Path-Breakers:
How Does Women's Political Participation Respond to Electoral Success?[*]

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Abstract

We examine whether women's electoral success induces greater female political participation in subsequent elections. Using the regression discontinuity afforded by close elections between women and men, and constituency level data on India's state elections for 1980-2007, we show that electoral victory for a woman leads to a large and significant increase in the share of female candidates from major political parties in the subsequent election. Approximately half of this increase is attributable to the entry of new female candidates, a finding that indicates a positive dynamic that could drive continued increases in women's participation in politics. However, women candidates who win or lose the current election have a lower probability of contesting the next election compared to men. One reason for this is that women are less likely to switch political parties than men.

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1. **Introduction**

Women are under-represented in political office across the world. Women comprise only 11% of India's national legislators, 18% of the members of the United States Congress and 22% of the United Kingdom's House of Commons. In most countries, this deficit in representation can be traced back to an equivalent deficit in candidacy. For instance, in India, women comprised 5.4% of state legislators over the last three decades, and accounted for an even smaller 4.3% of candidates for the state legislatures.

In our paper, we examine one specific mechanism that may influence women's political participation, which is that women who stood before won an election in their constituency. Using data from India, we document that a female electoral victory results in a significant increase in the fraction of female candidates in the next election. This increase is particularly pronounced among major parties, and is not accompanied by any decline in political viability. Approximately half of this increased candidacy of women can be attributed to the entry of new candidates who did not contest the previous election. We find further that losing an electoral race leads women to drop out of subsequent electoral races much more frequently than men; a large part of the continued candidacy of losing male candidates is attributable to their tendency to contest from a different party. We do not find any impact on the political participation of women as voters. The main results derive from the regression discontinuity afforded by close elections between men and women. We show that on either side of the discontinuity in the vote margin the sample is balanced on a range of covariates and there is no evidence of manipulation of vote shares at the discontinuity. OLS and IV estimators produce very similar results and are robust to controls for constituency level fixed effects, district specific trends and state times year fixed effects.

Our paper contributes to a stream of recent literature on the role of women in political office. Most of this literature has focused on the policy and development impact of electing women to political office. Previous work has documented that increasing female representation in elected office results in changed spending priorities (Chattopadhyay and Duflo, 2004), lower infant mortality and better child outcomes (Bhalotra and Clots-Figueras, 2012; Powley, 2007; Brollo and Troiano, 2012), better educational outcomes (Clots-Figueras, 2011) and improved access to justice (Iyer et al, 2012).

Given the policy importance of greater female political representation, how can such representation be increased? Pande (2007) uses the World Values Survey from several countries

to document that lower interest and lower political participation of women is a widespread phenomenon. Lawless and Fox (2010) and Lawless (2012) study potential candidate pools of men and women in the United States and document several differences in perception (of themselves and of politics) between men and women; they also find that initial exposure to politics is a key determinant of eventually entering a political career. However, they do not explicitly examine the impact of women actually winning electoral races.

Some recent papers have examined the impact of gender quotas, increasingly implemented by many countries, on future female representation.[1] Using data from India's local elections where one-third of elected representatives are required to be women, Beaman et al (2009) find a significantly higher probability of women being *elected* to political office, but only if the area in question has experienced gender quotas for two electoral terms. The only other paper that, like us, would appear to have modeled the candidacy of women is Bhavnani (2009). Using the randomization of quotas for women in local councils in one Indian state across election years, he shows that constituencies in which quotas were implemented for women saw an increase in women's candidacy in the subsequent election absent the quotas, but a subsequent re-analysis finds that the results are much weaker when a larger, more representative, sample is employed, most likely because of a "discouragement" effect on women candidate in areas not subject to the quota (Sekhon and Titiunik, 2012). The analysis of gender quotas in Spain shows that women are often given less prominent positions in party lists, and that such outcomes are due to party political machines being biased against women (Bagues and Esteve-Volart, 2012; Casa-Arce and Saiz, 2011). As far as we are aware, ours is the first empirical study to analyze women's candidacy and turnout in response to exposure to competitively elected female politicians in a non-quota setting.

The rest of the paper is structured as follows: Section 2 provides background on the Indian political system, Sections 3 and 4 describe our data and present some descriptive evidence on female candidates. Section 5 outlines our empirical strategy, Section 6 presents our results, and Section 7 concludes with a preliminary discussion of the possible mechanisms in play and plans for future research.

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[1] See Pande and Ford (2011) for a comprehensive survey of gender quotas.

2. Women in Indian Politics

India is a federal country, with a parliamentary system of government at both the central and state levels. Elections are held every five years, on a first-past-the-post system in single-member constituencies. Elections are very competitive in India, with more than 100 parties participating in the 2009 national elections. In our state elections data set, the median number of candidates in each constituency is 8. However, only 35% of candidates are from major political parties, and only 41% of candidates manage to obtain more than 5 percent of the total votes, suggesting that the majority of candidates in India's electoral races are not politically viable. In our analysis therefore, we will always present separate results for major party candidates and competitive candidates in order to focus on candidates who are politically meaningful.[2]

Women in India are significantly disadvantaged in terms of human development indicators. In 2007, India was ranked 114 out of 182 countries on the Gender Development Index of the UNDP and had only 940 women for every 1000 men in the 2011 census. Only 65% of women in India were literate in 2011, compared with 82% of men. Women are under-represented in political office as well. In 2009, the proportion of women in the Lower House of the national parliament exceeded 10% for the first time. Over the period 1980-2007, only 5.4% of state legislators on average were women. A constitutional amendment passed in 1993 instituted electoral quotas for women in district and village councils, below the state level.[3] A similar provision has been proposed for state and national legislatures; as of October 2012, this has not been enacted into law.

In India's political system, party leaders decide who will be their candidate in every constituency. In several cases, two or more parties form an electoral alliance and field a common candidate in specific constituencies. The process of choosing candidates is not transparent (there are no US-style primaries), and internal party politics, the preferences of party leaders, gender or caste or religious identity, political networks, criminal records and financial strength may all play

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[2] There is a strong overlap between these categories. The vast majority (87%) of major party candidates are competitive in the sense of obtaining at least 5% of total votes cast. Similarly, about 71% of competitive candidates belong to a major party.

[3] This amendment reserved one-third of all seats in village and district councils, and one-third of all chairperson positions, for women. The effects of this significant increase in women's political representation on policy choices and development outcomes has been studied in a number of papers, including Chattopadhyay and Duflo (2004), Iyer et al (2012), Beaman et al (2009), Beaman et al (2012) and Rajaraman and Gupta (2010).

a significant role in the choice of candidates.[4] A female candidate winning an election might encourage other potential female candidates to enter the electoral race, but obtaining the nomination of a major political party would require obtaining the approval of party leaders who are mostly male (currently, only four major political parties are headed by women). However, electoral success for a woman might also change the views of political party leaders about the viability of female candidates. In future work, we will model these kinds of opinion formation more formally with a view to deriving more precise testable predictions. The current draft of the paper provides a series of stylized facts to help structure such modeling.

Another factor to consider is voter engagement. In our data, voter turnout among women (59% of eligible voters) consistently lags behind that of men (66%). This is consistent with the cross-country evidence that women are significantly less likely to express interest in politics and to participate in politics (Pande, 2007). However, if female voters are more likely to vote for female candidates, the lower engagement of female voters might also be an important factor in explaining the low political representation of women.

3.   Trends in Female Candidacy in India

We obtained data on state legislative elections from the Election Commission of India. We have information on the name, gender, party affiliation and votes obtained by every candidate in every election held in India over the period 1980-2007. Over this period, electoral constituency boundaries remained fixed, and therefore we do not have to worry about concerns such as gerrymandering which might differentially affect the electoral prospects for women. In this draft we use data for 16 major states of India which account for over 95% of the total population.[5]

States often hold midterm elections, before the five-year term of the government expires, if the governing coalition loses the confidence of the majority of the state legislature, and an alternative government cannot be formed. The differing incidence of midterm polls across states means that different states have elections in different years. This enables us to control for secular changes over time, which may not be possible to do when using only national level election data.

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[4] It has recently become mandatory for candidates to file affidavits with details of their criminal records, wealth, education and age.

[5] In 2001, the three new states of Jharkhand, Chhattisgarh and Uttarakhand were carved out of the larger states of Bihar, Madhya Pradesh and Uttar Pradesh respectively. For the first two states, electoral constituency boundaries remained fixed over time; we drop the data from the Uttarakhand state elections of 2002 and 2007 since we are unable to match the electoral constituencies over time.

State Assembly constituencies are also easier to match to census characteristics at the level of the administrative districts.

We find that women constitute a very small share of electoral candidates in India. In our data, only 4.3% of candidates were women over the period 1980-2007; 70% of electoral races had no female candidates at all. Given that 5.4% of all winners were women, this means that conditional on candidacy, women are more likely to win than men. This suggests that barriers to candidacy may be the major determinant of the low representation of women in Indian politics. A low female candidate share is prevalent across all the states of India but it has shown a secular rise (Figure 1). Beginning from a low value of 2-3% at the start of our sample period (1980-84), the fraction of female candidates ranged from less than 6% in the state of Maharashtra to almost 10% in Andhra Pradesh towards the end of the period (2000-07).

4.   Where are the Female Candidates?

We compare the characteristics of electoral constituencies where female candidates are present to those where there are no female candidates. Contrary to hypotheses that female candidates might be more likely to enter where competition is lower, we find that constituencies with female candidates have larger electorates and a greater number of candidates (Table 2, Panel A). There is no significant difference in female voter turnout in the previous election, suggesting that potential support from female voters is not a major factor in inducing women to contest elections. The difference in number of contesting candidates from the major parties remains statistically significant even when we restrict attention to major party candidates only. Women are also more likely to be in electoral races where the incumbent is also contesting, further suggesting that they are contesting in more competitive races.

We also compared demographic characteristics of constituencies with and without female candidates. We find that the fraction of female candidates is inversely correlated with the male-female literacy gap (Table 2, panel B). This might represent the tendency of women to become candidates in places where overt gender bias is lower. Other demographic characteristics like average literacy levels, or urbanization are not significant predictors of the share of female candidates.

We examined the party affiliations of women candidates. We find that national parties are the most likely to have female candidates: 5.34% of national party candidates are female,

compared to 4.46% for leading regional parties and only 3.26% for candidates who do not have a formal party affiliation (results not shown). Women had a stronger representation among major party candidates throughout this time period, though female share of candidates has increased among non-major party candidates as well (Figure 2). Despite the very low average participation of women, there are several important parties which are headed by women. As we might expect, these parties are significantly more likely to field women candidates (6.67%) and more of their winners are likely to be female (6.82%).[6]

How do the characteristics of female candidates differ from those of male candidates? Is there "positive selection" in the sense that female candidates need to be more qualified (in a broad sense) in order to successfully enter politics? Data on candidate attributes are not available for most of our time period. However, since 2004, the Election Commission has required all candidates to file affidavits giving details such as their educational levels, asset ownership and any pending criminal charges. We have information on the candidates in 11 out of our 16 states, which held elections between 2004 and 2007.[7]

We find that women candidates are, on average, 3 years younger than their male counterparts within the same constituency (Table 3, Panel A). Women candidates are significantly less likely to have a college degree and more likely to have less than high school education. This is consistent with the fact that women's educational outcomes lag behind those of men in the population as a whole. Approximately 30% of male candidates have one or more criminal charges filed against them, and 15% have serious criminal charges pending against them (such as murder, kidnapping, rape etc). Female candidates are only half as likely to have any criminal charges filed against them, and only a third as likely to have serious charges against them. In this sense, female candidates are likely to have a better chance than men in elections, since prior research has shown that having criminal charges filed against a candidate does carry some stigma (Dutta and Gupta, 2012). In contrast to these stark differences in educational level

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[6] To be recognized as a state party, a political party needs to win at least six percent of the population vote or four percent of the national parliamentary seats or one out of 30 seats in the state legislature. If a party fulfills these criteria in four or more states, it is recognized as a national political party. Currently, there are six national political parties in India. We define "leading regional parties" to include any party which won at least 5% of the seats in any state election over our sample period of 1980-2007. We use the phrase "major parties" to refer to national parties and leading regional parties. We have classified the following parties as women-headed major parties: the Indian National Congress until 1984 and after 1998; the All India Trinamool Congress; the Bahujan Samaj Party after 1995 and the All India Anna Dravida Munnetra Kazhagam since 1989.

[7] We obtained these data from the website of the Association for Democratic Reforms (http://myneta.info); these data are available for most of the major party candidates in these years.

and criminal propensities, there are no significant differences between male and female candidates in terms of total assets or net worth, most likely because these estimates include spousal wealth or assets held jointly by a married couple. Finally, we should note that these differences in education and criminal charges remain very similar when we restrict the sample to major party candidates (Table 3, Panel B).

5.   Empirical Methodology

We begin by examining whether a woman's electoral success leads to greater political participation by women in the subsequent election, using a standard OLS panel data specification:

$$(1) \qquad\qquad Y_{ist} = a_{is} + b_t + fWomanWon_{is,t-1} + gX_{ist} + e_{ist}$$

where Y_{ist} is a measure of female political participation for constituency i in state s in year t. The main outcomes we will consider are the fraction of female candidates, and the female share of major party candidates. We will, however, investigate outcomes such as the number of male and female candidates, the number of male and female candidates from major parties, the female share of competitive candidates[8], the share of votes received by female candidates, and male and female voter turnout. Our main explanatory variable is $WomanWon_{is,t-1}$, a dummy which equals one if a woman won the previous election in that constituency.

Our empirical specifications control for time-invariant constituency characteristics a_{is} and time fixed effects b_t, and a set of time-varying characteristics X_{ist}. We are therefore running a difference-in-differences regression i.e. comparing the difference in women's participation in constituencies before and after a woman is elected to the same difference in constituencies where a woman is not elected. It is of course possible that there are time-varying characteristics which determine both whether or not a woman gets elected and future political participation of women. Potential omitted variables of this type include (i) gradually changing characteristics such as the evolution of social norms governing the role of women in politics or demographic and economic changes, (ii) factors specific to the election cycle such as the presence of a charismatic woman party leader in that particular election and (iii) other political changes occurring at the same time

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[8] We define competitive candidates as those who obtained more than 5% of the total votes cast.

such as changes in party strategy, a reduction in the anti-incumbent bias in Indian politics or the enactment of gender quotas for village and district councils.

We will control for many of these in our specifications. To control for gradually changing characteristics, we include district-specific time trends in our set of controls $X_{ist.}$[9] We estimate a specification explicitly controlling for other political variables such as lagged vote margins, and the number of candidates and voters in the previous election, and voter turnout in the previous election. We also estimate specifications with state*year fixed effects to control for factors in (ii) above. This essentially means that we are comparing female political participation across constituencies within a specific state election cycle, according to whether they had a female victory in the previous cycle. All standard errors are clustered at the constituency level to adjust for the possibility that observations from the same constituency might be correlated over time. We conduct robustness checks where standard errors are clustered at the state*year level.

So as to more conclusively rule out potential omitted variables bias, we use the regression discontinuity (RD) afforded by close elections between men and women, that is, elections in which the top two candidates are of opposite gender and the victory margin is small (we also confirm that we get similar estimates using winners in close elections to instrument winners in all elections). The identifying assumption is that the places where women won in close" elections are very similar in unobservables to places where women narrowly lose to men. For RD, we restrict the sample to constituencies with close elections between a man and a womanand control for linear and quadratic trends in the vote margin (of females over males), looking for whether there is a discrete jump in the outcome of interest when a woman "just wins." We conduct robustness checks to show that a regression discontinuity design is appropriate in our setting, including verifying that pre-determined variables do not show a discrete jump when a woman just wins, and that the distribution of vote margins is continuous around the discontinuity.

In general, the model to be estimated is:

(2) $Y_{ist} = a_{is} + b_t + d\ WomanWon_{is,t-1} + k\ f(\ M_{is,t-1}\ ) + e_{ist}$

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[9] In future work, we will also examine a computationally demanding specification with constituency-specific time trends.

In specification (2), $f(M_{is,t-1})$ is a flexible function of the margin of victory between the male and the female politicians $M_{is,t-1}$, which should be continuous in a neighborhood of $M_{is,t-1}$ =0. Given that the female politicians will win the election if the margin of victory is positive, and male politicians will win if the margin of victory is negative a sharp regression discontinuity design can be implemented.

In order to estimate specification (2) we apply two methods: the split polynomial approximation (Lee, Moretti and Butler, 2004) and local linear regressions restricting the sample to an optimal bandwidth around the discontinuity (Imbens and Lemieux, 2008). Following the first methodology we use the whole sample to estimate:

(3) $Y_{ist} = a_{is} + b_t + d\ WomanWon_{is,t-1} + k\ f(M_{is,t-1}) + j\ WomanWon_{is,t-1} * f(M_{is,t-1}) + e_{ist}$

In this case d is our coefficient of interest and $f(M_{is,t-1})$ are linear and quadratic polynomials of the margin of victory. Following the second methodology we first restrict the sample to a bandwidth h around the discontinuity to estimate:

(4) $Y_{ist} = a_{is} + b_t + d\ WomanWon_{is,t-1} + k\ M_{is,t-1} + j\ WomanWon_{is,t-1} * M_{is,t-1} + e_{ist}$

The optimal bandwidth *h* is selected by applying the method in Imbens and Kalyanaraman (2009)[10], but we also run the same specification with larger bandwidths: 0.25 and 0.5.

In the IV specification, we use female victories in close elections as an exogenous determinant of female victories overall. However, since places which feature such close elections might be different in unobservable ways to places which do not feature any close elections, we control directly for the presence of such close elections. Our first stage equation is therefore:

(5) $WomanWon_{is,t-1} = a_{is} + b_t + \varphi WomanWonCloseElection_{is,t-1} + \lambda CloseElection_{is,t-1} + u_{ist}$

In this specification **WomanWonCloseElection**$_{is,t-1}$ is a dummy equal to one if the woman candidate won by a very narrow margin against a man. We define close elections as those in which the difference in the vote margins was 5% or lower, even though we also run

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[10] See http://scholar.harvard.edu/imbens/scholar_software/regression-discontinuity.

specifications in which close elections are defined according to differences in vote margins of less than 3% and less than 2%. **_CloseElection$_{is,t-1}$_** is a dummy equal to one if there was a close election between a woman and a man in the constituency. In the second stage, we take the predicted values of **_WomanWon$_{is,t-1}$_** and re-estimate equation (1), controlling again for the presence of close elections, so that the exclusion restriction is satisfied:

$$(6) \qquad Y_{ist} = a_{is} + b_t + fWomanWon^*_{is,t-1} + hCloseElection_{is,t-1} + e_{ist}$$

where **_WomanWon$^*_{is,t-1}$_** is the predicted value of **_WomanWon$_{is,t-1}$_** obtained by running (5). We should note that this strategy is very similar to those used in many different instances, including Clots-Figueras (2011, 2012), Bhalotra and Clots-Figueras (2012) and Rehavi (2003). In our dataset, almost a fifth of female winners (19.6%) win by a margin of less than 5% against men and 9.4% of female winners win by less than 2%. We show results with either constituency fixed effects or state*year fixed effects.

6.   Does Women's Political Participation Depend on Prior Electoral Success?

A. OLS Results

We find that the fraction of female candidates is significantly higher in constituencies in which a womanwon in the previous election. Table 4 shows the results of estimating equation (1) using the difference-in-differences specification. The fraction of female candidates increases by 4.1 percentage points after a constituency elects a female legislator (Table 4, Panel A, Column 1). Given that the average fraction of female candidates is 4.3%, this indicates a very substantial increase in female political participation.

These estimates control for all time-invariant constituency characteristics. We also control (partially) for time-varying regional characteristics by including state-specific linear trends or district-specific linear trends. Columns 2 and 3 show that the estimates retain their size and statistical significance with these controls, suggesting that omitted time-varying variables at the state or district level are unlikely to be driving the relationship. The results are also robust to explicitly controlling for time-varying political characteristics such as the lagged vote margins, the number of candidates in the previous election, and lagged voter turnout (column 4). A final

verification that the results are not driven by omitted characteristics is provided in column 5, when we estimate the equation with state*year fixed effects, in essence comparing constituencies within each state-election-cycle. Results are also robust to controlling for the lagged dependent variable, so that the results we observe are not simply a function of persistency in female candidacy (column 6). There do not appear to be any significant spillover effects: our coefficients remain very similar when we control for the fraction of female winners in the administrative district as a whole (column 7).[11] Finally, we see statistically significant results when we change our dependent variable to a dummy variable for whether there are any women candidates in that constituency (column 8).

The effects of electoral success on female candidacy are larger when we restrict our sample to major party candidates only (Table 4, Panel B). This is reassuring because it means that the effects of electoral victory are not limited to marginal or politically irrelevant candidates. Since becoming a candidate of a major party is dependent on the decisions of party leaders, and not just of potential candidates, it means that electoral victory by female candidates might play a role in changing these leaders' perceptions of the viability of female candidates.

We now examine the robustness of our results to using alternative measures of female participation in electoral politics. We find an effect on the number of female candidates, but not on the number of male candidates, in columns 1 and 2 of Table 5, which establishes that there is in fact a greater number of women rather than a constant number of women candidates and a declining total candidacy (driven by a decline in male candidates). When we restrict to candidates from the major parties we find evidence of substitution between men and female candidates: we observe an increase in the number of female candidates and a decrease in the number of male candidates (columns 3 and 4). Again, this indicates a potential role for changed decision-making within the party leadership. In column 5, we look beyond the appearance of women as candidates to their electoral success. This is important because if there is a party bias against women at baseline and, after a woman wins, beliefs about women are positively updated, then party vote share should increase. We indeed see that an increase in female candidates is concomitant with an increase in the share of "competitive" candidates (which we define as obtaining at least 5% of total votes cast). Further, the vote share of all female candidates is also higher in the election after a woman is elected (column 6).

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[11] An administrative district usually comprises 9-10 electoral constituencies.

There is no effect of female electoral victories on women's participation as voters (column 7). Female voter turnout shows no significant relationship with a woman's electoral victory, suggesting that the primary channel is through changing the behavior of potential female candidates or party leaders who choose the candidates, rather than through any changes in voter behavior. There is also no effect on male voter turnout (column 8). We have also verified that voter turnout for men and women does not respond to the presence of female candidates on the current ballot (results available upon request). This is at variance with the effects documented in Washington (2006), where voter turnout changes in response to the racial identity of candidates in U.S. elections.

B. Regression Discontinuity Estimates

As explained earlier, the regression discontinuity compares female candidacy in constituencies where women "just won" to constituencies where women "just lost." We verify that this is a valid strategy in two ways. First, we check that the distribution of vote margins (difference between vote share of winners and runners-up) does not show a discrete jump at zero. If we observed such a jump in the distribution of vote margins itself, we would be unable to infer whether any outcome discontinuities we observe are due to this underlying distributional discontinuity or due to the actual effect of winning rather than losing. Figure 4a shows that the density of the vote margin does not show any discontinuities around zero. Following McCrary (2008), we estimate the density of the vote margin on either side of the zero point (Figure 4b), and test explicitly for any discontinuities. As we can see, the densities on either side share a substantial overlap. The estimated discontinuity is 0.0378 with a standard error of 0.0964, which is statistically insignificant.

Our second test for the validity of the RD strategy is to verify that pre-determined variables do not show any discontinuity around the zero point. Figure 5a shows the regression discontinuity graphs for the voter turnout and total number of candidates in the previous election—as we might expect, these do not vary discontinuously with the vote margin, in fact they show very little correlation with the vote margins overall. The comparisons for other measures of political competition are documented in Table A.1 (Panel A).

In Figure 5b, we examine the distribution of covariates such as the proportion of the population that is urban and the female-male literacy differential (which is a significant predictor

of the presence of women candidates). Again, we see that these variables show very little relationship with the vote margin in elections between male and female candidates and, in particular, do not show a discontinuity around the zero point. This reassures us that the female candidacy discontinuities we observe cannot be attributable to discontinuities in other variables. We have also examined other demographic characteristics of places where women won or lost close elections, and do not find any significant differences in these measures (Table A.1, Panel B). Finally, we also observe that women winning in close elections do not appear to be "positively" selected in any way (Table A.1, Panel C). As in the full sample, women candidates are less educated and less likely to have criminal charges filed against them; there is no difference in net worth of male and female candidates who win close elections.

We now go on to examine the impact of female electoral success on future female candidacy using regression discontinuity techniques. Figure 6a shows that there is very little impact on the share of female candidates in the next election, but there is a significant increase in the fraction of females among major party candidates (Figure 6b), and in the fraction of competitive female candidates (Figure 6c). There does not appear to be any significant effect on female voter turnout (Figure 6d).

The regression discontinuity results mirror the results from these graphs (Table 6). Given that our strongest results are for major party candidates, we show a series of robustness checks for these results. Recall that the RD estimates are from the sample where the election featured both male and female candidates. We find that the share of women in major party candidates increases by 14 percentage points following a woman's electoral victory (Table 6, panel A, column 1). The coefficient size decreases only slightly when we control for linear trends and quadratic trends in the vote margin between male and female candidates (table 6, panel A, columns 2-3). Columns 4-6 show that the results are unchanged when we also run local linear regressions restricting the sample to an optimal bandwidth around the discontinuity, as outlined in Imbens and Lemieux (2008)[12]. Finally, all our coefficients retain their size and significance when we control for state-year fixed effects to take into account state-specific time-varying factors which might independently influence female candidacy (Table 6, panel A, columns 7-9).

Panel B of Table 6 shows the regression discontinuity results for other measures of female candidacy, based on the specification with state-year fixed effects and a quadratic control

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[12] The optimal bandwidth is 0.2412.

for the vote margin. The fraction of female candidates increases by a marginally significant 2.4 percentage points after a woman wins the election (Table 6, panel B, column 1). This is much smaller than the OLS estimate of 4.1 percentage points. Results for the number of male and female candidates allow us to reach the same conclusions as before. We observe the same substitution of male candidates of major parties by female candidates of major parties once a female politician wins the previous election that we noted in studying the OLS estimates. We also find a significant increase in the share of women among competitive candidates. This is consistent with the strong increase in major party candidates, since the vast majority (71%) of competitive candidates belong to major parties. However, we now do not find effects for the vote share of female candidates and we continue to find no change in male or female voter turnout.

C. Incumbents or New Candidates?

The increase in female candidates may reflect female candidates who ran for election in the previous round (including the incumbent) being encouraged to contest again in the subsequent election or it may reflect new female candidates contesting. In Table 7, we run the same OLS and RD specifications as before but with the dependent variable defined as the fraction of candidates that were female who did not contest in the previous election (i.e. the fraction of new female candidates). Results in Panel A are for all candidates, while results in Panel B refer to candidates of major parties. This variable was constructed by manually comparing the names of candidates in a given election with those in the previous election. Many Indian politicians spell their names differently in different elections (or shorten middle names to initials etc), and often change party affiliation as well, so that it is difficult to construct the number of new candidates by automated means. Our coding by name is reasonably accurate: we were doubtful about only 0.11% of the names (and only 0.06% of major party candidates).

We find that approximately half of the observed increase in female candidacy comes from new female candidates. The estimated effect of a woman winning the previous election is to increase new candidates by 0.015 (Table 7, panel A, columns 1 and 2), but this is not significantly different from zero. When we look at the sample of major party candidates (where the effects on female candidacy were robust to the RD specification), we find that the fraction of new female candidates increases significantly by 0.047 following electoral victory for a woman

(Table 7, panel B, column 2). This is about half of the coefficient for overall female major party candidacy (0.092).

What accounts for the other half of the observed increase in candidacy? We find two effects here, which go in opposite directions. We find that the female winners of close elections are significantly more likely to be contesting the subsequent election (Table 7, Columns 3 and 4), while the losing female candidates are significantly less likely to contest the next election (Table 7, columns 5 and 6). All these effects are, as before, larger in size for major party candidates.

While these results show that female winners are more likely to contest again, the same might be true of men, so that what we observe is simply a reflection of incumbency advantage for female candidates. Further analysis however shows some interesting nuances in this regard. For each election, we examined whether the candidates of that election contested the next election and disaggregated this by their status as winners, runners-up or other non-winners. Further, we disaggregated whether the candidate contested the next election from the same party as before or from a different party.

We find that only 36% of winners in India's state elections go on to contest the next elections, and that there is a significant gender gap in this regard. Women winners are 2.9 percentage points less likely to contest the subsequent election (Table 8, Panel A, Column 1). Women runners-up face an even steeper challenge. While only 20% of all runners-up contest the next election, this probability is 5.9 percentage points lower for women candidates (Table 8, Panel A, Column 2). Candidates placed lower exhibit similar gender gaps. Interestingly, a large part of this gender gap stems from the lower mobility of women across parties. While male winners have a 8% probability of contesting the next election as the candidate of a different party, women winners are 3 percentage points less likely to do so—explaining the entire gender gap in subsequent candidacy of women winners (Table 8, Panel B, Column 1). For runners-up, this lack of party switching explains two-thirds of the gender gap in candidacy (3.9 out of 5.9 percentage points difference).[13]

Taken together, our results suggest a mixed picture for the greater political participation of women. Despite parties being willing to put forward women candidates in response to electoral victories, women candidates still appear to have lower chances of candidacy due to their inability (or unwillingness) to switch parties. This suggests that updating of beliefs about

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[13] These results are still preliminary, and need to be adjusted for a small number of party splits and mergers.

women's electoral abilities is likely to happen within parties, rather than being widespread across all parties.

D. Instrumental Variable Estimates

As described earlier, we use the dummy for a woman winning in a close election as an instrument for whether a woman in the constituency, to construct instrumental variable estimates for the impact of female victories on future participation. We find that there is a small increase in the overall fraction of female candidates but a large and statistically significant increase in the share of female candidates who are competitive or from major parties (Table A.2 in the Appendix, columns 1-3). The coefficient sizes for these regressions are almost identical to those from the regression discontinuity specification. This is not surprising, since the IV identification is based on the same sample of close elections between men and women.

In the IV specification, we find stronger effects for new female candidates from major parties, but as before, no effect on the overall share of new female candidates (Table 7, columns 5 and 6). We also do not find any effects on female turnout (column 4).

7.   Conclusions and Future Research

We document that a victory by a female candidate in Indian state elections has a large and significant effect on the political participation of women politicians in future elections, as measured by the share of female candidates from major parties. These increased candidacies are not accompanied by declines in political viability, since we see a concomitant rise in the female share of competitive candidates. Our estimates are robust to several different estimation methods, including instrumental variables and regression discontinuity techniques. They are also robust to a variety of ways of controlling for time-varying characteristics of electoral constituencies. The second important result is only half of this increase in major party female candidacy is attributable to the entry of new women, with the other half being explained by a greater probability of losing women candidates to drop out.

In future work, we plan to construct a theoretical framework to help interpret our results and generate additional testable predictions. We discuss here some preliminary thoughts on the mechanisms behind our observed results, and potential empirical tests of these hypotheses. One possible hypothesis is that observing a woman winning an election might change the priors of the

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potential candidate pool regarding the competitiveness of the race, and their perceptions of their own ability to serve in political office. Research on potential electoral candidates in the United States shows that women are far more likely than men to perceive electoral politics as extremely competitive and to rate themselves as not being qualified for political office (Lawless and Fox, 2010). The same research also shows that women are much less likely than men to be encouraged by others to run for political office (a channel we discuss in more detail below).

Our results on new female candidates suggest that this channel might play some role, but cannot explain the whole effect. In particular, this channel might operate only in specific circumstances, for instance if there is a large enough potential candidate pool who need only a little inducement to try for major party candidacy. One specific instance of this arises in the Indian context due to the reservation of 33% of village and district council seats for women after 1993. To see if this change was effective in creating a new class of potential candidates for higher office, we examined whether our effects are stronger in the period after local elections with increased female representation were held. Our initial analysis does not indicate any such effects at work; in fact, the effects of electoral victory on female candidacy are stronger in the earlier period.

A second hypothesis is that a woman's electoral victory changes the perceptions of the party leaders with respect to the political viability of female candidates. Beaman et al (2009) show that experiencing a woman leader changes people's perceptions of women in leadership roles, but this happens only with repeated exposure to female leaders. If a similar dynamic is at work, then we should see a greater effect on candidacy if there were two consecutive victories by women in the same place. We plan to test whether our observed effects on female candidacy are stronger after repeated electoral victories for women. Another possibility is that the opposition party feels obligated to field a woman candidate to counter the female victory in the previous election. We are in the process of putting together the data to test such party dynamics in candidate selection. Finally, it could be the case that women are initially considered not "tough enough" for electoral politics, and pulling off a narrow victory would go a long way to change this perception. In this case, we expect to see more candidacies if the margin of victory is smaller rather than larger.

Our results are important in showing that barriers to candidacy can be lowered significantly by the power of a good example. Whether this can act as a justification for

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promoting electoral quotas for women depends on the exact mechanism driving the result. Going forward, our major thrust will be to think through possible mechanisms in detail, and examine them with both quantitative and qualitative data.

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Table 1

Descriptive Statistics

	Obs	Mean	Std. Dev	Min	Max
Panel A: Current election					
Total number of candidates	22478	10.0	10.1	1	1033
Fraction of major party candidates	22478	0.348	0.197	0	1
Fraction of competitive candidates	22478	0.408	0.213	0	1
Fraction new candidates	22478	0.892	0.164	0	1
Voter turnout (as a fraction of registered voters)	22433	0.627	0.133	0	0.97
Fraction of female winners	22478	0.054	0.226	0	1
Fraction of female candidates	22478	0.043	0.082	0	0.8
Any female candidate (dummy)	22478	0.303	0.460	0	1
Female share of major party candidates	22412	0.055	0.154	0	1
Female share of competitive candidates	22478	0.050	0.133	0	1
Fraction new female candidates (as a share of all candidates)	22478	0.039	0.078	0	0.8
New female share of major party candidates	22412	0.047	0.143	0	1
New female share of competitive candidates	22478	0.042	0.123	0	1
Female voter turnout	22421	0.587	0.154	0	1.00
Difference between female turnout and male turnout	22412	-0.077	0.085	-0.63	0.62
Panel B: Previous election					
Woman won previous election (dummy)	22296	0.0470	0.2116	0	1
Woman in top 2 in previous election (dummy)	22296	0.0866	0.2813	0	1
Fraction of female winners in the district in previous election	22296	0.0469	0.0657	0	0.6
Close election between man and woman in previous period(5% margin)	22296	0.0185	0.1347	0	1
Close election between man and woman in previous period(3% margin)	22296	0.0117	0.1076	0	1
Close election between man and woman in previous period(2% margin)	22296	0.0079	0.0885	0	1
Woman won against man in close previous election (5% margin)	22296	0.0092	0.0957	0	1
Woman won against man in close previous election (3% margin)	22296	0.0061	0.0776	0	1
Woman won against man in close previous election (2% margin)	22296	0.0044	0.0658	0	1

Competitive candidates defined as candidates who receive more than 5% of total votes.

Table 2
Where are the women candidates?

Panel A: Political characteristics of races with and without women candidates

	Have a woman candidate	Have no woman candidate	Difference1	Difference2
	(1)	(2)	(1)-(2)	(1)-(2)
Number of candidates in election	12.49	8.94	2.2 ***	0.49
Number of major party candidates	2.77	2.53	0.1 ***	0.18 ***
Electorate size	165561	143042	1252 ***	-637
Voter turnout in previous election	0.61	0.63	-0.004 **	-0.001
Female voter turnout in previous election	0.57	0.59	-0.003	0.000
Victory margin in previous election	0.15	0.15	0.003	0.002
Incumbent contesting re-election	0.35	0.35	-0.025 ***	-0.025 ***
Reserved for Scheduled Caste	0.172	0.144		
Reserved for Scheduled Tribes	0.071	0.074		

Panel B: Census characteristics (2001 census)

	Fraction of female candidates	Female share of major party candidates
	1	2
Fraction of women in population	0.015	0.097
	[0.056]	[0.115]
Female literacy	-0.007	-0.015
	[0.009]	[0.018]
Female literacy - male literacy	0.078 ***	0.088 **
	[0.021]	[0.041]
Fraction urban population	-0.002	0.002
	[0.004]	[0.009]
R-squared	0.01	0
Observations	2540	2540

Dependent variables are calculated for each constituency across all elections over 1980-2007.
Standard errors in parantheses, corrected for heteroskedasticity.

Table 3
Characteristics of female and male candidates

Panel A: All candidates

	Observations	Mean		Difference	Difference1
		Female	Male		
Age	6937	44.4	47.9	-3.533 ***	-3.513 ***
Education: Less than high school	6486	0.372	0.280	0.092 ***	0.122 ***
High school	6486	0.123	0.150	-0.027 *	-0.043 *
College degree	6486	0.192	0.255	-0.063 ***	-0.067 **
Graduate or professional education	6486	0.313	0.315	-0.002	-0.012
Any criminal charges filed against candidate	6976	0.154	0.302	-0.148 ***	-0.093 ***
Any serious criminal charges filed against candidate	6976	0.044	0.147	-0.103 ***	-0.081 ***
Log(net worth)	6691	14.3	14.5	-0.145	-0.013

Panel B: Major party candidates only

	Observations	Mean		Difference	Difference1
		Female	Male		
Age	2375	46.3	49.4	-3.051 ***	-3.887 ***
Education: Less than high school	2264	0.408	0.260	0.147 ***	0.173 ***
High school	2264	0.106	0.144	-0.038	-0.037
College degree	2264	0.151	0.267	-0.116 ***	-0.131 ***
Graduate or professional education	2264	0.335	0.329	0.006	-0.005
Any criminal charges filed against candidate	2386	0.172	0.353	-0.181 ***	-0.150 ***
Any serious criminal charges filed against candidate	2386	0.032	0.170	-0.137 ***	-0.126 ***
Log(net worth)	2298	14.7	14.9	-0.153	-0.09

Data is from 11 state elections in 2004-2007. Fraction of women candidates in this sample is 7.5% and fraction of female winners is 7.8%. ***, **, * indicate significance at 1%, 5% and 10% level respectively.
Standard errors for the difference are clustered at constituency level in panel A and district level in panel B. "Difference1" adjusts for constituency fixed effects in panel A and district fixed effects in panel B.

Table 4
Women's Electoral Success and Future Political Participation: OLS Estimates

	Panel A: Dependent variable: Fraction of female candidates							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Woman won previous election (dummy)	0.041 ***	0.040 ***	0.036 ***	0.038 ***	0.103 ***	0.048 ***	0.041 ***	0.191 ***
	[0.005]	[0.005]	[0.005]	[0.005]	[0.004]	[0.005]	[0.005]	[0.017]
R-squared	0.34	0.34	0.36	0.34	0.13	0.34	0.34	0.33
Observations	22296	22296	22296	18952	22296	22296	22296	22296
	Panel B: Dependent variable: Female share of major party candidates							
Woman won previous election (dummy)	0.115 ***	0.112 ***	0.105 ***	0.104 ***	0.258 ***	0.128 ***	0.113 ***	0.229 ***
	[0.010]	[0.010]	[0.010]	[0.011]	[0.009]	[0.011]	[0.010]	[0.019]
R-squared	0.35	0.35	0.37	0.38	0.15	0.35	0.35	0.36
Observations	22230	22230	22230	18897	22230	22120	22230	22230
Constituency & election period FE	Y	Y	Y	Y		Y	Y	Y
State-specific linear trends		Y						
District specific trends			Y					Y
Controls (time-varying)				Y				
State*election fixed effects					Y			
Control for lagged dependent variable						Y		
Control for % of female winners in the district in previous election							Y	

Standard errors in brackets, clustered at the constituency level except when stated otherwise.
***, **, * indicate significance at 1%, 5% and 10% level respectively.
Time-varying controls include the vote margin, number of candidates and voter turnout in the previous election.

Table 5
Alternative Measures of Women's Political Participation

Panel A: All female candidates

	# female candidates	# male candidates	# major party female candidates	# major party male candidates	Female share of competitive candidates	Vote share of female candidates	Female voter turnout	Male voter turnout
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Woman won previous election	0.374 ***	0.679	0.258 ***	-0.257 ***	0.089 ***	0.076 ***	-0.002	-0.001
(dummy)	[0.042]	[0.935]	[0.022]	[0.034]	[0.008]	[0.009]	[0.003]	[0.003]
R-squared	0.32	0.35	0.38	0.61	0.39	0.42	0.77	0.72
Observations	22296	22296	22296	22296	22296	22296	22240	22234
Constituency & election period FE	Y	Y	Y	Y	Y	Y	Y	Y
District specific trends	Y	Y	Y	Y	Y	Y	Y	Y

Standard errors in brackets, clustered at the constituency level.

***, **, * indicate significance at 1%, 5% and 10% level respectively.

Competitive candidates defined as candidates who receive more than 5% of total votes.

Table 6

Women's Electoral Success and Future Political Participation: Regression Discontinuity Estimates

Panel A: Female share of major party candidates

	1	2	3	4	5	6	7	8	9
Woman won previous election	0.144 ***	0.111 ***	0.096 ***	0.111 ***	0.097 ***	0.094 ***	0.144 ***	0.106 ***	0.092 ***
	[0.014]	[0.018]	[0.024]	[0.019]	[0.023]	[0.023]	[0.013]	[0.018]	[0.024]
R-squared	0.08	0.08	0.09	0.08	0.07	0.03	0.18	0.18	0.18
Observations	1864	1864	1864	1830	1457	1140	1864	1864	1864
polynomial		linear	quadratic	linear	linear	linear		linear	quadratic
bandwidth				0.5	0.25	optimal			
State*year fixed effects							yes	yes	yes

Panel B: Other dependent variables

	Fraction of female candidates	# female candidates	# male candidates	# major party female candidates	# major party male candidates	Female share of competitive candidates	Vote share of female candidates	Female voter turnout	Male voter turnout
	1	2	3	4	5	6	7	8	9
Woman won previous election	0.024 *	0.246 ***	-1.479	0.168 ***	-0.205 ***	0.065 ***	0.035	-0.011	-0.001
	[0.013]	[0.079]	[0.910]	[0.055]	[0.064]	[0.023]	[0.026]	[0.009]	[0.009]
R-squared	0.19	0.14	0.07	0.2	0.53	0.19	0.2	0.65	0.56
Observations	1865	1865	1865	1865	1865	1865	1865	1863	1862
State*year fixed effects	Y	Y	Y	Y	Y	Y	Y	Y	Y
Bandwidth	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Polynomial	quadratic	quadratic	quadratic	quadratic	quadratic	quadratic	quadratic	quadratic	quadratic

Sample restricted to constituencies where a woman and a man were among the top two vote-getters in the previous election.

Standard errors in brackets, clustered at the state-election level.

***, **, * indicate significance at 1%, 5% and 10% level respectively.

Table 7

Decomposing the increase in female candidacy into new candidates and incumbent candidates

Panel A: All candidates

	Fraction of new female candidates		Fraction of incumbent female candidates		Fraction of non-incumbent non-new candidates	
	OLS	RD	OLS	RD	OLS	RD
	(1)	(2)	(3)	(4)	(5)	(6)
Woman won previous election	0.005	0.015	0.035 ***	0.035 ***	-0.003 ***	-0.026 ***
	[0.005]	[0.012]	[0.003]	[0.007]	[0.001]	[0.005]
R-squared	0.31	0.2	0.47	0.34	0.27	0.16
Observations	22296	1865	22296	1865	22296	1865

Panel B: Major party candidates

	New female share of major party candidates		Incumbent female share of major party candidates		Non-new non-incumbent female share of major party candidates	
	OLS	RD	OLS	RD	OLS	RD
	(1)	(2)	(3)	(4)	(5)	(6)
Woman won previous election	0.016 *	0.047 *	0.101 ***	0.110 ***	-0.012 ***	-0.065 ***
	[0.010]	[0.025]	[0.007]	[0.019]	[0.002]	[0.013]
R-squared	0.3	0.23	0.48	0.37	0.25	0.18
Observations	22230	1864	22230	1864	22230	1864
Constituency & election cycle FE	Y		Y		Y	
District specific trends	Y		Y		Y	
State*year fixed effects		Y		Y		Y
Bandwidth		0.5		0.5		0.5
Quadratic control for victory margin		Y		Y		Y

Standard errors in brackets, clustered at the constituency level. ***, **, * indicate significance at 1%, 5% and 10% level respectively.

Table 8

Do women and men differ in their candidacy paths following electoral victories and losses?

Panel A: Dependent variable is whether the candidate contests the next election

	Sample		
	Winners	Runners-up	Others
	(1)	(2)	(3)
Woman candidate	-0.029 *	-0.059 ***	-0.014 ***
	[0.017]	[0.015]	[0.003]
R-squared	0.62	0.42	0.09
Observations	19140	19130	157562
Mean of dependent variable	0.358	0.199	0.058
Constituency & election period FE	Y	Y	Y

Panel B: Dependent variable is whether the candidate contests the next election from a different party

	Sample		
	Winners	Runners-up	Others
	(1)	(2)	(3)
Woman candidate	-0.030 ***	-0.039 ***	-0.008 ***
	[0.011]	[0.010]	[0.002]
R-squared	0.29	0.28	0.05
Observations	19140	19130	157562
Mean of dependent variable	0.080	0.078	0.021
Constituency & election period FE	Y	Y	Y

Standard errors in brackets, clustered at the constituency level. ***, **, * indicate significance at 1%, 5% and 10% level respectively.

Table A.1

Comparing characteristics of close elections where women won and women lost

Panel A: Political characteristics

	Woman lost close election	Woman won close election	Difference
Number of candidates in election	10.036	9.978	-0.058
Number of major party candidates	2.637	2.604	-0.033
Electorate size	162576	156499	-6076.5
Voter turnout in previous election	0.632	0.622	-0.010
Female voter turnout in previous election	0.599	0.582	-0.017
Victory margin in previous election	0.146	0.143	-0.003
Incumbent contesting re-election	0.396	0.359	-0.036
Reserved for Scheduled Caste	0.173	0.181	0.009
Reserved for Scheduled Tribes	0.076	0.074	-0.001
Observations	278	270	

Panel B: Census characteristics (constituency level)

	Woman lost close election	Woman won close election	Difference
Population	103182	102232	-950
Fraction female	0.489	0.488	-0.001
Female literacy	0.447	0.453	0.006
Female-male literacy difference	-0.175	-0.177	-0.003
Fraction urban	0.159	0.184	0.025

Panel C: Characteristics of winning candidate

	Woman lost close election	Woman won close election	Difference
Age	47.153	44.741	-2.412
Education: Less than high school	0.214	0.462	0.247 **
High school	0.214	0.096	-0.108
College degree	0.214	0.096	-0.118 *
Graduate or professional education	0.357	0.346	-0.118 *
Any criminal charges filed against candidate	0.383	0.093	-0.291 ***
Any serious criminal charges filed against candidate	0.150	0.019	-0.131 **
Log(net worth)	14.760	14.481	-0.279
Observations	60	54	

Sample restricted to races where a man and a woman were in the top 2 vote-getters and the margin of victory was less than or equal to 5%.

***, **, * indicate that differences are significant at 1%, 5% and 10% level respectively.

Table A.2

Women's Electoral Success and Future Political Participation: Instrumental Variable Estimates

	Fraction of female candidates	Female share of major party candidates	Female share of competitive candidates	Female voter turnout	Fraction of new female candidates	New female share of major party candidates	New female share of competitive candidates
	1	2	3	4	5	6	7
Woman won previous election (dummy)	0.022 *	0.092 ***	0.064 ***	-0.009	0.017	0.060 ***	0.036 *
	[0.011]	[0.024]	[0.021]	[0.009]	[0.011]	[0.022]	[0.019]
Close election in constituency (dummy)	0.057 ***	0.135 ***	0.136 ***	0.006	0.031 ***	0.072 ***	0.073 ***
	[0.008]	[0.015]	[0.015]	[0.006]	[0.008]	[0.014]	[0.013]
R-squared	0.09	0.11	0.11	0.62	0.07	0.06	0.06
Observations	22296	22230	22296	22240	22296	22230	22296
State*year fixed effects	Y	Y	Y	Y	Y	Y	Y
Margin for close elections	5%	5%	5%	5%	5%	5%	5%

Standard errors in brackets, clustered at the state-election level.

***, **, * indicate significance at 1%, 5% and 10% level respectively.

Figure 1
Fraction of Female Candidates in Major Indian States, 1980-2007
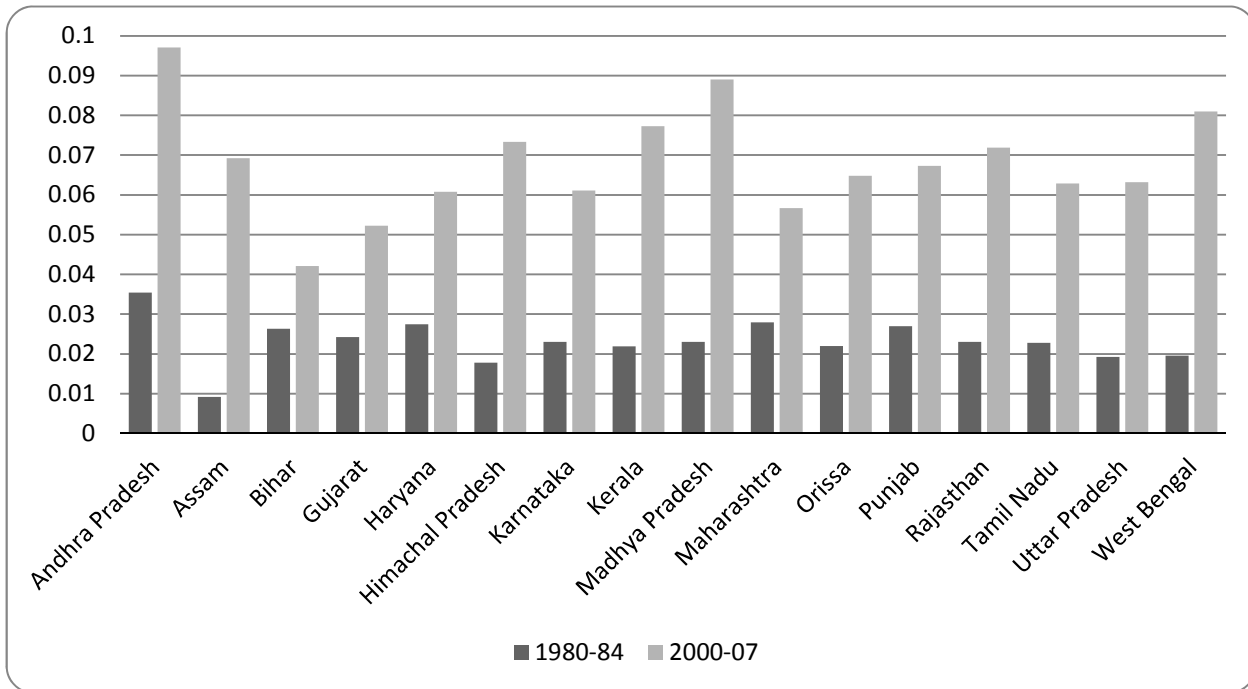
Figure 2
Women Candidates in Major Indian States 1980-2007

Female share of all candidates ■   Female share of major party candidates ■
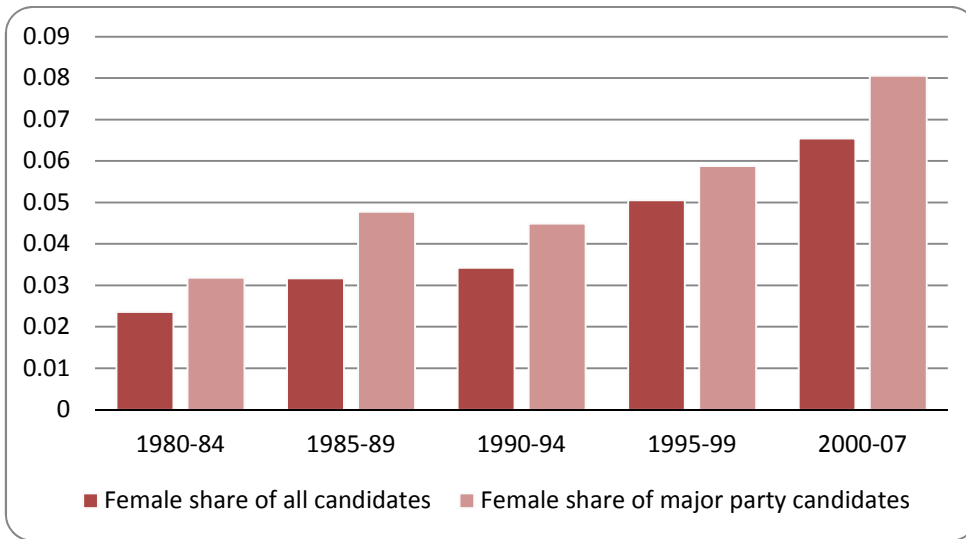
Figure 3
Male and Female Voter Turnout in Major Indian States, 1980-2007

Female voter turnout ■   Male voter turnout ■
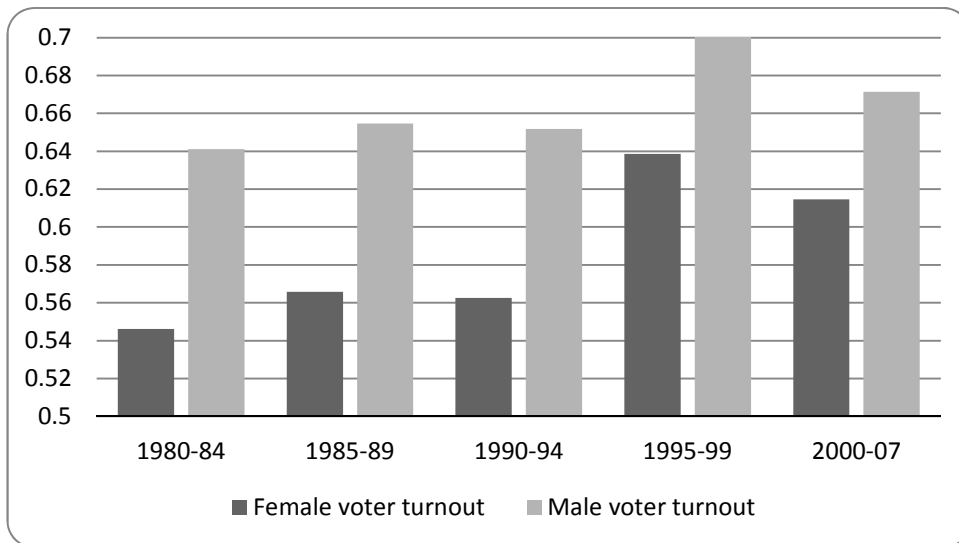
Figure 4a
Density of the margin of victory between male and female candidates
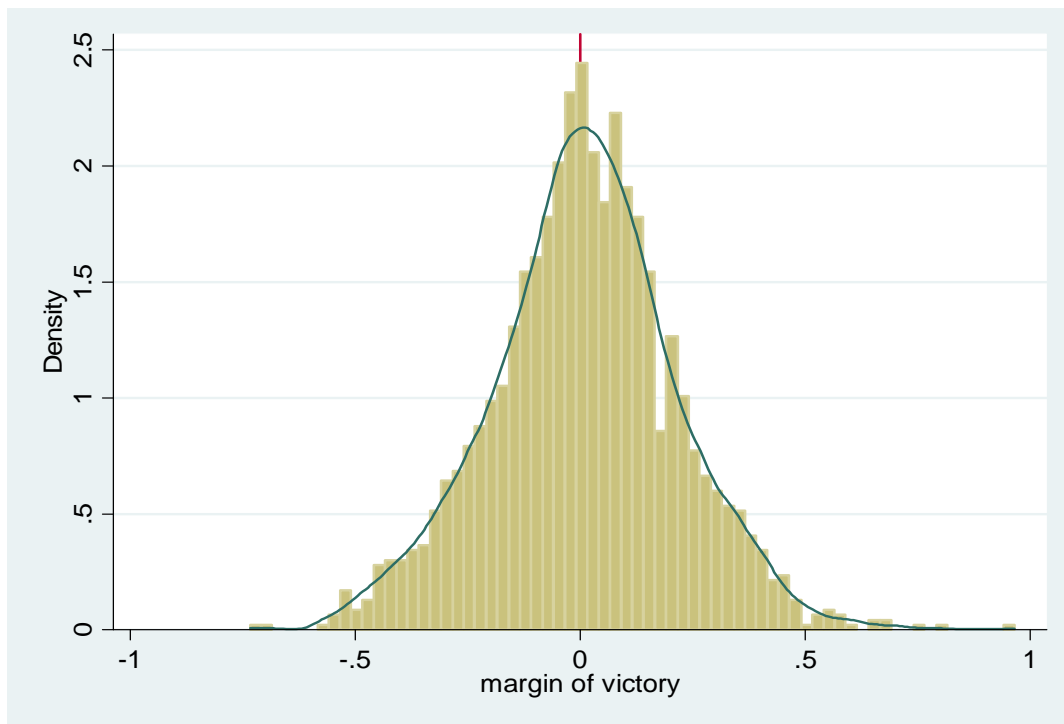
Notes: Sample restricted to those where a man and a woman were the top two vote-getters in the election.

Figure 4b
Testing for density discontinuities at zero (McCrary Test)
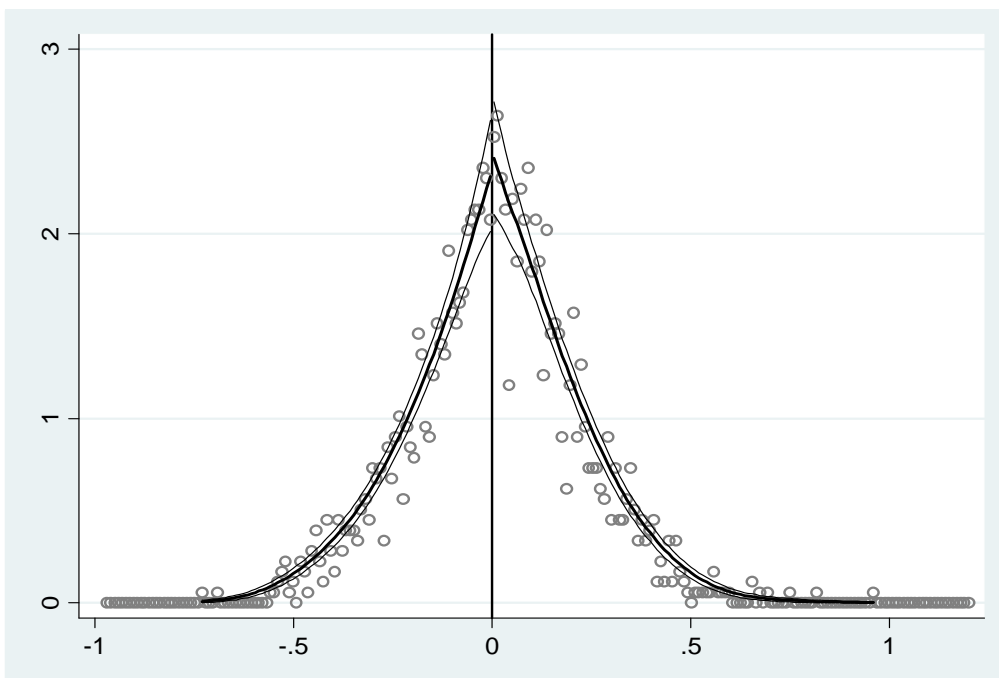
Figure 5a: Verifying that pre-determined variables do not show discontinuities

turnout_lag
Close election with female winner having margin > 0

ncand_lag
Close election with female winner having margin > 0
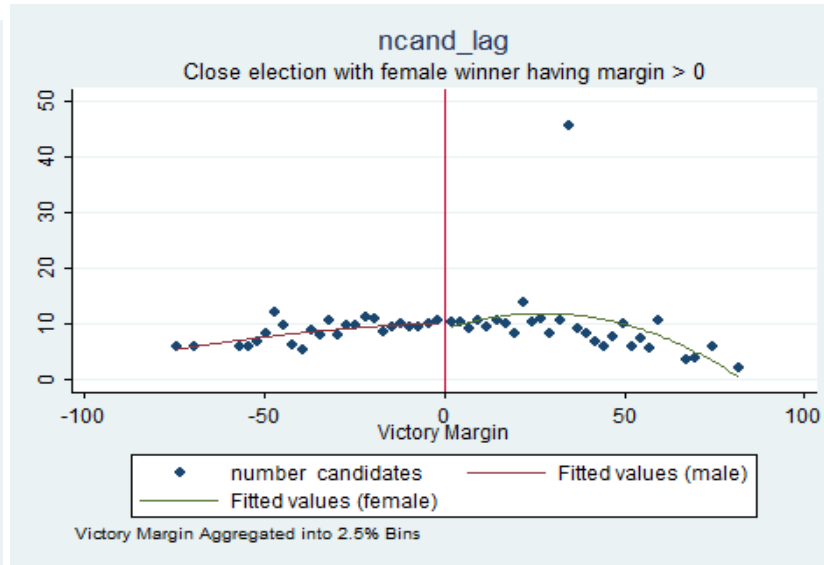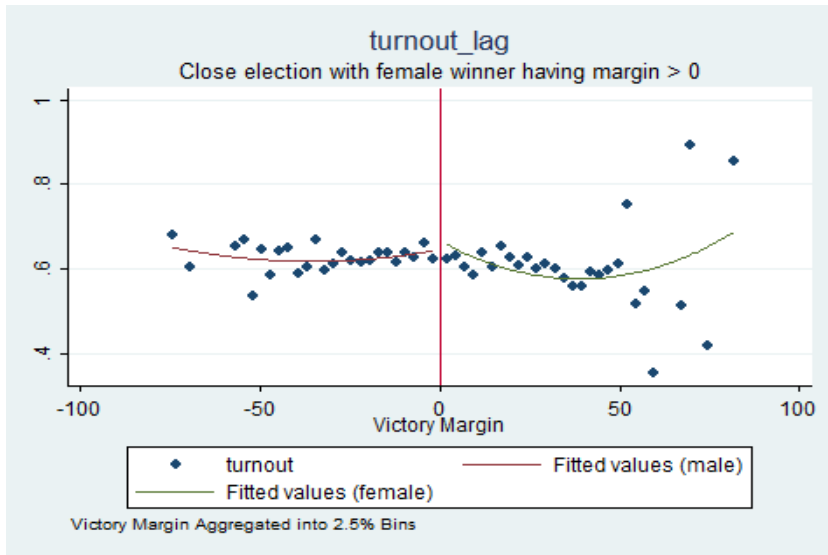
Figure 5b: Verifying that covariates do not show discontinuities

frac_urban
Close election with female winner having margin > 0

FMLiterary_difference
Close election with female winner having margin > 0
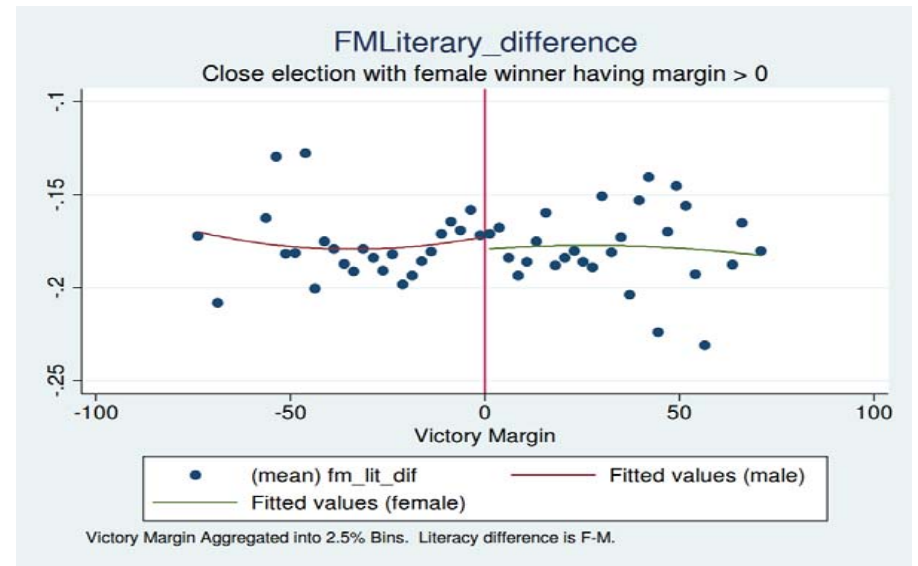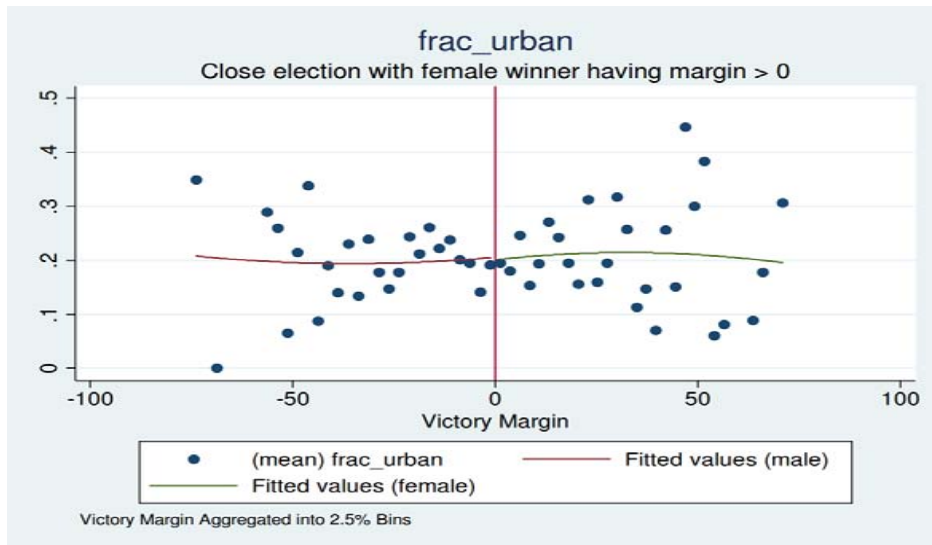
Figure 6: Regression Discontinuity Estimates for Female Political Participation

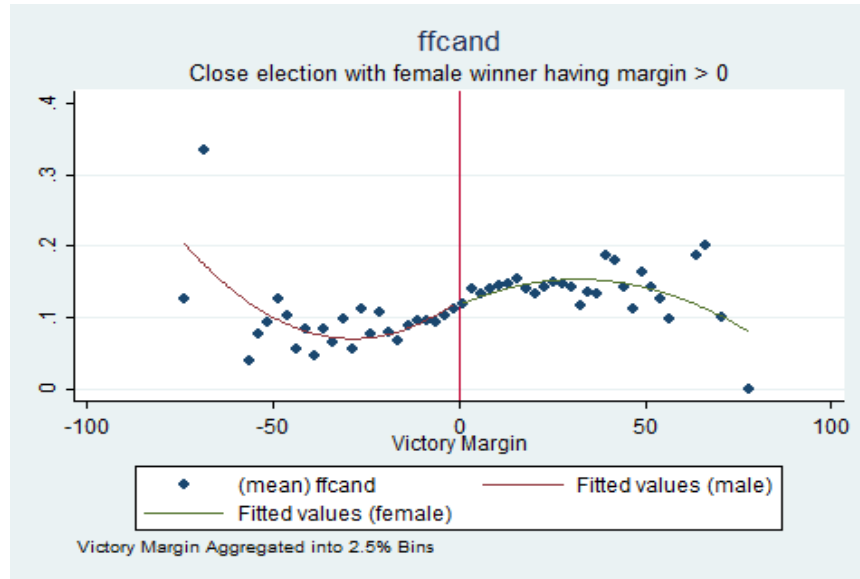Figure 6a: Fraction of female candidates

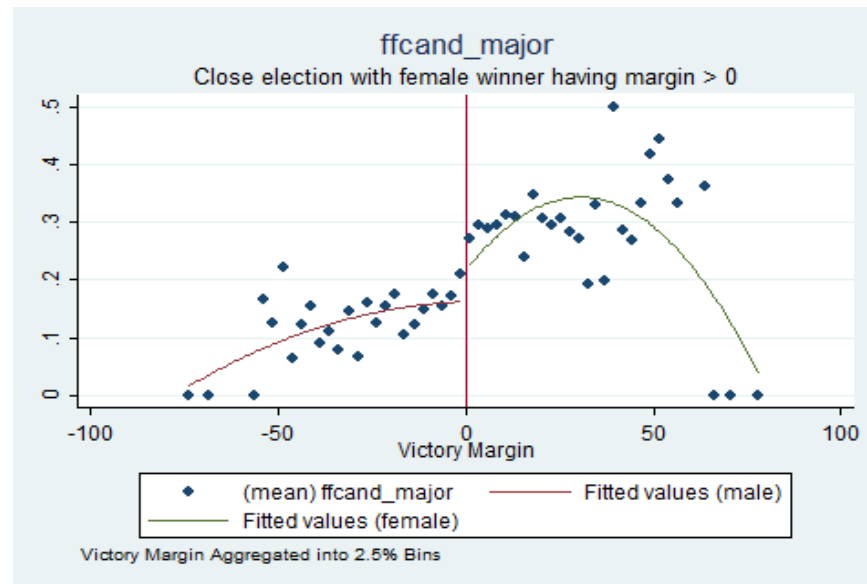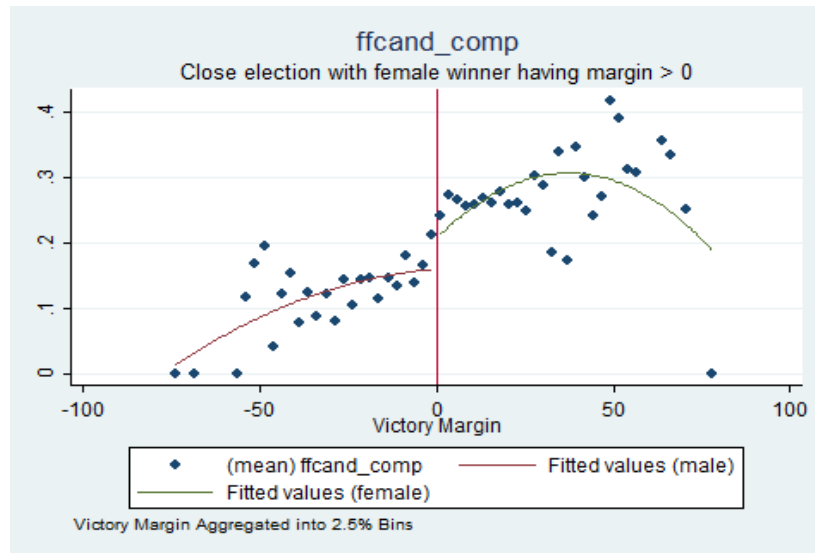Figure 6b: Female share of major party candidates

Figure 6c: Female share of competitive candidates

Figure 6d: Female voter turnout