variable for victory in election  $t + 1$  on a dummy that takes a value of one if a candidate won in election  $t$  and zero otherwise, a fourth order polynomial in margin of victory, their interactions, and the state-time fixed effects.<sup>10</sup> The estimate of the difference between the right hand side and left hand side limits of probability of winning at the threshold ( $mov = 0$ ) determines the incumbency effect. The top panel plots the probability of winning during the pre-1991 period and the bottom panel does the same for the post-1991 period. There is a slight disadvantage in the pre-1991 period. In the post-1991 period, the incumbency effect is about -0.09 implying bare winners are about 9 percentage points less likely to win the next election than bare losers.

As mentioned above, only a fraction of candidates who contested the election in  $t$  rerun for election in  $t+1$  and, hence, are not observed in election

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<sup>10</sup>All the succeeding plots have this specification unless noted otherwise



$t + 1$ . As a result, the incumbency effects in Figure 1 are estimated assuming that such candidates lose the election in  $t + 1$ . This assumption may lead to biased estimates of the incumbency effects if the probability of rerunning differs between the winners and losers at the threshold. Figure 2 plots the probability of rerunning in  $t + 1$  against the margin of victory in  $t$ . The bare winners are about 14 percentage points more likely to rerun in the next election than the bare losers in the pre-1991 period. The difference is about 10 percentage points in the post-1991 period. This means that the estimates in Figure 1 are biased upwards providing us with an upper bound on the magnitude of the incumbency effect.

To overcome this problem, I condition my estimates of the incumbency effects on candidates who rerun in  $t + 1$ . However, this could give rise to a problem of sample selection bias in the estimated incumbency effects. This might be the case, for example, if losers who rerun are systematically different from losers who do not rerun. More specifically, we might have reasons to believe that only those losers, who are stronger than other losers and have higher chances of winning, rerun. I show below that my estimates of incumbency are free from this sample selection bias.

Figure 3 plots the probability of winning in  $t + 1$  against the margin of victory in  $t$  conditional on the pool of candidates who rerun. There is a big discontinuous fall in the probability of winning at the margin of victory of zero, as we move from the left of the threshold to the right. The discontinuity is not evident at any other level of margin of victory. The incumbency effect in the pre-1991 period is -0.15 implying that bare winners are about 15 percentage points less likely to win the next election

than bare losers. After 1991, the incumbency effect is about -0.22 implying a greater incumbency disadvantage in the post-1991 period. These findings differ from those for the national elections by Linden (2003). First, both the pre-1991 and the post-1991 state elections are characterized by a negative incumbency effect. Linden finds that the incumbency effect is positive in the pre-1991 period and negative in the post-1991 period at the national level. Second, the magnitude of the incumbency disadvantage in state elections is greater than that in elections for the national Parliament. The comparison between the incumbency effects at the national level and the state level in India is in agreement with the findings in the United States. In the US also, the incumbency effects are found to be lower at the state level than at the federal level (Cox and Morgenstern (1993)). Figure 4 plots the vote share in  $t + 1$  against the margin of victory in  $t$ . The incumbency effect is about -2.2 percentage points of the votes in the pre-1991 period implying that bare winners get about 2.2 percentage points less votes in the next election than bare losers. The effect is about -2.8 percentage points in the post-1991 period and confirms an increase in the incumbency disadvantage in this period.

As emphasized earlier, an important requirement for the RDD estimates of the incumbency effects to be valid is that the factors at  $t$  other than the incumbency status of a candidate be a continuous function of the margin of victory. A convincing test of this assumption on the basis of all possible characteristics is constrained by lack of comprehensive data. However, I check for continuity of various candidate characteristics such as the vote share in  $t - 1$ , the probability of winning in  $t-1$ , the electoral experience of a candidate at  $t$  (number of times a candidate has contested the election up

to  $t$ ), the political experience at  $t$  (number of times a candidate has won an election up to  $t$ ), the proportion of female candidates and the proportion of candidates belonging to Indian National Congress (INC). I also check for the following constituency characteristics: the rate of voter turnout, the number of candidates, the proportion of seats reserved for the SC candidates and the proportion of seats reserved for the ST candidates.

Table 2 provides the continuity checks of characteristics for the pre-1991 period. Columns (2)-(5) show the differences in the probability of winning in  $t + 1$ , the vote share in  $t + 1$  and other characteristics for all winners and losers (All), when the margin of victory is within 25%, and when it is within 5%. In column (2), winners, on average, have a greater vote share in the previous election, have more electoral and political experience, greater proportion of females, feature in constituencies with higher voter turnout, have fewer candidates contesting election and are less likely to belong to a constituency reserved for scheduled tribe as compared with losers. These differences suggest that a comparison of all winners (all incumbents) and all losers (all non-incumbents) would provide biased estimates of the incumbency effect. However, the differences become smaller as the margin of victory gets closer to zero. In column (4), when the margin of victory is within 5%, the differences in candidate and constituency characteristics become statistically insignificant implying they are continuous functions of margin of victory, whereas differences in the probability of winning and the vote shares in  $t + 1$  remain significant.

Column (5) estimates the differences in the predicted values from a regression of each variable in column (1) on a dummy variable that takes a

value of one for a winner in  $t$  and zero otherwise, a fourth order polynomial in margin of victory, their interactions with the incumbency dummy, and the state-time fixed effects. The differences are computed separately for winners and losers at the margin of victory of zero. Again, the differences in the candidate and constituency characteristics are insignificant which further confirms the continuity assumption, while the differences in the probability of winning and vote share in  $t + 1$  are significant. Table 3 checks for the continuity assumption for the post-1991 period. The continuity assumption is also valid in this period.

## 5 Robustness Checks

The research design used above allows me to test for robustness of the estimated incumbency effects. We can further check the claim that the estimated incumbency effects are not confounded by candidate and constituency characteristics by including the latter in the basic polynomial specification used above (for instance, in tables 2 and 3). The resultant estimate of the incumbency effect should be insensitive to inclusion of these characteristics as covariates because it is not confounded by them. Table 4 performs these checks for the pre-1991 period. Column (2) reproduces the estimated incumbency effect of -0.15 in Table 2 using the basic polynomial specification. In column (3), I include the candidate characteristics as additional regressors. The estimated incumbency effect remains virtually the same. The estimate does not change by much in column (4), where I include only the constituency characteristics and in column (5), where both candidate and

constituency characteristics are included.

Finally, in column (6), I use an indicator variable for victory in  $t - 1$  as the dependent variable in the basic polynomial specification with all characteristics in  $t$  as the additional regressors. The estimated difference in probability of winning in  $t - 1$  should be close to zero, as it is already determined and cannot possibly be affected by the characteristics in  $t$ . This difference is -0.01 and is statistically insignificant. Table 5 performs similar robustness checks for the post-1991 period. These robustness checks reinforce the claim that the estimated incumbency effect is not confounded by other characteristics and is an unbiased estimate of the true incumbency effect.

In the above analysis, I conditioned my estimates on the pool of candidates who rerun in the next election. This could give rise to a sample selection bias in the estimated incumbency effects as mentioned above. In Table 6, I compare losing rerunners with losing non-rerunners on all characteristics around the threshold of winning. I regress each characteristic on a dummy variable that is one if a candidate reruns in election  $t + 1$  and zero otherwise, a fourth-order polynomial of margin of victory, their interactions and the state-time fixed effects for candidates within a margin of victory of 5%. All differences between two sets of candidates are insignificant suggesting that around the threshold, losing rerunners are comparable to losing non-rerunners. So, there is no systematic bias due to conditioning on the rerunning candidates. This is not to deny what we already know from Figure 2, namely that bare winners are more likely to rerun in the next election than bare losers. But the determinant of running decisions of a

candidate seems to be exogenous. For example, in India, the top-level leadership of the party (or the party high command) decides whom to nominate for elections (Chhibber and Kollman (2004, pp 86)).

## **6 Explaining the Incumbency Effects across Indian States**

India is a developing country, where a large proportion of population do not have access to even basic necessities of life. The picture is really grim as far as the provision of public goods is concerned. In 1991, only 42.4% of Indian population had access to electricity, 62.3% had safe drinking water, and only 30.4% had both. About 27% villages did not have a primary school and 67% did not have any health infrastructure (Banerjee and Somanathan (2001)). Since voters care about the provision of public goods as found by surveys of voters by Mitra and Singh (1999), and Chhibber, Shastri and Sisson (2004), the states with greater supply of public goods should have higher incumbency effect or relatively lower incumbency disadvantage. I use the number of health centers and the number of schools per thousand people as the two measures of public good provision in a state. I also use the data on percentage of population below poverty line and the rate of employment as additional factors affecting voters' decisions.<sup>11</sup> The relationship between

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<sup>11</sup>The education data are taken from the Department of Education, Ministry of Human Resource Development, Government of India (URL: <http://www.education.nic.in/cd50years/home.htm>). The health data are taken from Central Bureau of Health Intelligence, Directorate General of Health Services, Ministry of Family Health and Welfare, Government of India (URL: <http://www.cbhidghs.nic.in/hia2005/content.asp>). The poverty data is taken from Planning Commission, Government of India (<http://planningcommission.nic.in/>). The data on employment rate, per capita income and government expenditure are taken from Reserve Bank of India (URL: <http://www.rbi.org.in/>). These data are not annual data and

the incumbency effect and poverty is likely to be negative if the poverty-stricken voters are in a position to organize and assert themselves as a group to get a favorable policy outcome. However, as argued by Bardhan (2005, ch 5, pp 96), it may be difficult for the poor to get organized at local level. Bardhan and Mookherjee (2000, 2005, 2006) further argue that the poorer sections of the society get captured by the local elites who want the policies disproportionately biased towards their preferences. In such a case, the relationship between the incumbency effect and poverty will be positive as poorer states may exhibit greater control of office by the local elites and, hence, greater incumbent control.

Also, India has a multi-party system causing the contests to be relatively more competitive (as already pointed out above in terms of lower vote share and margin of victory for the winners). It is quite plausible that in the states, where elections are more competitive, incumbents might find it harder to hold on to their seats. So the level of competition and the incumbency effect may be negatively related. However, Chhibber and Nooruddin (2004) argue that the effective number of parties could positively affect the incumbency effect as with more parties in a plurality electoral system such as in India incumbents have to get smaller percentage of votes to win. Butler, Lahiri and Roy (1995, pp 28) also argue that a disunited opposition has benefitted the incumbent congress party in elections at the national level in India. So the effect of competition represented by the effective number of parties

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available for a few years for the period of study. The available years for each variable are as follows: health data is available for 1985, 1990, 1997, 2002 and 2004; education data for 1970-71, 1980-81 and 1990-91; poverty data for 1973-74, 1983-84, 1993-94 and 1999-2000; rate of employment growth for the periods 1980-90, 1990-98 and 1998-2005. The data on income and expenditure is available annually for the period between 1980-2003.

is ambiguous. I use the Laasko-Taagepara index (Laasko and Taagepara (1979)) to find the effective number of parties. This index is computed as follows:

$$ENOP_{jt} = \frac{1}{\sum v_{i,jt}^2} \quad (10)$$

where  $ENOP_{jt}$  is the effective number of parties in state  $j$  in election  $t$  and  $v_{i,jt}$  is the vote share of party  $i$  in state  $j$  in election  $t$ . I also use the rate of voter turnout as another political factor representing voter activism.

Table 7 summarizes the main results of the comparative analysis across Indian states. The dependent variable is the difference between probabilities of winning of bare winners and bare losers for each state from 1975 to 2003. All the right hand side variables are averaged out for the years they are available. In column (2), probability difference is regressed on per capita number of health centers (Health) and per capita number of schools (Education). The coefficient on health is positive and significant at 1 percent level of significance implying that the higher is the per capita number of health centers in a state, the higher the incumbency effects (or lower incumbency disadvantage). However, the coefficient on education variable is not significant. In column (3), I include other factors such as percentage of people living below the poverty line and rate of employment. In this specification also, the coefficient on health is positive and significant. The coefficients on employment and poverty are positive but insignificant. In column (4), political factors such as effective number of parties and the rate of turnout are included. The effect of per capita health centers is positive and significant in this specification. The effect of effective number of parties



is positive as suggested by Chhibber and Nooruddin (2004). However, the effect is insignificant at the conventional levels of significance.

In column (5), I control for state per capita income, the per capita government expenditure and the state population. In addition to a significant positive effect of per capita health facilities, the coefficient on state per capita income is positive and significant. The states with higher per capita income have higher incumbency effect. The poverty variable is significant and positively affects the incumbency effect implying Bardhan and Mookherjee's capture idea. Some poorer states such as Bihar, Orissa, Assam and Uttarpradesh have relatively less incumbency disadvantage and, in practice especially Bihar and Uttarpradesh, are frontrunners in caste politics or in domination by one group or another. The employment variable becomes significant at 10% level of significance in this specification and has a positive effect on the incumbency effect.

## **7 Conclusion**

In the United States, incumbent candidates have an electoral advantage over non-incumbent candidates. This paper finds an opposite effect in state legislative elections in India. Incumbents are not only less likely to win compared with their challengers, but the negative effect of incumbency has increased in the elections held after 1991. However, in line with the findings in the US, the incumbency effect is lower at the state level than at the national level. This means greater incumbency disadvantage at the state level than at the national level in Indian elections.

The research design used in this paper isolates the effect due to the incumbency status of a candidate from overall advantage which also includes the effects due to candidate-specific and district-specific characteristics. The comparability of bare winners and bare losers approximates a random assignment of incumbency status. In such a situation, the size of the discontinuity in probability of winning at margin of victory of zero gives us an unbiased estimate of the incumbency effect. The validity of the RDD estimates is established by comparing bare losers with bare winners at election  $t$ . It turns out that all the differences in candidate and constituency characteristics between them become insignificant, as we compare closer elections, and thus, any difference in their  $t + 1$  election outcome is because of their incumbency status. I check for the robustness of my estimates by considering different specifications to measure the incumbency effect. The estimates pass all the robustness checks.

The variation in the incumbency effects across Indian states depends in part on the state's ability to provide the public goods such as health centers, the rate of employment and per capita income levels. The positive relationship between the incumbency effects and the poverty rate suggests that poorer states may have been affected by capture by the local elites who hijack the policy making process to fulfill their vested interests at the cost of disadvantaged sections of the society. Bardhan (2005, pp 93) notes that even in cases where disadvantaged groups are able to form a viable organized group and make political gains, these are just symbolic victories rather than as committed attempts at changing the economic structure of deprivation.

The results of this paper raise two interesting questions. First, how does

lower expected tenure of the elected officials, which is a direct implication of the incumbency disadvantage, affect their policy decisions? Some endogeneity issues notwithstanding, does it discourage policies that are desirable from a long run perspective? Second, how does local capture undermine the policy making process at the cost of the disadvantaged sections of society? How does decentralization help or hinder the policies for upliftment of the poor? These are interesting questions study of which will be extensions of the results of present paper.

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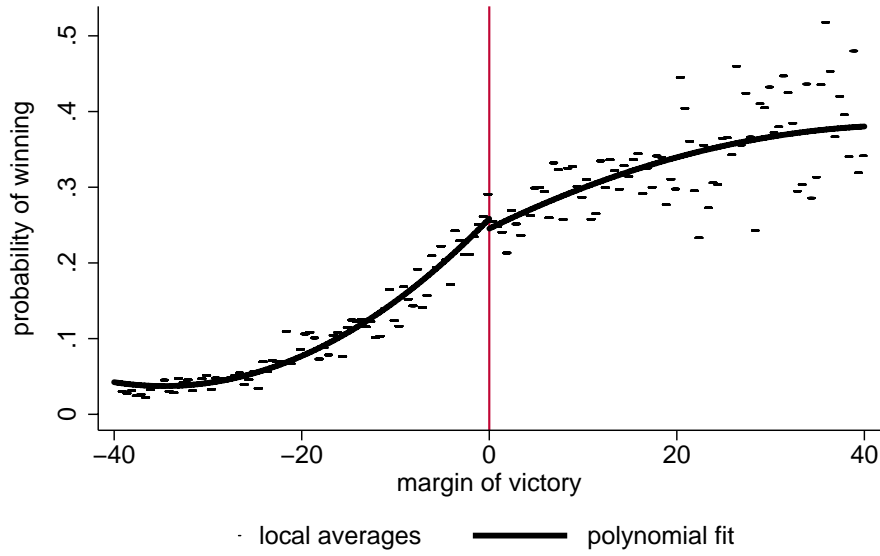
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Figure 1: Probability of Winning in  $t+1$

(a): The Pre-1991 period



(b): The Post-1991 Period

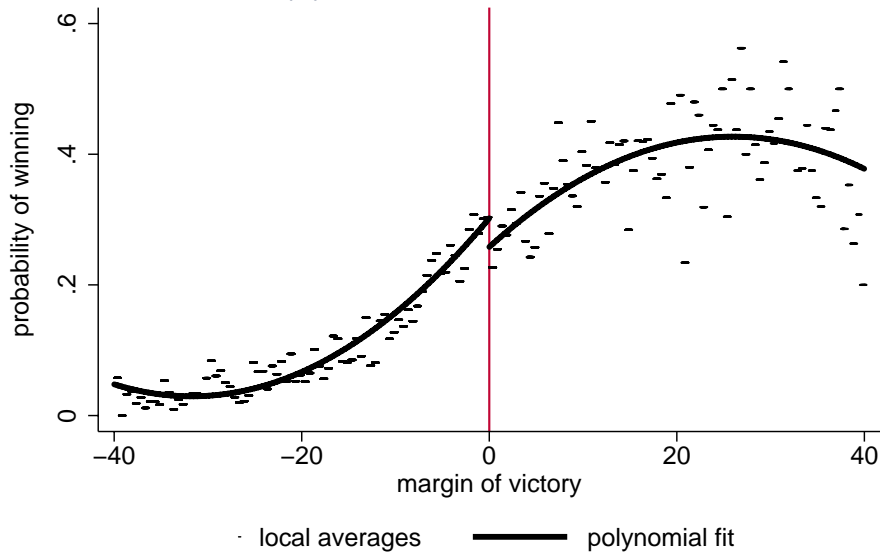
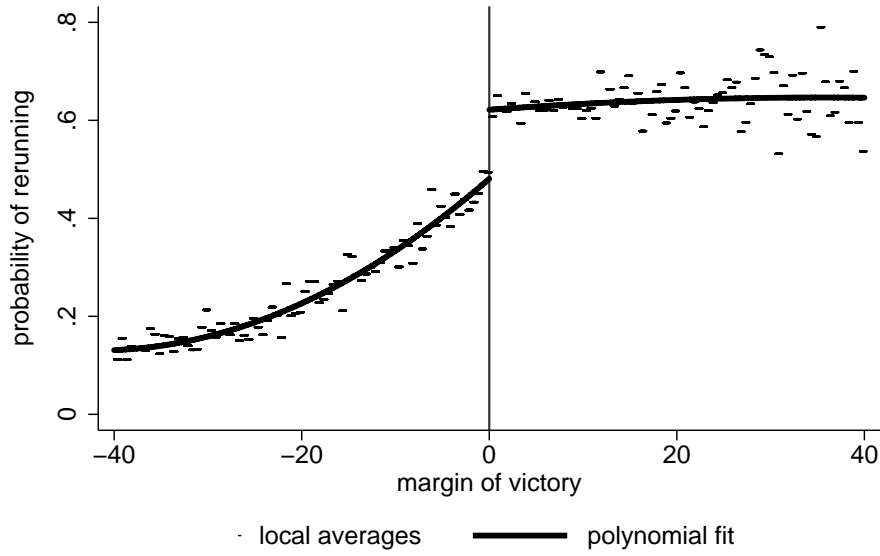




Figure 2: Probability of Rerunning in t+1

(a): The Pre-1991 Period



(b): The Post-1991 Period

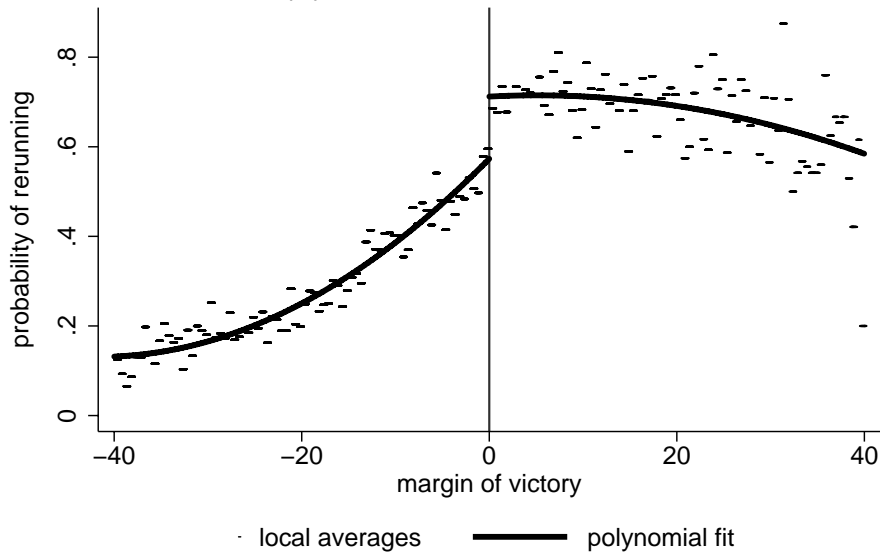


Figure 3: Probability of Winning in  $t+1$ , Conditional on Rerunning

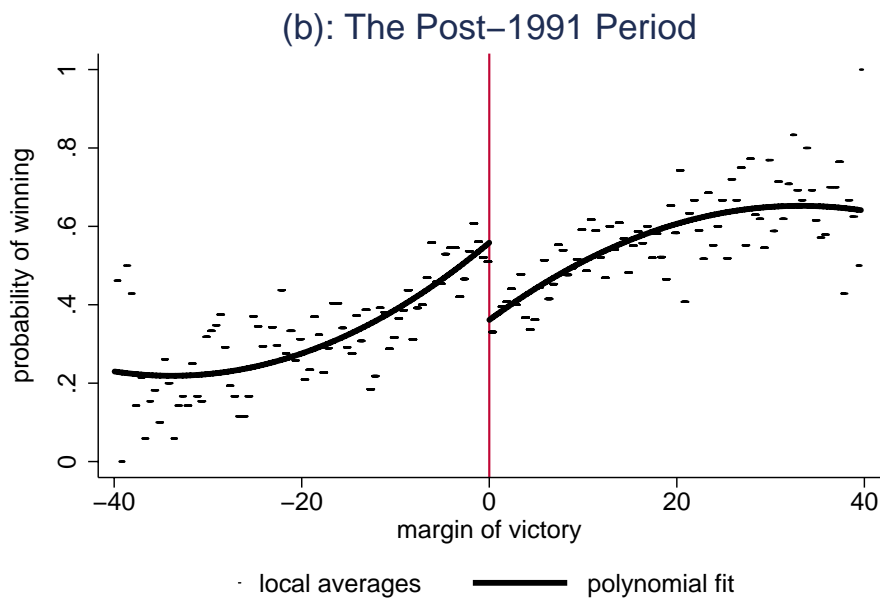
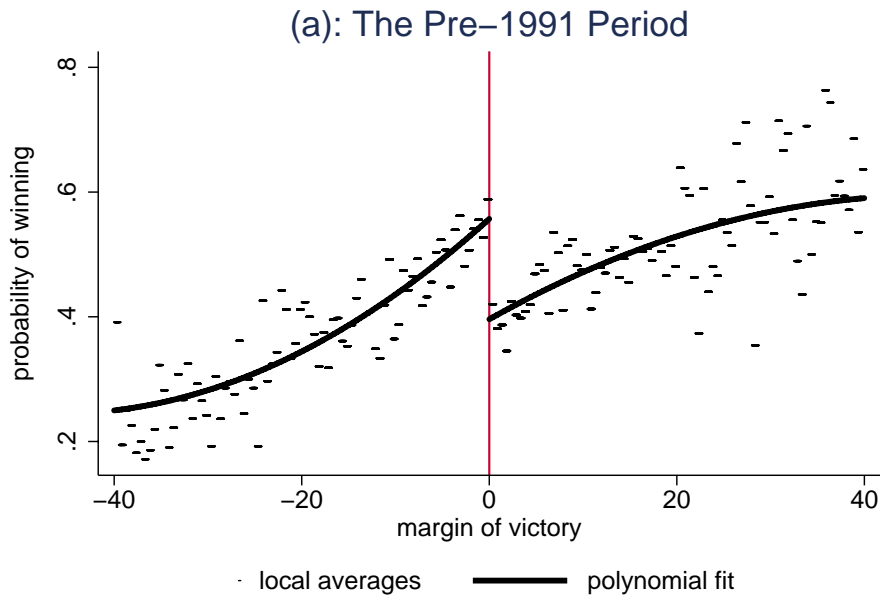


Figure 4: Vote Share in  $t+1$ , Conditional on Rerunning

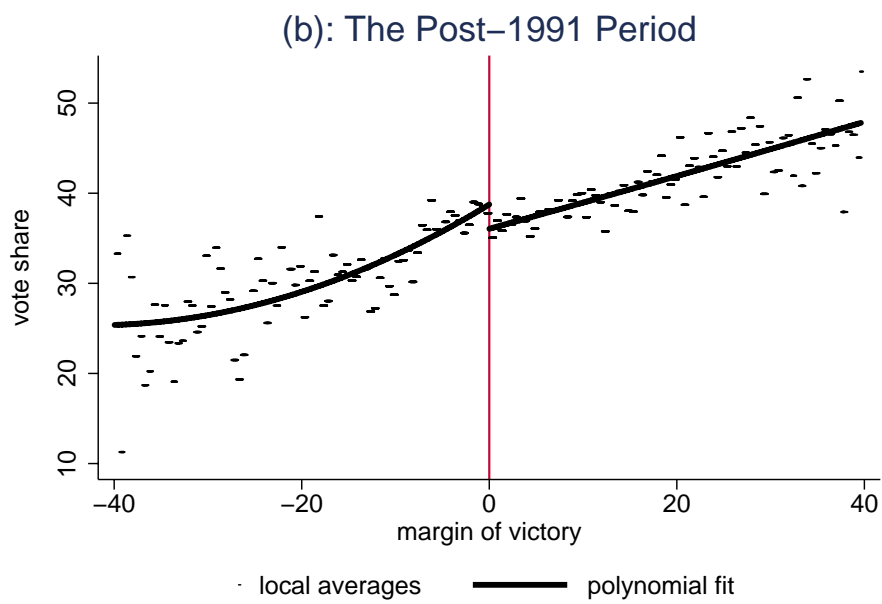
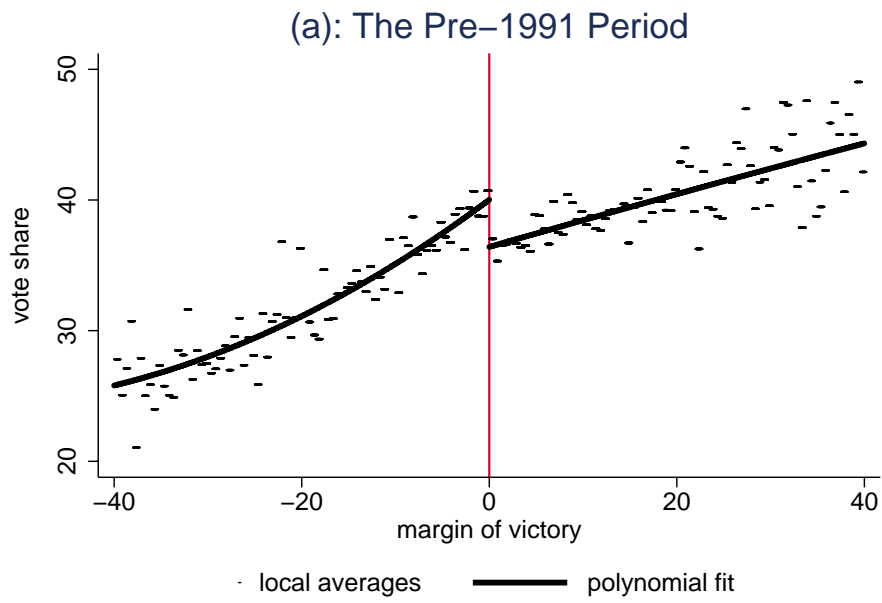


Table 1: Years of Election and Number of Seats

State	Years of Election	Number of Seats
Andhra Pradesh	1978, 1983, 1985, 1989, 1994, 1999	294
Arunachal Pradesh	1978, 1980, 1984, 1990, 1995, 1999	Before 1984=30 and after 1984=60
Assam	1978, 1983, 1985, 1991, 1996, 2001	126
Bihar	1977, 1980, 1985, 1990, 1995, 2000	324
Delhi	1977, 1983, 1993, 1998	Before 1983= 56 and after 1983=70
Goa	1977, 1980, 1984, 1989, 1994, 1999	Before 1984=30 and after 1984=40
Gujarat	1975, 1980, 1985, 1990, 1993, 1998, 2002	182
Haryana	1977, 1982, 1987, 1991, 1996, 2000	90
Himachal Pradesh	1977, 1982, 1985, 1990, 1993, 1998, 2003	68
Karnataka	1978, 1983, 1985, 1989, 1994, 1999	224
Kerala	1977, 1980, 1982, 1987, 1991, 1996, 2001	140
Madhya Pradesh	1977, 1980, 1985, 1990, 1993, 1998	320
Maharashtra	1978, 1980, 1985, 1990, 1995, 1999	288
Manipur	1980, 1984, 1990, 1995, 2000, 2002	60
Meghalaya	1978, 1983, 1988, 1993, 1998, 2003	60
Mizoram	1978, 1979, 1984, 1987, 1989, 1993, 1998	Before 1984=30 and after 1984=60
Nagaland	1977, 1982, 1987, 1989, 1993, 1998, 2003	60
Orissa	1977, 1980, 1985, 1990, 1995, 2000	147
Punjab	1977, 1980, 1985, 1992, 1997, 2002	117
Rajasthan	1977, 1980, 1985, 1990, 1993, 1998	200
Sikkim	1979, 1985, 1989, 1994, 1999	32
Tamilnadu	1977, 1980, 1984, 1989, 1991, 1996, 2001	234
Tripura	1977, 1983, 1988, 1993, 1998, 2003	60
Utter Pradesh	1977, 1980, 1985, 1989, 1991, 1993, 1996	425
West Bengal	1977, 1982, 1987, 1991, 1996, 2001	294

Table 2: Incumbency Effects and Predetermined Characteristics: The Pre-1991 Period

(1)	(2)	(3)	(4)	(5)
	Difference between Winners and Losers			
	All	margin  ≤ 25%	margin  ≤ 5%	Polynomial fit
Probability of Winning in $t+1$	0.1*** (0.01)	0.03*** (0.01)	-0.12*** (0.02)	-0.15*** (0.03)
Vote share in $t+1$	6.5*** (0.25)	3.2*** (0.3)	-2.0*** (0.5)	-2.20*** (0.63)
Electoral Experience	0.1*** (0.01)	0.05*** (0.01)	-0.04 (0.03)	-0.05 (0.04)
Political Experience	0.09*** (0.01)	0.05*** (0.01)	-0.02 (0.02)	-0.049 (0.034)
Vote share in $t-1$	4.8*** (0.4)	3.3*** (0.4)	-0.6 (0.7)	-1.9 (1.1)
Probability of Winning in $t-1$	0.06*** (0.01)	0.04*** (0.01)	0.00 (0.01)	-0.03 (0.04)
Proportion of Female Candidates	0.01*** (0.00)	0.01*** (0.00)	0.01 (0.01)	-0.02 (0.02)
Proportion of INC Candidates	0.00 (0.01)	-0.01 (0.01)	0.01 (0.01)	0.05 (0.05)
Rate of Turnout (%)	1.2*** (0.2)	1.0*** (0.3)	0.5 (0.5)	0.4 (0.5)
Number of Candidates	-0.8*** (0.1)	-0.7*** (0.1)	-0.4 (0.2)	-0.3 (0.2)
Proportion of Scheduled Casts	-0.00 (0.00)	0.00 (0.00)	-0.01 (0.01)	-0.06 (0.04)
Proportion of Scheduled Tribes	-0.02*** (0.00)	-0.02*** (0.01)	0.00 (0.01)	0.06 (0.04)
Observations	16,486	12,654	3,550	16,486

Notes: The values in the table are the differences between winners and losers in the variables in column (1). All comparisons are conditional on rerunning. Standard errors are in the parenthesis and are clustered at the state level for the polynomial fit which is a regression of each variable in column (1) on a dummy variable indicating the incumbency status of the candidate at  $t+1$ , a fourth order polynomial of margin of victory, their interactions with incumbency dummy and the state-year fixed effects. The values with \*\*\* and \*\* are significant at 1% and 5% levels of significance respectively.

Table 3: Incumbency Effects and Predetermined Characteristics: the Post-1991 period

(1)	(2)	(3)	(4)	(5)
	Difference between Winners and Losers			
	All	margin  ≤ 25 %	margin  ≤ 5 %	Polynomial fit
Probability of Winning in $t+1$	0.16*** (0.01)	0.09*** (0.01)	-0.13*** (0.02)	-0.22* (0.04)
Vote share in $t+1$	8.2*** (0.3)	5.3*** (0.3)	-0.9 (0.6)	-2.8*** (1.1)
Electoral Experience	0.15*** (0.03)	0.08** (0.03)	0.03 (0.06)	-0.1 (0.1)
Political Experience	0.15*** (0.02)	0.10*** (0.03)	0.06 (0.05)	-0.02 (0.09)
Vote share In $t-1$	5.6*** (0.5)	3.8*** (0.6)	0.2 (1.0)	1.4 (1.6)
Probability of Winning in $t-1$	0.05** (0.01)	0.04*** (0.01)	-0.01 (0.02)	0.01 (0.03)
Proportion of Female Candidates	0.00 (0.00)	0.00 (0.00)	0.00 (0.01)	-0.00 (0.01)
Proportion of INC Candidates	-0.03*** (0.01)	-0.04*** (0.01)	0.00 (0.02)	-0.04 (0.04)
Rate of Turnout (%)	0.5 (0.3)	0.5*** (0.3)	0.1 (0.6)	-0.6 (0.4)
Number of Candidates	-1.1*** (0.3)	-1.4*** (0.2)	-0.4 (0.4)	0.8 (0.6)
Proportion of Scheduled Casts	-0.01 (0.01)	0.00 (0.01)	0.00 (0.01)	-0.00 (0.01)
Proportion of Scheduled Tribes	0.00 (0.01)	0.00 (0.01)	-0.01 (0.01)	-0.08 (0.06)
Observations	7,699	6,308	1,951	7,699

Notes: The values in the table are the differences between winners and losers in the variables in column (1). All comparisons are conditional on rerunning. Standard errors are in the parenthesis and are clustered at the state level for the polynomial fit which is a regression of each variable in column (1) on a dummy variable indicating the incumbency status of the candidate at  $t+1$ , a fourth order polynomial of margin of victory, their interactions with incumbency dummy and the state-year fixed effects. The values with \*\*\* and \*\* are significant at 1% and 5% levels of significance respectively.

Table 4: Incumbency Effects Based on Different Specifications: The Pre-1991 period

(1)	(2)	(3)	(4)	(5)	(6)
Independent Variables	Incumbency Effect				Probability Difference in t-1
	-0.15*** (0.03)	-0.14*** (0.03)	-0.15*** (0.03)	-0.14*** (0.03)	-0.01 (0.02)
Electoral Experience	No	Yes	No	Yes	Yes
Political Experience	No	Yes	No	Yes	Yes
Vote Share In $t-1$	No	Yes	No	Yes	
Probability of Winning in $t-1$	No	Yes	No	Yes	
Proportion of Female Candidate	No	Yes	No	Yes	Yes
Proportion of INC Candidates	No	Yes	No	Yes	Yes
Rate of Turnout	No	No	Yes	Yes	Yes
Number of candidates	No	No	Yes	Yes	Yes
Proportion of Scheduled Casts	No	No	Yes	Yes	Yes
Proportion of Scheduled Tribes	No	No	Yes	Yes	Yes
State fixed effects	Yes	Yes	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes	Yes	Yes
Observations	16,486	16,486	16,486	16,486	16,486

Notes: The basic specification in column (1) regresses a dummy variable indicating victory in  $t+1$  on a dummy variable indicating the incumbency status of the candidate at  $t+1$ , a fourth order polynomial of margin of victory, their interactions with incumbency dummy and the state-year fixed effects. The remaining columns add the specified covariates to the basic specification. Standard errors are in the parenthesis and are clustered at the state level. The values with \*\*\* and \*\* are significant at 1% and 5% levels of significance respectively.

Table 5: Incumbency Effects Based on Different Specifications: The Post-1991 period

(1)	(2)	(3)	(4)	(5)	(6)
Independent Variables	Incumbency Effect				Probability Difference in t-1
	-0.22*** (0.04)	-0.21*** (0.04)	-0.22*** (0.04)	-0.21*** (0.04)	-0.04 (0.05)
Electoral Experience	No	Yes	No	Yes	Yes
Political Experience	No	Yes	No	Yes	Yes
Vote Share In t-1	No	Yes	No	Yes	
Probability of Winning in t-1	No	Yes	No	Yes	
Proportion of Female Candidate	No	Yes	No	Yes	Yes
Proportion of INC Candidates	No	Yes	No	Yes	Yes
Rate of Turnout	No	No	Yes	Yes	Yes
Number of candidates	No	No	Yes	Yes	Yes
Proportion of Scheduled Casts	No	No	Yes	Yes	Yes
Proportion of Scheduled Tribes	No	No	Yes	Yes	Yes
State fixed effects	Yes	Yes	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes	Yes	Yes
Observations	7,699	7,699	7,699	7,699	7,699

Notes: The basic specification in column (1) regresses a dummy variable indicating victory in  $t+1$  on a dummy variable indicating the incumbency status of the candidate at  $t+1$ , a fourth order polynomial of margin of victory, their interactions with incumbency dummy and the state-year fixed effects. The remaining columns add the specified covariates to the basic specification. Standard errors are in the parenthesis and are clustered at the state level. The values with \*\*\* and \*\* are significant at 1% and 5% levels of significance respectively.



Table 6: A comparison of losing rerunners and losing non-rerunners

(1)	(2)	(3)
	Difference	
	The Pre-1991 Period	The Post-1991 Period
Electoral Experience	0.1 (0.1)	0.2 (0.3)
Political Experience	0.1 (0.1)	0.1 (0.3)
Vote Share in $t-1$	6.2 (3.7)	-2.8 (6.5)
Probability of Winning in $t-1$	-0.16 (0.24)	-0.07 (0.11)
Proportion of Female Candidates	-0.03 (0.03)	-0.15 (0.09)
Proportion of INC Candidates	0.04 (0.08)	0.00 (0.13)
Rate of Turnout	-0.5 (1.4)	1.1 (2.2)
Number of Candidates	0.3 (0.7)	-3.2 (2.1)
Proportion of Scheduled Casts	-0.18 (0.12)	-0.18 (.13)
Proportion of Scheduled Tribes	-0.17 (0.23)	0.00 (0.00)
Observations	3509	1690

Notes: All characteristics are regressed on a dummy variable indicating if a candidate reruns in the next election, a fourth order polynomial of margin of victory, their interactions with the rerun dummy and the state-year fixed effects around the threshold. Standard errors are in the parenthesis and are clustered at the state level. The values with \*\*\* and \*\* are significant at 1% and 5% levels of significance respectively.

Table 7: Explaining the Incumbency Effects Across Indian States

(1)	(2)	(3)	(4)	(5)
	Incumbency Effect			
Health	2.04*** (0.71)	2.1*** (0.69)	2.21*** (0.70)	2.47*** (0.82)
Education	-0.14 (0.25)	-0.22 (0.26)	-0.14 (0.27)	-0.15 (0.21)
Poverty Rate		0.006 (0.004)	0.005 (0.004)	0.02*** (0.00)
Employment Rate		0.07 (0.05)	0.09 (0.06)	0.08* (0.04)
Effective Number of Parties			0.03 (0.03)	0.02 (0.02)
Turnout Rate			-0.007 (0.006)	0.00 (0.01)
Per Capita Income				0.00** (0.00)
Per Capita Expenditure				-0.00 (0.00)
Population				-0.00 (0.00)
Observations	25	25	25	24
<b>R-squared</b>	0.33	0.43	0.47	0.61

Notes: Standard errors are in the parenthesis. The values with \*\*\*, \*\* and \* are significant at 1%, 5% and 10% levels of significance respectively.