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Closing the Gender Gap in Leadership Positions: Can Expanding the Pipeline Increase Parity?

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ABSTRACT

Closing the Gender Gap in Leadership Positions: Can Expanding the Pipeline Increase Parity?*

Gender gaps in leadership roles may be reduced by increasing the number of women in career stages that typically precede high-status positions. This can occur by increasing the supply of experienced women, inspiring new female candidates for these positions, and/or changing beliefs about women as leaders. In this study, we investigate whether and how adding women to a career pipeline can reduce gender gaps in higher-ranking positions over time. Specifically, we examine the effects of women's local electoral success on subsequent female candidacy at higher levels of government in India from 1977 to 2014. We use close elections won by women contesting state legislature seats to identify the effect of pipeline expansion on later candidacy for the national parliament. The results indicate that for each additional lower-level seat won by a woman, there is a 30 percent increase in the number of female candidates in subsequent national legislature elections. This effect is driven by new candidates and not by career politicians, and women receive a disproportionately favorable increase in the vote share. These effects are strongest in areas with low levels of existing female political participation and empowerment. The findings are consistent with a mechanism in which exposure reduces bias, allowing for updated beliefs about the viability of latent candidates who then run for higher office.

JEL Classification: J16, J71, P16

Keywords: gender gap, political candidacy, female politicians, India

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1 Introduction

Women continue to be underrepresented in leadership positions across many fields including academia, the corporate sector, and politics (Bertrand and Hallock, 2001; Ginther and Kahn, Forthcoming; Bhalotra et al., forthcoming). Explanations for the low share of women in high-ranking positions include discrimination, the existence of biased beliefs regarding ability, and career-family trade-offs (Wolfers, 2006; Bertrand, 2009; Bertrand et al., 2010). Importantly, these factors are likely to impact the creation and growth of a pipeline of women in lower-career stages which could then influence both the availability of qualified women for high-ranking positions and broader changes in attitudes towards women in leadership positions.

The gender gap in high-ranking positions is particularly stark in politics, where gender disparities in representation have been linked to low rates of female candidacy (Lawless and Fox, 2008). In this paper, we study whether expanding the pipeline of women in lower tier political positions affects later candidacy for, and representation in, national politics.[1] The case of the female politician pipeline is particularly interesting because it allows us to analyze different mechanisms that promote the candidacy and representation of female politicians at the highest level of government, shedding light on the process by which individuals enter public service (Myerson, 2011; Finan et al., 2015). Specifically, we will examine the relationship between exposure to female politicians in the Indian state legislature and the participation and success of women in Indian national parliament elections. Given that the enfranchisement of historically marginalized groups is recognized as a cornerstone of inclusive development (Acemoglu and Robinson, 2012), this paper ultimately asks whether shocks to minority-group representation in politics can be self-perpetuating, and if so, through which channels.

[1] Recent studies suggest that increasing the share of women in government leads to policy initiatives which benefit women, increases trust in government, and positively affects children's outcomes (Chattopadhyay and Duflo, 2004; Miller, 2008; Iyer et al., 2012; Kalsi, forthcoming)

To conduct our analysis, we use data from state and national legislature elections in India over the period of 1977-2014. A typical national legislature constituency (NLC) in our data is made up of six state legislature constituencies (SLC) that each elect a representative to their state's *legislative assembly*. Voters in the NLC directly elect one representative to the lower house of parliament (the *Lok Sabha*). Importantly, neither state assemblies nor the parliament are subject to gender quotas. Our empirical approach uses the number of close mixed-gender *state legislature* elections won by female candidates in a given *parliamentary* constituency area to generate quasi-random variation in the overall number of women representing that constituency in the state legislature. The main identifying assumption is that the winner's gender in a mixed-gender close election is as as good as random. Intuitively, this implies that an additional close election won by a female candidate in a given constituency increases the number of women representing that constituency in the state assembly by one - a prediction we are able to verify in the data.

The use of competitive elections allows us to overcome several technical challenges natural to investigating the pipeline hypothesis, as the use of close elections provides exogenous variation in the number of female politicians entering a career stage that typically precedes candidacy for the national legislature.[2] Another advantage of this strategy is that these pipeline positions are competitive rather than assigned. Given that most positions in politics and in the corporate sector involve a competition amongst candidates, this represents a more generalizable situation than being assigned to the position or gaining it via quota. Moreover, competing for and winning a political position against a man, rather than obtaining it by assignment or through quotas, may affect the capacity of that female politician to inspire other candidates, change voter preferences, and to propel her own career.

An additional contribution of our paper is to address two main mechanisms through which local female politicians may change the supply of candidates in parliamentary races. The

[2]Historically in the United States, approximately 40% of Congressional representatives served as state legislators prior to Congressional service.

first channel operates through a direct supply of politicians who compete for national seats after serving in the state assembly. Serving in the state legislative assembly could provide a politician with the experience and credentials she needs to run and win a higher level seat. This is different than a typical incumbency effect, and would result in elected officials climbing the political "ladder" after gaining experience in the state legislature. Second, an increase in the number of female state legislators could also have an indirect effect in which locally elected women may impact the decision of aspiring female politicians to compete either by providing information about the competitiveness of women in electoral races, the returns to serving in office, or by serving as role models.

Our results indicate that while an additional female state legislator does not increase the number of female politicians competing in national races during the state legislator's current term, the number of female candidates running for parliamentary seats during the subsequent term increases by 30%. In addition, although imprecisely estimated, we find that the number of women winning these higher level elections increases by a substantial 38%. Importantly, the increase we observe in the supply of women in national races is not driven by female politicians who previously served as state or federal legislators. The increase in female candidacy at the national level can thus be attributed to new entrants who have no previous political experience in any legislature. This is a novel result compared to the findings of Bhalotra et al. (forthcoming), in which the election of a female state legislator increases the number of female candidates in subsequent (same level) state legislature elections almost exclusively through an incumbency effect.

Another potential mechanism is that exposure to a woman's tenure in the state legislature might change voters' and parties' preferences for female candidates, leading to an increase in the demand for female politicians in higher and more influential seats (Casas-Arce and Saiz, 2015). The results indicate that an increase in the number of female state legislators is associated with female candidates receiving more of the vote share in national races in

the subsequent term while not affecting the overall voter turnout. This suggests exposure to local female politicians changed voter preferences rather than increased enfranchisement. Overall, the results indicate that an expansion in the number of local female politicians has an important indirect spillover effect on the careers of aspiring female politicians.

Finally, we explore different margins of heterogeneity and provide several novel insights. Specifically, we find that candidacy effects are strongest in states with lower literacy rates and a high share of Muslim population, and were largely derived from candidates who run as part of the major conservative party. The nature of this heterogeneity indicates that in terms of higher-level candidacy, exposure to elected local politicians has a bigger impact in environments with a greater degree of previous gender bias, and may help reduce barriers facing new female candidates in national politics.

The paper proceeds as follows. Section 2 describes the Indian electoral system and the data used in the analysis. Section 3 outlines the empirical strategy and we discuss the results in section 4. We conclude in section 5.

2 Context and data

In 2017, women comprised only 21% of the U.S. Senate, 19.3% of the U.S. House of Representatives (CAWP, 2017), 32% of the U.K. House of Commons, and 12% of India's national legislature (Bhalotra et al., forthcoming). In India, as in many other countries, low rates of female representation in the political domain are longstanding and persistent (Sharma, 2016). This imbalance led to a gender-based quota system in local government, which has been in place since the mid-1990s.

While quotas at the local level have been shown to generate policies that align with women's preferences, increase trust in government, and positively affect children's outcomes

(Chattopadhyay and Duflo, 2004; Iyer et al., 2012; Kalsi, forthcoming),[3] it is less clear that they can reduce institutional and cultural barriers that give rise to the gender imbalance in politics and be effective in generating a "pipeline" of candidates for higher offices (O'Connell, 2017).[4]

The candidate pipeline may be expanded through either of two channels: through affirmative action policies or competitively won elections, and the mechanism by which female politicians come to power may matter for changing these inertial factors. That is, a female politician who wins a competitive election against a male opponent may have more capacity to inspire other potential female candidates, change voter preferences, or propel her own political career relative to one who gained political experience through a reserved seat. Focusing on the effect of elected female politicians on subsequent female political participation is also important because quotas do not (and in some cases, cannot) exist in many countries at either the local or the national level. For these reasons, it is important to understand the role of competitive elections in promoting the participation and representation of historically underrepresented groups in politics.

Previous work investigating the effect of female victories in competitive elections in India has focused on subsequent impacts within the same level of government. Specifically, Bhalotra et al. (forthcoming) provide evidence that incumbent female politicians in Indian state legislative assemblies are more likely to re-contest their seat compared to incumbent men. While they find that exposure to a female state representative does not encourage new female candidates to enter state politics, whether exposure to a locally elected female politician can affect the progression of female representation in more influential positions remains an open question. It is this latter pathway of female political progression that has

[3]Other studies documenting a relationship between female representation and investments in children include Miller (2008); Clots-Figueras (2012); Bhalotra and Clots-Figueras (2014); Brollo and Troiano (2016). Ferreira and Gyourko (2014) find no effect on the policy choices of U.S. female mayors compared to male mayors.

[4]Sekhon and Titiunik (2012) show that mandated seats for female representatives reduce the number of female candidates at the local level in non-mandated regions.

the capability of fundamentally changing the gender representation gap in the most powerful positions and is a distinguishing feature of this paper.

2.1 Indian Elections

Since its founding, India has had a federal system of government with single-member constituencies elected on a first-past-the-post basis in both state and national legislatures. At the federal level, there is a bi-cameral legislature consisting of the indirectly elected upper house (Rajya Sabha) and the directly elected lower house (Lok Sabha). Both houses have equal authority in nearly all legislative areas.[5] Legally, terms of office in the Lok Sabha are five years – although at various points in history the federal government has been dissolved and reconstituted at the sole discretion of the lower house.

Each state has its own legislature, for which asynchronous elections have been held every five years since 1952, with occasional exceptions. Elections for both federal and state legislatures are administered by the federal or state elections commission. Figure 1 shows the timing of federal and state elections from 1960 to present.[6]

A typical national legislature constituency (NLC) in the Lok Sabha is comprised of six state legislature constituencies (SLC) that each elect a representative to their state's *legislative assembly*. Voters in the NLC directly elect one representative to the lower house of parliament (the *Lok Sabha*), and neither state assemblies nor the parliament are subject to gender quotas. While legislative assemblies shape many state policies related to education, health, and police enforcement, the national parliament of India legislates federal policies, is in

[5]For the remainder of this paper, we focus on the directly elected lower house, the Lok Sabha, in all analyses. References to "parliament" will refer solely to the Lok Sabha.

[6]Redistricting has occurred twice since 1952 – once taking effect in 1977, and again in 2007. Both times, redistricting occurred at both the state and federal level. We focus our analysis on elections occurring from 1977 forward due to the fact that we are able to accurately identify constituencies' geographic boundaries before and after the 2007 redistricting, but do not have comprehensive records of state legislature constituencies prior to 1977.

charge of approving the national budget, and is the body that can remove a prime minister and the cabinet through a vote of no confidence. Linking these two levels of government, we study whether exposure to more female legislators in the state legislature is related to the number of female candidates competing to represent, and being elected by, parliamentary constituencies.

2.2 Elections Data

We use data available from Jensenius (2013) and the Elections Commission of India for state legislature election results in all states from 1977 to 2013. These data contain the constituency of the election contested, the list of candidate names, the vote counts, and the sex of the candidate. We then identify and assign each state constituency to the parliamentary constituency it is contained within. Data from parliamentary elections are from the Election Commission of India and contain the details of all candidates across all constituencies of the directly elected lower house of parliament (the Lok Sabha) for the same period. Unlike in many countries, state legislature constituencies in India are either found entirely within parliamentary constituency areas or share coterminous boundaries; we use publicly-available digitized maps of constituency boundaries to associate state assembly constituencies to their unique parliamentary constituencies.

To explore mechanisms behind our relationship of interest, we link the names of individual candidates across state and federal elections. This allows us to disaggregate higher-level candidacy effects as coming from repeat or new candidates. We employ a name matching algorithm similar to the one used by Fujiwara and Anagol (2016), which is based on a fuzzy string matching process that searches for each parliamentary candidate's name in a given state and election with potential name matches from previous state legislature and parliamentary elections.

Table 1 contains summary statistics on the state legislature elections data. In Panel A, we see that for the full sample, on average, 9.3 candidates contest for a state legislature seat. Only 0.4 (4.3%) of those candidates are female. The average victory margin (defined as gross percentage of votes the winner garnered over the first runner-up) is 14.5%, and 26% of all elections were won by a victory margin of less than five percentage points (from hereon we refer to these as "close" elections). Approximately 10% of elections were "mixed" (*i.e.*, the winner and first runner-up were comprised of one male and one female candidate). Following the overall pattern, approximately one quarter of the mixed elections were close (2.4% of all elections) and half of the mixed-close elections were won by the female candidate (1.2% of all elections) .

In Panel B, we focus on the sample of mixed-close elections. These elections had a slightly larger pool of candidates (10.2) and, by construction, a larger number of female candidates (1.5). If the outcome of close elections between male and female candidates is "as good as random" in this sample, we expect to see women win approximately 50 percent of the time – which is precisely the case (50.5%). The mixed-close elections were more likely to occur later (average year is 1999, compared to 1993 in Panel A) which reflects the secular trend in increasing female political participation over time. From these data, we aggregate across state legislature constituencies the number of mixed-close elections and the number of female won mixed-close elections by parliamentary constituency, and then match this to later parliamentary elections returns by constituency.

Table 2 provides summary statistics on the outcome data from pooled parliamentary elections returns matched to state returns. The average parliamentary constituency contains 6.3 state legislature constituencies, in which there were an average of 1.6 close elections, .63 mixed elections, .15 mixed close elections, with 50% of those (.078) won by the female candidate. In the parliamentary elections themselves, there was an average of 13.7 candidates, .62 female candidates, and 7.4% of elections were won by a female candidate.

3 Methodology

Our goal is to estimate the impact of a female candidate being elected to the state legislature on female participation and success in later parliamentary elections. To do this, we use variation in the campaign success of female candidates for the state legislature within corresponding parliamentary constituency areas. The threat to identification inherent in an observational approach to this question is that areas in which female candidates are more numerous, more competitive, and win state legislature seats are likely to be those same areas in which female political participation and representation at the national level is correspondingly higher due to observable or unobservable factors.

We use the quasi-random nature of the victor's gender in close elections where a male and female candidate are the top two finishers ("close mixed-gender elections") in state legislature races. Our identifying assumption is that, except for the gender of the candidate, other variables such as area or candidate characteristics, or more generally preferences for female candidates, vary continuously at the vote margin of zero. The validity of this identifying assumption enable us to interpret an additional close mixed-gender state legislature race won by a woman as an exogenous increase in female representation at the state level. Given this research design, our main analysis will measure the impact of an additional state-level female politician as a result of a close-won election on later female representation and success in the affected national parliamentary constituency's elections.

3.1 Investigating the Validity of the Research Design

As is standard in the literature, we conduct several checks to confirm that preferences for female politicians are continuous at the vote margin of zero. However, our context provides another directly testable check for the validity of identifying assumption: a female victor in a

close mixed-gender election in one of the state constituencies that make up a larger national constituency should increase the total number of female state legislators within that national constituency by exactly and only 1. This prediction could be violated if the likelihood of a female winning a close election in a particular state constituency is indicative of a general preference for electing female politicians across the national parliamentary constituency. Under such a scenario, a close female win in a state constituency would be associated with more than one additional female representing the corresponding national constituency in the state legislature. Thus, with the type of research design used in this analysis, traditional checks for continuity of variables other than gender at the threshold provide necessary but not sufficient evidence for the validity of the research design. This test is formalized in the following regression:

$$\begin{aligned} SLC\ seats\ held\ by\ women_{it} = \alpha_1 * \#\ of\ close\text{-}mixed\ SLC\ female\ wins_{it} \\ + \alpha_2 * \#\ of\ close\text{-}mixed\ elections_{it} + \Gamma_i + \Theta_t + \epsilon_{it} \end{aligned} \quad (1)$$

$SLC\ seats\ held\ by\ women_{it}$ represents the total number of women that won a state legislature seat in a particular national constituency i, in election year t. The independent variable of interest in this model is $\#\ of\ close\text{-}mixed\ SLC\ female\ wins_{it}$, which captures the number of women that won a close election against a man. In this analysis, "close" is defined as a $\leq$5% or a $\leq$2.5% margin between the top two finishers. The model also controls for the total number of close mixed-gender elections in NLC i and in election year t, $\#\ of\ close\text{-}mixed\ elections_{it}$, as well as fixed effects for NLC (Γ_i) and election year (Θ_t). We two-way cluster the standard errors by national constituency and year.

In Table 3, we present coefficients for this test. The first two columns contain estimates using the five percentage point margin we apply throughout the paper. Column 1 estimates equation 1 omitting the vectors of fixed effects and controls and Column 2 estimates equation 1 in full. In both cases the coefficient cannot be statistically distinguished from one. Columns

3 and 4 adjust the win margin defining a close election to be 2.5 percentage points, and our results correspond closely to those in Columns 1 and 2.

As mentioned previously, it is also important for the validity of our research design that no other relevant characteristics other than the gender of the winner are changing non-linearly as the female candidate's vote margin crosses the threshold of zero in state legislature elections. We conduct a number of standard checks of this assumption. First, following McCrary (2008), we test for manipulation of the running variable in the mixed-gender close elections in the state legislature data. Figure 2 plots the density of the running variable, the vote margin between a male and female candidate, and provides no evidence of a discontinuity at the zero vote margin, suggesting that a female candidate is as likely to win or lose a closely contested race.

We also perform falsification exercises in which we estimate a traditional regression discontinuity specification, given below, using outcomes that should not be affected by a female candidate closely winning an election. Specifically, we estimate the following regression:

$$Y_{it} = \beta_0 + \beta_1 * female\ won_{it} + \sum_{j=1}^{4} \beta * female\ win\ margin_{it}^{j} + \sum_{j=1}^{4} \beta * female\ win\ margin_{it}^{j} * female\ won_{it} + \Theta_t + \epsilon_{it} \quad (2)$$

We estimate several outcomes that should be unrelated to a close win by a female candidate in Table 4 using the specification in equation 2. Importantly, the first column shows that a close female win is not related to the fraction of votes won by all women contesting in the constituency. This is particularly relevant, as it suggests that a close female win does not reflect a discontinuous change in preferences for female politicians. We also verify that a close female win is not associated with the number of female candidates who previously ran for the state legislature (column 3) nor the number of female candidates from the major progressive or conservative party (columns 4 and 5). A close female win is also not associated with

whether the female incumbent is in the race (column 2), whether any incumbent is in the race (column 6), and the number of candidates who previously served in the state legislature (column 7). In addition, Bhalotra et al. (forthcoming) uses variation generated by a similar sample of mixed-close elections in Indian state legislative assemblies and finds no evidence that a close female win at the state house is related to candidate characteristics such as education levels, net worth, or having criminal charges filed against them.[7]

In terms of representativeness, our sample of mixed-close elections is drawn from a wide range of states across India. Moreover, Figure 3 shows that the contribution of each state to the sample of mixed-close elections is closely proportional to their contribution to the overall sample of elections. Specifically, Figure 3 plots the correlation between the share of overall elections that each state contributes to the sample and the share of mixed-close elections by state and the green line represents the 45 degree line. As can be seen, our sample of close elections is not driven by a few outlying or non-representative states and thus captures the variation in underlying attitudes towards women across India. The share of all elections and close mixed-gender races by time period in the sample is depicted in Appendix Figure 1, which shows that the prevalence of close gender-mixed elections increased over time.

3.2 Empirical Strategy

We next proceed to the main analysis in which we estimate the impact of an increase in the number of state female legislators on women's candidacy and success in later parliamentary

[7]Using a similar sample to ours, Bhalotra et al. (forthcoming) also shows that other demographic and socioeconomic characteristics of the population (including population gender ratios, literacy rates, proportion of lower castes and backward tribes, and the male-female literacy differential) are also not correlated with a woman winning a close election.

races. The empirical specification we use is as follows:

$$Y_{ict} = \alpha_1 * \#\ of\ close\text{-}mixed\ SLC\ female\ wins_{it} + \alpha_2 * \#\ of\ close\text{-}mixed\ elections + \Gamma_i + \Theta_t + \delta_c + \epsilon_{ict} \quad (3)$$

In this model, the dependent variable reflects outcomes, Y, in parliamentary constituency i, occurring in parliamentary election year c, as a function of the results of state legislature elections held in year t. Our primary outcomes of interest are the number of female candidates, the number of female winners, and the vote share for all female candidates in the national parliamentary elections.

We also separate the analyses by campaign cycle to differentiate the effect of experiencing additional female state representation before ("current term") or after ("subsequent term") the elected state representative has completed their term of office. During the current term, a newly elected representative might not yet have a proven record as a legislator, and may themselves be deciding between candidacy for the state and national legislature in the subsequent election. After the current term, the politician will have the experience from a completed term of office and exposure effects are more likely to be present among potential external candidates and among voters. We are therefore more flexible in allowing out analysis to examine both immediate and longer-run effects of exposure to elected local politicians.[8] In addition, to provide a placebo test for our identification strategy, we also study outcomes from the previous assembly term (i.e. one to five years before the focal state elections). If a

[8]Since our unit of observation is related to time since a SLC election, it is important to verify that the sample remains representative of India as the period since the SLC election becomes more distant. In each set of national elections from 1 to 9 years after the corresponding SLC election the observations represent 80-85% of all Indian states in the dataset. Observations of national elections 10 years after the focal SLC, though, are only made up of one-third of Indian states and are not geographically representative of the country. In order to be conservative in handling the potential systematic selection into the sample for observations 10 years after the SLC, the "subsequent term" period will only include elections six to nine years after the SLC election. Robustness checks of the candidacy results which include year 10 in the "subsequent term" period are provided in Appendix Table 1 and are qualitatively and statistically indistinguishable from the main results.

woman winning a mixed-gender close election at the state level is uncorrelated with trends in the relevant national constituency's parliamentary elections, we should find no effect during the previous campaign cycle. Equation 3 uses the same independent variables found in equation 1 and includes a fixed effect for the year of the national parliamentary election, δ_c.[9] The estimates from equation 3 are also equivalent to using a more standard regression discontinuity specification in which the independent variable is an indicator for whether a female closely won a state-level race and where the dependent variable is measured at the parliamentary constituency level, as in equation 2. We report results estimated using this specification in Appendix Table 5.

4 Results

4.1 Main results: candidacy, representation, and vote returns

We first investigate the effects of an additional close election won by a female candidate on the number of female candidates competing in parliamentary races. The results in Column 1 of Table 5 indicate that the number of closely elected female state legislators does not affect the number of female parliamentary candidates in *past* parliamentary elections. This falsification test suggests that NLCs which are later exposed to additional state female politicians did not already have a differential number of female candidates running at the national level. We also find no meaningful effect on higher-level candidacy during the term of office of the women who were recently elected at the state level (Column 2). In contrast, the results in Column 3 of Table 5 indicate that an increase in the number of state female legislators leads to a large

[9] An alternative strategy would be to use mixed-gender close elections won by a woman as an instrument for the endogenous number of state legislature seats held by women. Given that the first stage model would be the same as equation 1 and thus the first stage coefficient should be indistinguishable from 1, the results from the 2SLS model and the reduced form in equation 3 below will be very similar. IV results for our main candidacy results are available in Appendix Table 2.

and statistically significant increase in the number of female candidates in parliamentary races held during the subsequent term of the focal state legislature. Specifically, for each additional female state legislator winning by a close election, there are .19 additional female parliamentary candidates running for office in the subsequent term. Put differently, an addition of five lower-level female representatives generate one additional female higher-level candidate – an increase of approximately 30% relative to the mean number of female candidates (.19/.63). In comparison, an additional quota-induced term leads to a similar increase of .22 female parliamentary candidates but represent seats that govern between five and ten times the population as a state legislator (O'Connell, 2017). This suggests that a woman winning a less powerful seat by a close election has a similar effect on female participation in national politics as a woman having held a more powerful political position through a quota.

It is important to note that sample sizes across columns differ due to the fact that the varying time horizon captures different sets of parliamentary elections relative to state legislature elections. For example, the sample in Column 2 would contain 2010 state assembly elections matched to outcomes from 2014 parliamentary elections, but the sample in Column 3 would not contain any state assembly elections held after 2009 as the final parliamentary election we observe is in 2014. The results do not change in any meaningful way when when we restrict the sample to be fully consistently defined across the three periods, with results shown in Appendix Table 3.

4.2 Sources of candidacy

What is the source of the increase in female parliamentary candidates? One possibility is that the candidacy effect we find is driven by career politicians who have previously served in the state or national legislature. Another possibility is that state-level female politicians

inspire new female politicians who decide to compete for national-level seats. In Table 6, we estimate the impact of increased female representation in the state legislature on the number of female parliamentary candidates who had previously won a state or national legislature election. For the current term, we might be concerned that the lack of an increase in candidacy could arise due to two opposing effects on different segments of candidates: an increase in newly inspired candidates seen alongside a reduction in career politicians who are now holding office in the state legislature. However, we do not find evidence for this hypothesis, since there is no strong reduction in the number of career politicians (Columns 2-4).

The effect of lower-level wins on candidacy in the subsequent period is clearly not operating solely or predominantly through career politicians who come from state legislatures (Column 6) or the parliament (Column 7). A combined category of candidates who had ever previously served at the state or national level (Column 8) further confirms that the candidacy effect found in our main analysis is not due to career politicians. These estimates indicate that exposure to an increase in competitively elected women at the local level likely inspires female political participation outside the sphere of existing politicians.[10]

4.3 Representation and vote outcomes

In Table 7 we estimate effects on female representation in the national parliament. We again find no meaningful effect during the previous or current term of office of the women who were elected at the state level, but in the subsequent term, an additional lower-level female representative yields a large (38%) increase in higher-level representation, although

[10]While dynastic and political families are quite common in India, we believe it is unlikely that the effect is driven by candidacy among women from political families as this group would likely comprise a substantial portion of those with previous political experience. In addition, and as has been pointed out by (Bhalotra et al., forthcoming), approaches to comprehensively detect dynasties at the local level by surnames are subject to substantial misclassification error. Moreover, it is unlikely that the affiliation to a political dynasty is correlated with mixed-gender close elections.

this effect is imprecisely estimated (Column 3), and as above this result is repeated even in the consistently-defined sample (Appendix Table 4).[11]

We proceed by exploring whether the increase in female representation at the state level impacts candidacy and representation of women in the national parliament by changing voters' preferences. In Table 8, we estimate the effect of an increase in the number of female state legislators on the aggregate share of votes going to female candidates in parliamentary elections. The results in Column 3 indicate that an additional female state politician leads to an increase of about 4 percentage points in the share of votes received by female parliamentary candidates in the subsequent term, which is about a 60% increase relative to the mean vote share received by female candidates. To put this into context, based on the means reported in Table 2, there were .63 female candidates per national election winning 7.2% of the overall votes, which suggests that the typical female parliamentary candidate wins 11.4% of the votes in her election. For the newly-induced candidates in our analysis, the additional .19 women running for a parliamentary seat are able to increase the share of votes going to female candidates by about 4.2 percentage points – which, on a per candidate basis, means these marginal candidates win, on average, 22.1% more votes in their election. This suggests that the candidates who run for parliamentary seats as a result of the prior success of female politicians at the lower level are, or become, substantially more competitive than the average female parliamentary candidate.

With the increase in female vote share in mind, we next explore if this is a result of increased voter participation of previously disenfranchised pro-female voters by testing whether there were changes in overall voter turnout. In Table 9, we estimate Equation 3 using the total voter turnout for the parliamentary election as the outcome and find no significant effects in any period. Assuming that the composition of voters did not change, these results

[11] We also estimate outcomes for the appointment or election of women to the upper house of the Indian parliament, the Rajya Sabha, in Appendix Table 6. We find no similar effect there, although this is not a directly elected house and the process by which individuals become "candidates" for these seats is markedly different from those in the lower house.

suggest that electing state-female legislators changes the preferences of voters towards female politicians.

4.4 Is it gender, party, or incumbency?

Nearly 50% of female state legislature candidates are fielded by a single party the center-left/progressive Indian National Congress (INC). This raises the concern that female electoral success may simply be reflecting a party effect if, for example, the election of an additional INC candidate to the state legislature impacts the supply of candidates competing for parliamentary seats.

In order to test whether the party affiliation of an additional state legislator impacts the number of parliamentary female candidates, we use variation from close-won elections by INC candidates instead of variation in gender of candidates in closely won elections. The results of this exercise, presented in Appendix Table 7, show that progressive-party wins actually lead to a small reduction in female participation in subsequent parliamentary elections. The results suggest that our results are driven by the gender of the candidate and not their political affiliation.

It is also possible that the effects of closely electing a female state legislator varies by whether she is an incumbent or a new candidate. For example, the close election of a female politician who never served in the state assembly could provide information to potential candidates and parties about voter preferences towards women. To test this, we estimate Equation 3 with an additional regressor for the count for close female wins by incumbents. The results in Appendix Table 9 suggest that the effects are driven from the election of new female state politicians and provide evidence that the success of non-incumbent state female legislators could inspire latent female parliamentary candidates and provide them, and the parties they belong to, with information about voters' attitudes.

Lastly, we explore whether increased state-level female representation is also increasing male candidacy. If this were the case, it would imply that the identification strategy is simply picking up a spurious relationship between close mixed state elections won by women and an increase in overall participation of candidates at the national level. The results of this analysis are found in Table 10 and provide no evidence supporting this hypothesis. This indicates that the impact of state-level female politicians on candidacy in national elections is gender-specific.

4.5 Heterogeneity: area characteristics, recency, incumbency, and party affiliation

We next examine the heterogeneity of the relationship between exposure to an elected female local politician and female representation and success in national elections. We start by exploring whether candidacy effects were different in states with more or less female empowerment. For this exercise, a state's level of female empowerment is characterized along two dimensions based on the 2001 Population Census: the female literacy rates and the Muslim population shares. Following Bhalotra et al. (forthcoming), states with lower literacy rates (below the national median) and states with a large share of Muslims (above the national median) can be thought of as areas with low historical empowerment of women.[12]

Table 11 reports estimates from separate regressions by sub-samples of states based on the female literacy rate and the population Muslim share. Columns 1 and 4 indicate that the increase in the number of parliamentary female candidates is concentrated in states with low literacy rates and a high share of Muslim population.[13] These results are counter to

[12]While our indicators of female empowerment may be endogenously related to our independent variable of interest due to the fact that they are measured in 2001, the relative persistence in these factors over time should mitigate the concerns about the use of these specific measures. These results should therefore be viewed and interpreted with this potential issue in mind.

[13]An increase in the probability of a female winning a parliamentary race is also concentrated in low literacy states and those with high share of Muslims, but the results are not statistically significant.

Bhalotra et al. (forthcoming)'s finding that the relationship between female electoral success at the state level and the likelihood of that woman re-contesting her seat in the next election is strongest in more progressive states, and suggest that the dynamics of improving female political participation at the state level may substantially differ from those that generate increased participation and representation in national politics. We also do not find that the effects are strongly divergent between the earlier and later periods in our sample (Columns 5 and 6) and do not detect any substantial complementarity between close wins and the existence of the quota policy in local government (see Appendix Table 8).

Lastly, we examine if the political party of the close female winner differentially affects female representation in higher-level candidacy. To do this, the main regressor is split into three separate measures: the number of close female wins by the major progressive party (INC), the number of close female wins by the major conservative party (BJP), and close female wins by candidates from all other parties and independents. Although nearly half of the mixed close elections won by women are won by the progressive party, the majority of the effect on later higher-level candidacy comes from lower-level wins by female candidates who run as conservatives, in smaller parties, or as independents – as shown in Column 3 of Table 12. Correspondingly, we find that an additional woman winning at the lower level increases female candidacy by BJP and independent candidates, but not by INC candidates.[14] These results are found in Table 13.[15]

[14]These findings are unlikely to be driven by systematic overlap with the Muslim share results above, as traditional conservative party strongholds can be found in areas across the country. In unreported estimations, we find that the conservative party results are particularly concentrated in low Muslim-share states.

[15]Ideally we would also observe measures of performance of the women who win close elections while in office to determine whether this has a relationship to higher-level candidacy. However, such measures are not available both comprehensively and historically. We leave this important investigation for future work.

5 Conclusion

Women are consistently underrepresented in high-ranking positions in both the public and private sectors around the world. We hypothesize that placing women into career stages that precede top-level positions might reduce observed disparities in representation over time through increasing the supply of potential experienced candidates, inspiring new women to compete for higher-level positions, and/or by changing beliefs about female candidates. Specifically, we investigate whether the election of women to state legislatures in India increases the number of women who compete for and win later elections for the national parliament. We find that an additional woman entering the political career pipeline by winning a state legislature election increases the number of female parliamentary candidates in elections held during the subsequent term of office by around 30%. The impact on female success in national elections follows the same temporal pattern and, while imprecisely estimated, is also positive and of a similar proportional magnitude.

The new female candidates running for the national legislature are not those who had previously won a state or national election, suggesting that lower-level success induces candidacy from women who were not already career politicians. This rules out a direct supply-side effect in this context, and highlights that pipeline expansion can affect the institution more broadly and change the entrance and participation decisions of *latent* candidates who had not previously run for office. These findings parallel those of **?**, Iyer et al. (2012), and **?**, among others, who find that female leadership can change institutions to alter the decisions and behavior of those not directly affected by empowerment policy.

In addition, we find that female political success in a state election leads to subsequent female candidates in national elections receiving a higher share of the vote without increasing voter turnout. This suggests that either voter preferences changed and/or the new candidates were more competitive than the average existing female candidate. Interestingly, the

effects are concentrated in states with low female literacy and high muslim population shares – areas that have traditionally had higher barriers to women's political participation and empowerment. Similarly, the cross-party effects are driven by the lower-level electoral success of women who are not part of the progressive party, but rather those who run as conservatives or independents. Given recent literature on the ability of female politicians to outperform their male counterparts in government effectiveness and economic performance (Brollo and Troiano, 2016; **?**), we take our findings as consistent with a mechanism in which exposure reduces bias, allowing for updated beliefs about the viability of *latent* female candidates who then run for higher office.

This is the first paper to empirically test the implications of the election local female politicians on the supply of female candidates running for national legislature. The results suggest that initiatives to promote the candidacy of women at earlier stages in the political ladder have the potential to generate a broader expansion in the pipeline of female politicians, especially in gender-biased areas where the barriers to entry for female politicians are high.

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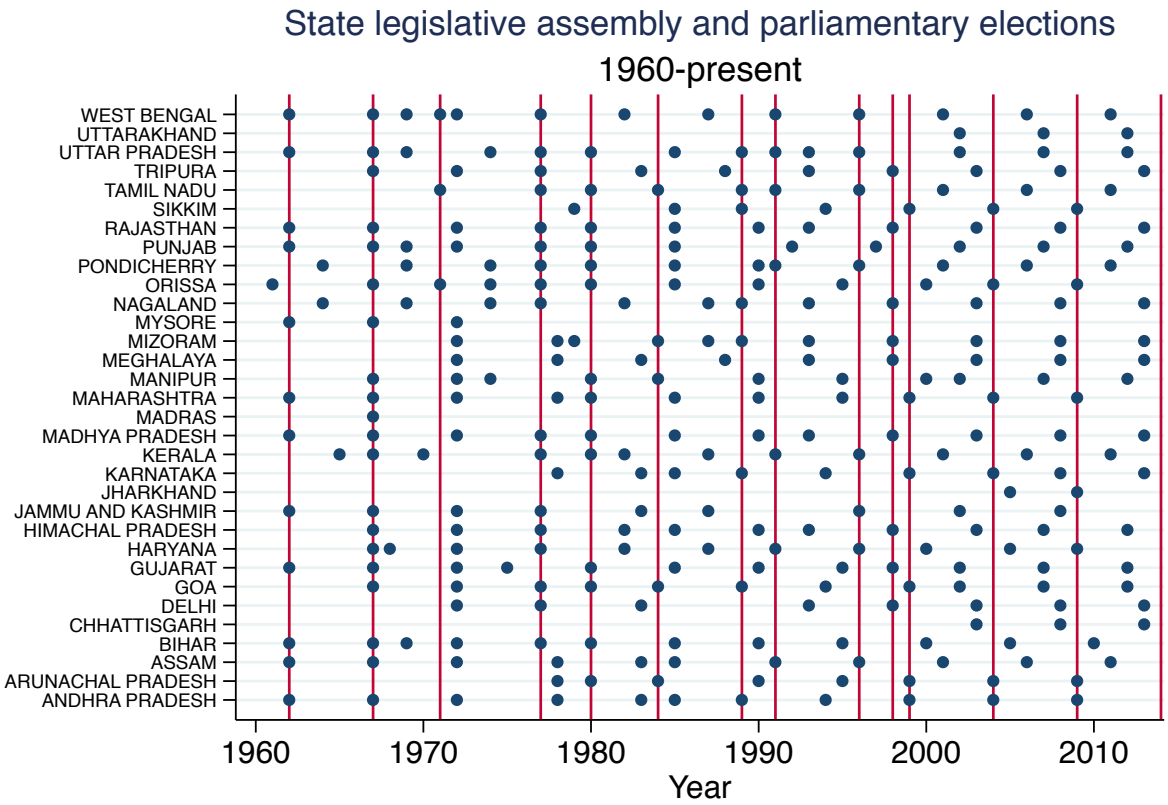
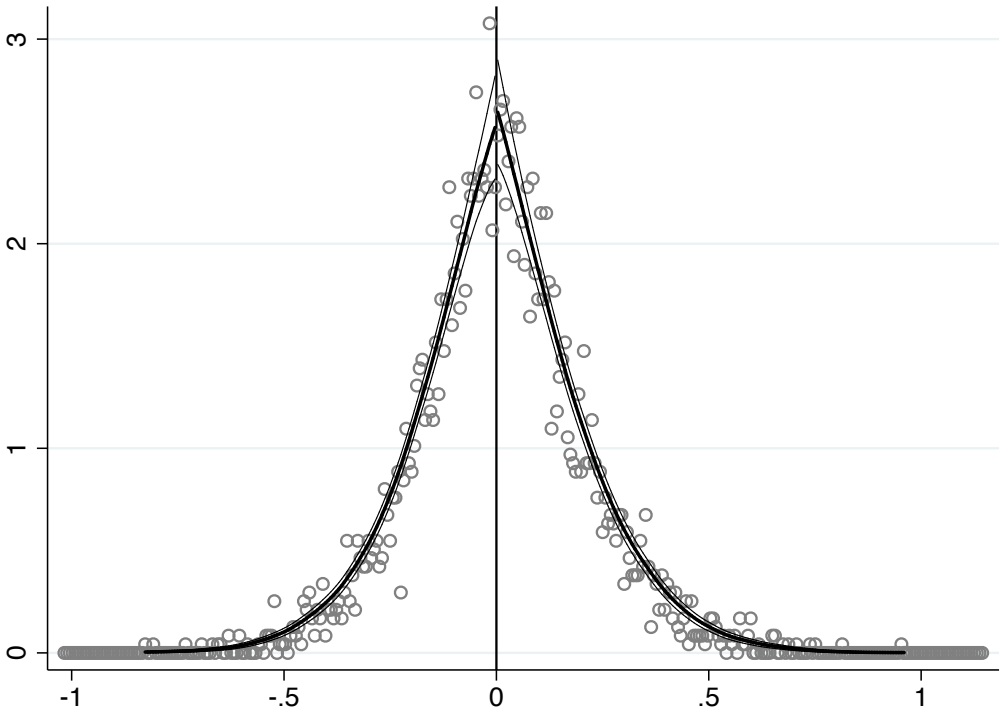
Figure 1: Timing of state and federal elections, 1960 to present



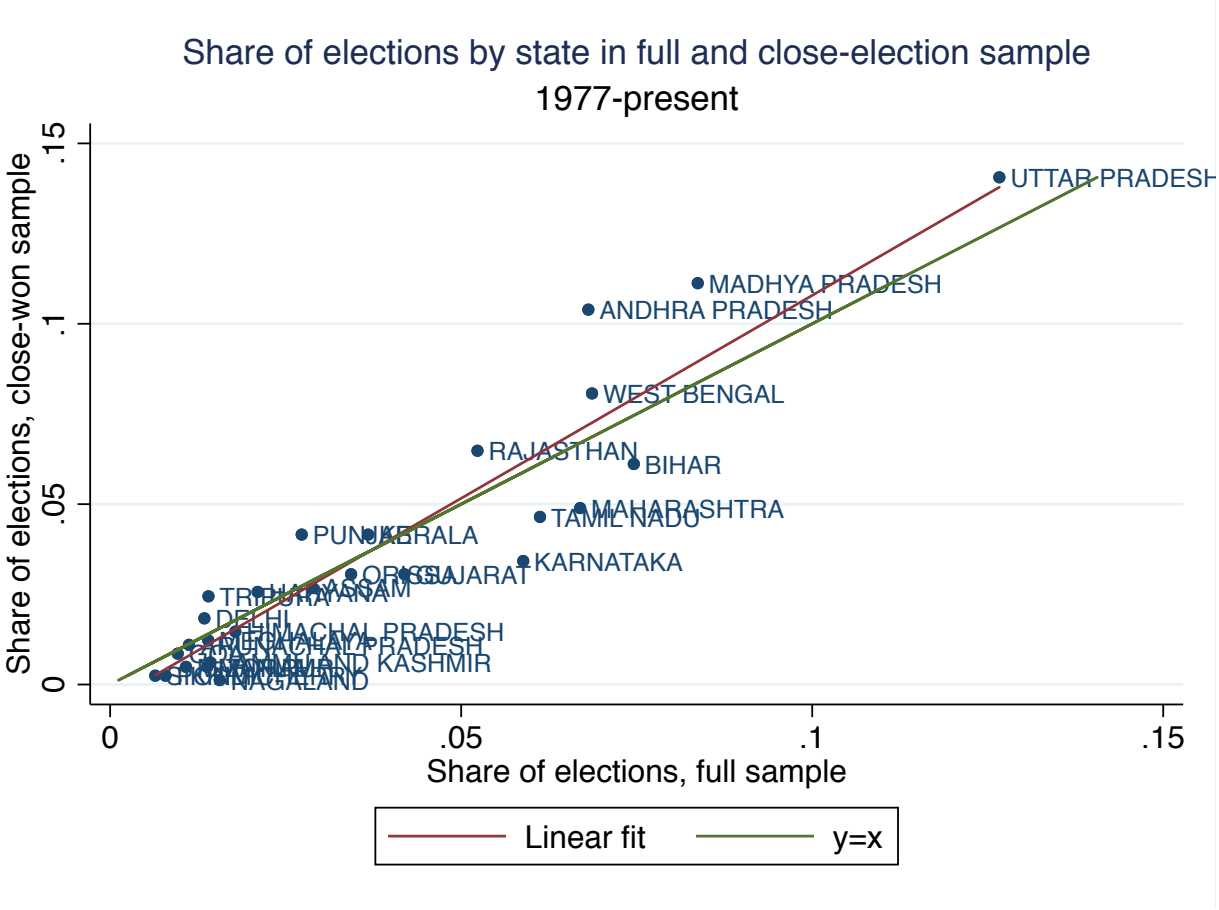
Note: Parliamentary elections represented by vertical bars.

Figure 2: Density test for manipulation of the running variable



Note: Graphic presents a test of differential density of observations around the forcing variable (election victory margin) for state legislature elections with both a male and female candidate finishing in the top two. The horizontal axis is the female victory margin, where positive values indicate a win by the female candidate and negative values indicate a win by the male candidate.

Figure 3: Close election sample representativity by state



Note: Graphic plots the share of all state legislature elections in the sample (horizontal axis) with the share of state legislature elections in the close-mixed gender election sample by state. p-value of $H_0 : \beta = 1$: 0.16.

Table 1: Summary statistics, state legislature elections, 1977-2014

Panel A: Full sample				
Variable	**Mean**	**Std. Dev.**	**Min.**	**Max.**
Candidates	9.339	6.559	1	301
Female candidates	0.419	0.756	0	16
Victory margin	0.145	0.138	0	1
Close election [0/1]	0.264	0.441	0	1
Election b/w male and female candidate	0.095	0.293	0	1
Female candidate won	0.047	0.212	0	1
Close election b/w male and female cand.	0.024	0.153	0	1
Female cand. won in MF close election	0.012	0.109	0	1
State legis. election year	1993.739	11.073	1977	2013
High female literacy state	0.535	0.499	0	1
High muslim share state	0.422	0.494	0	1
N		34267		

Panel B: Mixed-close election sample				
Variable	**Mean**	**Std. Dev.**	**Min.**	**Max.**
Candidates	10.236	6.009	2	45
Female candidates	1.511	0.841	1	7
Victory margin	0.025	0.015	0	0.05
Female candidate won	0.505	0.500	0	1
State legis. election year	1999.064	10.245	1977	2013
High female literacy state	0.471	0.499	0	1
High muslim share state	0.41	0.492	0	1
N		818		

Source: Authors' calculations based on state legislative assembly election returns, 1977 to 2014.

Table 2: Summary statistics: merged state and national elections returns

Variable	Mean	Std. Dev.	Min.	Max.
State legis. election year	1992.789	10.471	1977	2013
# SLC constituencies (elections)	6.382	5.114	1	60
# SLC close elections	1.67	2.101	0	29
# SLC elections w/ F cand. in top 2	0.633	0.908	0	9
# SLC elections won by F cand.	0.295	0.567	0	5
# SLC close elections b/w M & F cand.	0.153	0.42	0	4
# SLC close elections won by F cand.	0.078	0.284	0	2
Natl. legis. election year	1996.361	10.321	1980	2014
# NLC candidates	13.741	9.541	1	122
# Female NLC candidates	0.62	0.909	0	6
Whether female cand. won NLC election	0.074	0.261	0	1
Vote share for all F. cand	6.96	16.464	0	97.03
N		5569		

Source: Authors' calculations based on state and national legislative assembly election returns, 1977 to 2014.

Table 3: Women's electoral success in mixed-gender elections and number of elected female state legislators

	+/- 5% win margin		+/- 2.5% win margin	
	(1)	(2)	(3)	(4)
# of close elections won by female cand.	1.027***	0.953***	1.030***	0.948***
	(0.027)	(0.044)	(0.036)	(0.063)
Const. fixed effects	No	Yes	No	Yes
Year fixed effects	No	Yes	No	Yes
Close elections w/ M & F	No	Yes	No	Yes
p value, $H_0 : \alpha_1 = 1$	0.33	0.29	0.41	0.41
N	5791	5692	5791	5692
R^2	0.26	0.46	0.14	0.39
Mean of outcome	0.28	0.28	0.28	0.28
St. dev. of outcome	0.55	0.55	0.55	0.55

Note: Each column shows a separate regression of the number of close mixed-gender elections won by female candidates for state legislature elections within a national legislature constituency (NLC) on the number of women election to state legislatures within the national constituency area (equation 1). Standard errors are two-way clustered by national constituency and year. Significance levels are indicated by $*$ < .1, ** < .05, *** < .01.

Table 4: Characteristics of candidate pool in mixed-gender elections

	Vote share for all female cands. (1)	Whether female incumbent ran (2)	# female previous state legis. cands. (3)	# female cands. from INC (4)	# female cands. from BJP (5)	Whether incumbent ran (any) (6)	# prev. state legis. cands. running (7)
Woman won election	0.010	-0.026	-0.060	0.031	-0.003	-0.082*	-0.116
	(0.007)	(0.024)	(0.038)	(0.045)	(0.029)	(0.042)	(0.116)
N	3744	3744	3744	3744	3744	3744	3744
R^2	0.68	0.03	0.05	0.24	0.15	0.07	0.16
Mean of outcome	0.42	0.12	0.19	0.44	0.13	0.32	0.89
St. dev. of outcome	0.12	0.32	0.41	0.50	0.34	0.51	1.12

Note: Table reports coefficient estimates from the estimation of a regression discontinuity on falsification outcomes among the sample of state legislature elections in which the top two finishers were a male and female candidate. All equations include fixed effects for election year, and linear, quadratic, cubic, and quartic terms in the vote share garnered by the female candidate, as well as interactions with these measures for the female candidate having won. Significance levels are indicated by $* < .1$, $** < .05$, $*** < .01$.

Table 5: Women's electoral success in state mixed-gender elections and the number of female candidates in parliamentary elections

	Previous term	Current term	Subsequent term
	(1)	(2)	(3)
# SLC close elections won by F cand.	0.048	-0.025	0.191**
	(0.062)	(0.067)	(0.083)
# close mixed-gender elections	Yes	Yes	Yes
N	6108	4521	3832
R^2	0.37	0.38	0.39
Mean of outcome	0.46	0.61	0.63
St. dev. of outcome	0.77	0.90	0.90

Note: Table reports coefficient estimates from equation 3 estimated via OLS. All specifications include constituency FE, assembly election year FE, and parliamentary election year FE. Standard errors are two-way clustered by parliamentary constituency and year of state legislature election. Significance levels are indicated by $* < .1$, $** < .05$, $*** < .01$.

Table 6: Women's electoral success in state mixed-gender elections and the number of female candidates in parliamentary elections by source of candidacy

	Current term				Subsequent term			
	All cands. (1)	Prev. state legislator (2)	Prev. parliamentary legislator (3)	Prev. parliamentary or state legis. (4)	All cands. (5)	Prev. state legislator (6)	Prev. parliamentary legislator (7)	Prev. parliamentary or state legis. (8)
# SLC close elections won by F cand.	-0.023	-0.014	0.019	0.021	0.191**	0.029	-0.004	0.052
	(0.067)	(0.017)	(0.015)	(0.040)	(0.082)	(0.031)	(0.023)	(0.056)
# close mixed-gender elections	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	4521	4521	4521	4521	3832	3832	3832	3832
R^2	0.38	0.23	0.25	0.28	0.39	0.24	0.28	0.29
Mean of outcome	0.61	0.03	0.04	0.17	0.63	0.03	0.04	0.18
St. dev. of outcome	0.90	0.17	0.20	0.46	0.90	0.18	0.21	0.48

Note: Table reports coefficient estimates from equation 3 estimated via OLS. All specifications include constituency FE, assembly election year FE, and parliamentary election year FE. Standard errors are two-way clustered by parliamentary constituency and year of state legislature election. Significance levels are indicated by $* < .1$, $** < .05$, $*** < .01$.

Table 7: Women's electoral success in state mixed-gender elections and the probability of a female win in parliamentary elections

	Previous term	Current term	Subsequent term
	(1)	(2)	(3)
# SLC close elections won by F cand.	-0.001	0.006	0.030
	(0.016)	(0.019)	(0.034)
# close mixed-gender elections	Yes	Yes	Yes
N	6109	4521	3832
R^2	0.27	0.28	0.30
Mean of outcome	0.07	0.07	0.08
St. dev. of outcome	0.25	0.26	0.26

Note: Table reports coefficient estimates from equation 3 estimated via OLS. All specifications include constituency FE, assembly election year FE, and parliamentary election year FE. Standard errors are two-way clustered by parliamentary constituency and year of state legislature election. Significance levels are indicated by $*<.1$, $**<.05$, $***<.01$.

Table 8: Women's electoral success in state mixed-gender elections and the vote share of female candidates in parliamentary elections

	Previous term	Current term	Subsequent term
	(1)	(2)	(3)
# SLC close elections won by F cand.	-0.436	-0.478	4.211*
	(1.086)	(1.290)	(2.141)
# close mixed-gender elections	Yes	Yes	Yes
N	6109	4521	3832
R^2	0.33	0.33	0.37
Mean of outcome	6.17	6.97	7.22
St. dev. of outcome	15.64	16.40	16.69

Note: Table reports coefficient estimates from equation 3 estimated via OLS. All specifications include constituency FE, assembly election year FE, and parliamentary election year FE. Standard errors are two-way clustered by parliamentary constituency and year of state legislature election. Significance levels are indicated by $*<.1$, $**<.05$, $***<.01$.

Table 9: Women's electoral success in state mixed-gender elections and the voter turnout in parliamentary elections

	Previous term	Current term	Subsequent term
	(1)	(2)	(3)
# SLC close elections won by F cand.	0.364	-0.419	-0.799
	(0.447)	(0.478)	(0.743)
# close mixed-gender elections	Yes	Yes	Yes
N	5980	4425	3765
R^2	0.70	0.77	0.76
Mean of outcome	58.10	59.33	59.43
St. dev. of outcome	11.79	12.32	12.44

Note: This table reports coefficient estimates from equation 3 estimated via OLS. All specifications include constituency FE, assembly election year FE, and parliamentary election year FE. Standard errors are two-way clustered by parliamentary constituency and year of state legislature election. Significance levels are indicated by $*<.1$, $**<.05$, $***<.01$.

Table 10: Women's electoral success in state mixed-gender elections and the number of male candidates in parliamentary elections

	Previous term	Current term	Subsequent term
	(1)	(2)	(3)
# SLC close elections won by F cand.	0.116	0.113	-0.021
	(0.380)	(0.598)	(0.467)
# close mixed-gender elections	Yes	Yes	Yes
N	6109	4521	3832
R^2	0.65	0.69	0.67
Mean of outcome	10.77	12.90	12.88
St. dev. of outcome	8.50	9.33	8.87

Note: Table reports coefficient estimates from equation 3 in the text. All specifications include constituency FE, assembly election year FE, and parliamentary election year FE. Standard errors are two-way clustered by parliamentary constituency and year of state legislature election. Significance levels are indicated by $*$ $< .1$, ** $< .05$, *** $< .01$.

Table 11: Women's electoral success in state mixed-gender elections and the number of female candidates in parliamentary elections by state characteristics

	State female literacy		State muslim pop. share		Post-1991	
	Low	High	Low	High	Pre-	Post
	(1)	(2)	(3)	(4)	(5)	(6)
# SLC close elections won by F cand.	0.276*	0.095	0.201	0.189*	0.153	0.209**
	(0.133)	(0.114)	(0.120)	(0.109)	(0.234)	(0.087)
# close mixed-gender elections	Yes	Yes	Yes	Yes	Yes	Yes
N	2019	1813	1895	1937	883	2870
R^2	0.40	0.39	0.37	0.42	0.70	0.42
Mean of outcome	0.68	0.57	0.57	0.68	0.35	0.72
St. dev. of outcome	0.95	0.84	0.85	0.95	0.65	0.95

Note: This table reports coefficient estimates from equation 3 estimated via OLS. All specifications include constituency FE, assembly election year FE, and parliamentary election year FE. Standard errors are two-way clustered by parliamentary constituency and year of state legislature election. Significance levels are indicated by $*$ $< .1$, ** $< .05$, *** $< .01$.

Table 12: Women's electoral success in state mixed-gender elections and the number of female candidates in parliamentary elections by state-level candidate party

	Previous term	Current term	Subsequent term
	(1)	(2)	(3)
close elections won by F INC cand.	-0.014	-0.039	0.125
	(0.081)	(0.098)	(0.106)
close elections won by F BJP cand.	0.154	-0.058	0.381**
	(0.093)	(0.096)	(0.171)
close elections won by any other F cand.	0.079	0.015	0.180*
	(0.082)	(0.083)	(0.088)
# close mixed-gender elections	Yes	Yes	Yes
N	6109	4521	3832
R^2	0.37	0.38	0.39
Mean of outcome	0.46	0.61	0.63
St. dev. of outcome	0.77	0.90	0.90

Note: Table reports coefficient estimates from equation 3 estimated via OLS. All specifications include constituency FE, assembly election year FE, and parliamentary election year FE. Standard errors are two-way clustered by parliamentary constituency and year of state legislature election. Significance levels are indicated by $* < .1$, $** < .05$, $*** < .01$.

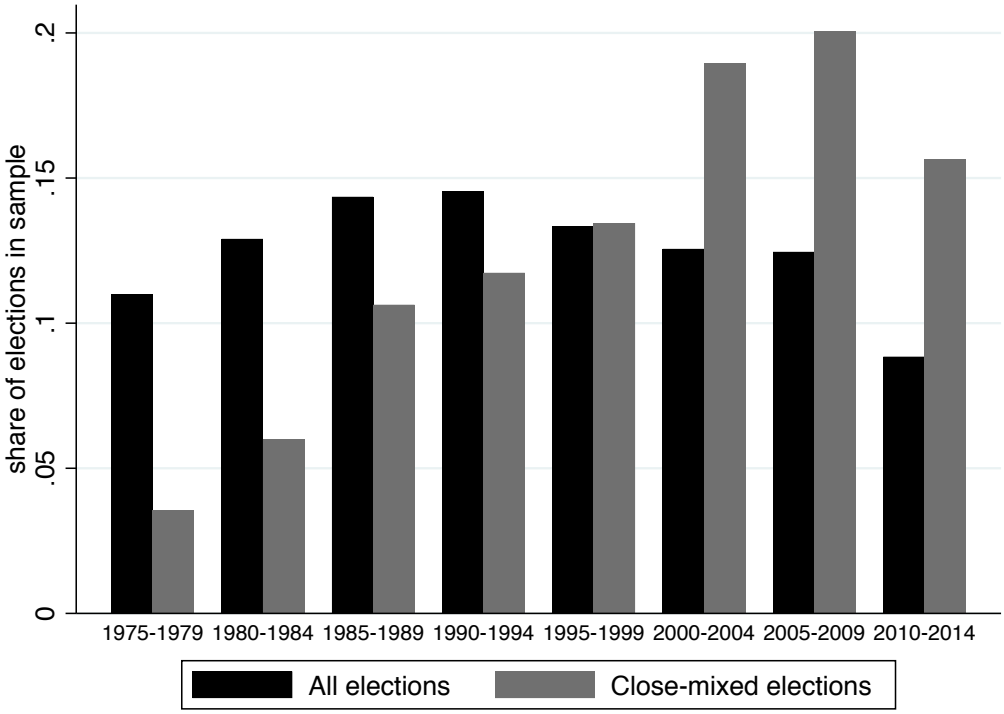
Table 13: Women's electoral success in state mixed-gender elections and the number of female candidates in parliamentary elections by party affiliation

	INC	BJP	Other parties	Independents
	(1)	(2)	(3)	(4)
# SLC close elections won by F cand.	0.014	0.038*	0.035	0.104
	(0.034)	(0.020)	(0.055)	(0.063)
# close mixed-gender elections	Yes	Yes	Yes	Yes
N	3832	3832	3832	3832
R^2	0.36	0.32	0.32	0.30
Mean of outcome	0.08	0.05	0.24	0.26
St. dev. of outcome	0.28	0.21	0.52	0.57

Note: Table reports coefficient estimates from equation 3 estimated directly via OLS. All specifications include constituency FE, assembly election year FE, and parliamentary election year FE. Standard errors are two-way clustered by parliamentary constituency and year of state legislature election. Significance levels are indicated by $* < .1$, $** < .05$, $*** < .01$.

A1 Appendix Tables and Figures

Appendix Figure 1: Histograms of full and mixed-gender close election sample



Note: Graphic presents histograms of the state legislature elections in the overall sample and the close-mixed gender election sample by five-year ranges.

Appendix Table 1: Women's electoral success in state mixed-gender elections and the number of female candidates in parliamentary elections using alternate subsequent election samples

	Previous term	Current term	Subsequent term (incl. 10)
	(1)	(2)	(3)
# SLC close elections won by F cand.	0.053	-0.023	0.191**
	(0.062)	(0.067)	(0.073)
# close mixed-gender elections	Yes	Yes	Yes
N	6109	4521	4182
R^2	0.37	0.38	0.38
Mean of outcome	0.46	0.61	0.63
St. dev. of outcome	0.77	0.90	0.90

Note: Table reports coefficient estimates from equation 3 estimated via OLS. All specifications include constituency FE, assembly election year FE, and parliamentary election year FE. Standard errors are two-way clustered by parliamentary constituency and year of state legislature election. Significance levels are indicated by $*<.1$, $**<.05$, $***<.01$.

Appendix Table 2: Women's electoral success in state mixed-gender elections and the number of female candidates in parliamentary elections - IV estimates

	Previous term	Current term	Subsequent term
	(1)	(2)	(3)
# female state legislators	0.052	-0.027	0.197**
	(0.067)	(0.074)	(0.086)
# close mixed-gender elections	Yes	Yes	Yes
N	6108	4521	3832
R^2	0.37	0.38	0.38
Mean of outcome	0.46	0.61	0.63
St. dev. of outcome	0.77	0.90	0.90

Note: Table reports coefficient estimates from equation 3 estimated via OLS. All specifications include constituency FE, assembly election year FE, and parliamentary election year FE. Standard errors are two-way clustered by parliamentary constituency and year of state legislature election. Significance levels are indicated by $*<.1$, $**<.05$, $***<.01$.

Appendix Table 3: Women's electoral success in state mixed-gender elections and the number of female candidates in parliamentary elections - consistent sample

	Previous term	Current term	Subsequent term
	(1)	(2)	(3)
# SLC close elections won by F cand.	0.069	-0.018	0.214**
	(0.089)	(0.070)	(0.094)
# close mixed-gender elections	Yes	Yes	Yes
N	2792	2792	2792
R^2	0.40	0.41	0.39
Mean of outcome	0.39	0.55	0.64
St. dev. of outcome	0.72	0.84	0.91

Note: Table reports coefficient estimates from equation 3 estimated via OLS. All specifications include constituency FE, assembly election year FE, and parliamentary election year FE. Standard errors are two-way clustered by parliamentary constituency and year of state legislature election. Significance levels are indicated by $*<.1$, $**<.05$, $***<.01$.

Appendix Table 4: Women's electoral success in state mixed-gender elections and the probability of a female win in parliamentary elections - consistent sample

	Previous term	Current term	Subsequent term
	(1)	(2)	(3)
# SLC close elections won by F cand.	-0.003	-0.018	0.046
	(0.021)	(0.022)	(0.032)
# close mixed-gender elections	Yes	Yes	Yes
N	2792	2792	2792
R^2	0.32	0.35	0.31
Mean of outcome	0.06	0.08	0.08
St. dev. of outcome	0.24	0.27	0.27

Note: Table reports coefficient estimates from equation 3 estimated via OLS. All specifications include constituency FE, assembly election year FE, and parliamentary election year FE. Standard errors are two-way clustered by parliamentary constituency and year of state legislature election. Significance levels are indicated by $*<.1$, $**<.05$, $***<.01$.

Appendix Table 5: Women's electoral success in state mixed-gender elections and the number of female candidates in parliamentary elections - RD estimates

	Previous term (1)	Current term (2)	Subsequent term (3)
Female candidate won	0.079	-0.084	0.204**
	(0.099)	(0.095)	(0.086)
Win margin: linear, square, cube, quartic	Yes	Yes	Yes
Female win*win margin linear, square, cube, quartic	Yes	Yes	Yes
N	2233	1894	2094
R^2	0.52	0.54	0.50
Mean of outcome	0.58	0.70	0.77
St. dev. of outcome	0.89	0.96	0.98

Note: Table reports coefficient estimates from the estimation of a regression discontinuity specification using higher-level election outcomes across subareas within a given constituency, estimated via OLS. All specifications include parliamentary constituency FE, assembly election year FE, and parliamentary election year FE. Standard errors are two-way clustered by parliamentary constituency and year of state legislature election. Significance levels are indicated by $*<.1$, $**<.05$, $***<.01$.

Appendix Table 6: Women's electoral success in state mixed-gender elections and the number of females elected/appointed to Rajya Sabha

	Woman Elected to Rajya Sabha		
	Previous term (1)	Current term (2)	First post-term election (3)
Female candidate won	-0.028	-0.034	-0.029
	(0.031)	(0.032)	(0.031)
N	7210	7212	6896
R^2	0.34	0.36	0.38
Mean of outcome	0.41	0.43	0.44
St. dev. of outcome	0.60	0.61	0.62

Note: This table reports coefficient estimates from equation 3 in the text. All specifications include constituency FE, assembly election year FE, and parliamentary election year FE. Standard errors are two-way clustered by parliamentary constituency and year of state legislature election. Significance levels are indicated by $*<.1$, $**<.05$, $***<.01$.

Appendix Table 7: Electoral success by INC candidates in state close elections and the number of female candidates in parliamentary elections

	Previous term	Current term	Subsequent term
	(1)	(2)	(3)
# SLC close elections won by INC	-0.031	0.009	-0.052**
	(0.021)	(0.024)	(0.022)
Close elections w/ INC	Yes	Yes	Yes
N	6109	4521	3832
R^2	0.37	0.38	0.39
Mean of outcome	0.46	0.61	0.63
St. dev. of outcome	0.77	0.90	0.90

Note: Table reports coefficient estimates from equation 3 estimated via OLS. All specifications include constituency FE, assembly election year FE, and parliamentary election year FE. Standard errors are two-way clustered by parliamentary constituency and year of state legislature election. Significance levels are indicated by $* < .1$, $** < .05$, $*** < .01$.

Appendix Table 8: Women's electoral success in state mixed-gender elections and the number of female candidates in parliamentary elections - complementarity to quota policy

	Full sample, interacted	Any reservations int.
	(1)	(2)
# SLC close elections won by F cand.	-0.151	-0.150
	(0.128)	(0.128)
SLC close elections won by F cand. * post-1991	0.392**	0.413**
	(0.145)	(0.165)
SLC close elections won by F cand. * state has quota resvs.		-0.026
		(0.128)
State has quota resvs.		0.069
		(0.063)
# close mixed-gender elections	Yes	Yes
N	3832	3832
R^2	0.59	0.59
Mean of outcome	0.63	0.63
St. dev. of outcome	0.90	0.90

Note: This table reports coefficient estimates from equation 3 in the text with the additional inclusion of state-specific linear trends included in all specifications. All specifications include constituency FE, assembly election year FE, and parliamentary election year FE. Standard errors are two-way clustered by parliamentary constituency and year of state legislature election. Significance levels are indicated by $* < .1$, $** < .05$, $*** < .01$.

Appendix Table 9: Women's electoral success in state mixed-gender elections and the number of female candidates in parliamentary elections by incumbency status

	Previous term	Current term	Subsequent term
	(1)	(2)	(3)
# SLC close elections won by F cand.	0.069	-0.037	0.192**
	(0.064)	(0.072)	(0.078)
# SLC close elections won by incumbent F cand.	-0.187	0.116	-0.010
	(0.119)	(0.183)	(0.366)
# close mixed-gender elections	Yes	Yes	Yes
N	6108	4521	3832
R^2	0.37	0.38	0.39
Mean of outcome	0.46	0.61	0.63
St. dev. of outcome	0.77	0.90	0.90

Note: Table reports coefficient estimates from equation 3 estimated via OLS. All specifications include constituency FE, assembly election year FE, and parliamentary election year FE. Standard errors are two-way clustered by parliamentary constituency and year of state legislature election. Significance levels are indicated by $* < .1$, $** < .05$, $*** < .01$.