

Do female politicians matter for female labor market outcomes? Evidence from state legislative elections in India

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January 11, 2019

Abstract

This paper studies the long-term economic consequences of electing women to State Legislatures in India. I estimate the effect of exposure to female politicians during young adulthood on later life female labor market outcomes for age-cohorts 15-24 from 1980 to 2007. To address endogeneity of electoral preferences, I use close elections between male and female candidates, won by a woman, as an instrument for female political representation in a district. I find an inverse U-shaped relationship between age of exposure and the probability of working in wage employment. Exposure to female politicians between ages 18-20 across cohorts has non-trivial effects on later life wage employment. Specifically, an additional female politician in a district results in a 2.5 percentage point increase in the probability of working in wage employment, corresponding to an increase of 42%. These results are driven by employment in the private sector and areas with less entrenched gender bias. I provide suggestive evidence and discuss whether the employment effects are consistent with a policy channel or changed aspirations of young girls due to role modeling.

JEL classification: D72, J01, J20, O15

Keywords: female labor market outcomes, female politicians, role model, India

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1 Introduction

Declining female labor force participation (FLFP) in India is a policy concern as it can impede the country’s growth potential. Between 2005 and 2012, 19.6 million women left the labor force and FLFP rate declined to 31% (Andres et al., 2017). Inclusive growth is important as women’s employment and income can increase their bargaining power in the household and have spillover effects on their children’s well-being (Duflo, 2003),(Qian, 2008). Aside from structural features of the economy,¹ social norms about appropriateness of women engaging in market work constrain FLFP in India.² Jayachandran (2015) identifies role models as a potential policy approach to influence social norms on gender attitudes and show what is feasible for women to attain. Female politicians as public role models, can affect FLFP through policy measures, and changes in women’s aspirations and social norms (Beaman et al., 2012).

Women’s political representation is found to result in policies and welfare effects favorable to women and children,³ but there is limited evidence of the economic consequences of electing women. To address this gap, this paper studies whether exposure to female politicians in State Legislatures during young adulthood affect later life labor market outcomes of women using the National Sample Survey (NSS) 2011-2012. I exploit variation in differential exposure to female politicians within districts for age-cohorts 15-24 from 1980 to 2007, to assess the impact on women’s choice of economic activity. I find that exposure to female politicians for age-cohorts 18-20 increases the likelihood of women selecting into wage employment as adults.

Causal identification of a competitively elected female politician requires addressing endogeneity of electoral preferences, which can be correlated with both FLFP and female political representation. To overcome endogeneity bias, I use an instrumental variable derived from a fuzzy regression discontinuity. I follow the estimation strategy of Clots-Figueras (2012) and Bhalotra and Clots-Figueras (2014) and use the fraction of seats won by a woman in a close election against a male candidate, as an instrument for the fraction of seats in a district won by a female

¹FLFP is hypothesized to have a U-shaped relationship across the process of economic development (Goldin, 1994). Rise in household incomes (Afridi et al., 2018),(Mehrotra and Parida, 2017) decline in demand for women’s labor in agriculture (Chatterjee et al., 2015) and availability of suitable jobs partly account for the decline in FLFP. However, a structural shift towards manufacturing and service accompanied by an increase in women’s education levels and a sizable decline in fertility (Klasen and Pieters, 2015) predicts an increase in FLFP, but this has not transpired.

²See Marianne (2011) for a survey on the role of social and gender identity norms on women’s labor market choices.

³See Bhalotra and Clots-Figueras (2014),Clots-Figueras (2012),Bhalotra et al. (2017),Clots-Figueras (2011),Chattopadhyay and Duflo (2004).

politician. The identifying assumption being that the outcome of close mixed gender elections is quasi-random and does not indicate any clear electoral preference for female politicians.

Existing research finds evidence that exposure to female politicians in reserved seats at local levels of government in India⁴ increase women-owned establishments in the informal sector (Ghani et al., 2014), self-employment in farming activities (Deininger et al., 2012), and participation in a large public works program (Ghani et al., 2013),(Bose and Das, 2018) with negligible effects on wage employment. There is mixed evidence of the effect on men. Politicians are found to affect labor market outcomes in other settings as well. Beland (2015) finds that party affiliation of governors to the Democratic party in the USA cause an increase in annual hours worked by black workers, relative to whites, with a reduction in the racial earnings gap. Nye et al. (2014) find that black mayors lead to improved employment outcomes for black workers with larger impacts in municipal government jobs. However, Ferreira and Gyourko (2014) does not find any effect of female mayors on municipal employment.

This paper differs from earlier studies in India along two important dimensions. First, I study female politicians elected competitively to State Legislatures, in contrast to previous research which focus on local political reservations.⁵ The personal background and role of politicians vary considerably at these two levels of government. This can have implications for which type of constituents respond to their presence (i.e. who is a more proximate role model) and the pathways of their policy influence.⁶ Second, I explore the long run economic consequences of exposure to female politicians during young adulthood, which is a critical time period for shaping norms and beliefs (Dhar et al., 2018) and making important decisions regarding schooling and employment. Role models are expected to be especially important during these formative years. Using night lights as a measure of growth, Baskaran et al. (2018) find that female politicians in State Legislatures lead to increased GDP growth in their constituencies. This paper complements their work in studying politicians at the same level of government and quantifying the local economy effect on individual outcomes by gender at the district level.

There is evidence of change in education and occupation aspirations, and gender-

⁴A constitutional amendment in 1993 mandated randomized reservation of seats for women in local levels of government.

⁵There are limitations to generalizing the effect of reservations, as it can change political competition through changes in candidate quality and voter preferences (Clots-Figueras, 2012), (Bhalotra and Clots-Figueras, 2014). If women in reserved seats are perceived to be less qualified, it may lead to backlash and reinforcement of negative gender stereotypes (Bhalotra et al., 2017).

⁶Policy influence of local governments are limited to rural areas although their role model effect can spill over to urban areas as found in Kalsi (2017).

discriminatory behavior in constituents due to exposure to female politicians in reserved seats in India (Beaman et al., 2009),(Kalsi, 2017). Further, female politicians have been found to influence other important correlates of FLFP including education, gender-unequal laws and intra-household bargaining power (Heath and Jayachandran, 2016), (Mehrotra and Parida, 2017). Women elected to State Legislatures from reserved Scheduled Castes (SC)/Scheduled Tribes (ST) seats are found to support women-friendly laws such as the amendment of the Hindu Succession Act 2005, which provided women with equal inheritance rights (Clots-Figueras, 2011). Heath and Tan (2014) find that the Act raised women’s autonomy and labor supply in high paying jobs. Studies also find that female politicians increase women’s bargaining power, as reflected in increased decision-making on purchases, fertility, and marriage and spending less time on domestic chores (Beaman et al., 2012), (Deininger et al., 2012), (Dasgupta, 2016), (Castilla, 2017).

Using individual-level data, I match age-cohorts of 15-24 from 1980 to 2007 to district female political representation. I find that exposure to female politicians for age-cohorts 18-20 has a non-trivial effect on women working in wage employment later in life, with limited evidence of an effect on self-employment or casual work. The results show that a 10 percentage point increase in female politicians, equivalent to an additional politician in the median district, results in a 2.5 percentage point increase in women’s wage employment, corresponding to an increase of 42%. The results are robust to a number of specification checks.

I examine and discuss potential pathways through which women’s wage employment is affected; through a policy or perception channel, recognizing that multiple channels could be at work simultaneously. I do not find evidence that the employment effects are linked to opportunities in the public sector, including public works programs. The effects are largely driven by employment in the private sector and in districts with relatively lower gender bias, as proxied by sex ratios. The latter highlights the importance of an enabling external environment for women’s employment (Roy et al., 2018). I show that these employment effects do not transpire in the short term, emphasizing the role of mechanisms that are borne out in the long term.

Two plausible hypotheses include provision of public goods conducive for local economic activity or changed aspirations of girls due to role modeling. As education is important for employment outcomes, I investigate the effect of female politicians on individual schooling attainment. I find that exposure to female politicians in the years prior to starting secondary and tertiary schooling increases the likelihood of completing these levels of schooling, primarily for urban adolescent girls, with

limited effect on boys. This is consistent with prior work which finds that political reservations increase girls' school enrollment (O'Connell, 2018), and erase gender education gaps (Beaman et al., 2012) due to a role model effect, with negligible effect on boys. Further, Mammen and Paxson (2000) find that educated women are more likely to work in wage employment in India.

Estimates of parameter heterogeneity show that the employment effects transmit between politicians and constituents with shared identity of gender and caste. Specifically, women elected from general seats increase wage employment of non-SCST individuals only. On the other hand, SCST female politicians affect employment outcomes of SCST individuals and lead to a substitution away from casual work towards self-employment. This is consistent with the literature which finds that shared identity with individuals of a similar background, who are seen to be personally relevant, are important for role modeling (Lybbert and Wydick, 2018), (Ray, 2006) (Bertrand and Duflo, 2017). Furthermore, this pattern only holds for women's employment outcome but not for men, mitigating concerns of redistribution of resources to favored groups.

Taken together, these set of results provide suggestive evidence that female politicians could have changed both education and employment aspirations of young girls. This is consistent with Roy et al. (2018) who find that an increase in adolescent girl's aspirations affect their actual education and labor market outcomes. The empirical results also find a positive effect on men's economic activity, indicating the relevance of a policy channel. Data constraints limit testing the aspirations channel directly, and disentangling between competing mechanisms. However, the results highlight that education investment, either due to a policy or aspirational role of female politicians, is likely an important mediating factor for the employment effects.

To the best of my knowledge, this paper is the first in the literature to quantify individual level employment effects of competitively elected female politicians in a developing country. The paper contributes to a growing literature on the effects of female political leadership and a broader literature on women's economic advancement, especially in constrained social environments. The findings are important as it demonstrates that greater gender representation in politics can have spillover effects on economic outcomes.

The remainder of the paper is organized as follows. Section 2 describes the institutional context; Section 3 describes the data and sample selection; Section 4 describes the empirical strategy; Section 5 presents the main results, discussion of pathways and robustness checks, Section 6 concludes.

2 Institutional context

India has a federal system of government with 29 states and 7 union territories, subdivided into districts and smaller administrative units. Women are under-represented in politics and comprise 12% of national legislators (Bhalotra et al., 2017). State Legislative Assembly elections are generally held every five years⁷ but are not carried out in the same year for all states and union territories. Candidates are elected in first-past-the-post elections⁸ from single member constituencies.

The qualification required to become a member of the State Legislative Assembly (lower House)⁹ is similar to that of a Member of the Parliament. A person should be i) a citizen of India, and ii) not be less than 25 years of age.¹⁰ They also need to be a voter from a constituency within the state. State Legislative Assemblies have the power to decide on state budget allocations and amend or make laws (Clots-Figueras, 2011). Legislators also have access to discretionary funds to spend on local development (Asher and Novosad, 2017). Qualitative evidence suggests that legislative members play a key role of acting as an intermediary between constituents and the state in accessing resources and services (Asher and Novosad, 2017).

While there are political reservations for women at local levels of government, there are no quotas for women at higher levels of political representation. A Women's Reservation Bill was proposed to reserve 33% of all seats in the Lower House of Parliament and State Legislative Assembly, but lapsed in the Parliament in 2014.

3 Data and descriptive statistics

This paper uses the 68th round of the cross-sectional National Sample Survey (NSS) 2011-2012 and State Legislative electoral data from 1977-2007. The analysis is limited to 15 states¹¹ which include approximately 74% of the total population of the country (2011 Census). As of 2011, India had 28 states, of which, the three states of Jharkhand, Chattisgarh and Uttarakhand were created from the existing states of Bihar, Madhya Pradesh and Uttar Pradesh respectively in 2000. To follow

⁷In some years for select states, elections have been held within a shorter duration.

⁸Voting method in which electors vote for one candidate of their choice, and the candidate who receives the most votes wins.

⁹Bicameral legislature exists in the seven states of Andhra Pradesh, Bihar, Jammu and Kashmir, Karnataka, Maharashtra, Telangana, and Uttar Pradesh with the rest having a unicameral system with only one House known as the Legislative Assembly.

¹⁰The requirement is to not be less than 30 to be a member of the Legislative Council (upper House).

¹¹Andhra Pradesh, Assam, Bihar, Gujarat, Haryana, Himachal Pradesh, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Orissa, Punjab, Rajasthan, Tamil Nadu, and West Bengal.

constituents in the same state and districts consistently over time from 1980 to 2007, I dropped the newly created states, states for which all district and constituency boundaries changed substantially over time, newly created districts and districts that split over time. The final sample includes a total of 234 districts.¹²

Electoral data.—The electoral data on State Legislative elections is available from reports published by the Election Commission of India (ECI).¹³ The ECI provides constituency-level data about candidates, their gender, political party affiliation, total votes received, total number of electors and whether the constituency is a reserved seat for SC/ST politicians. Each district has between 1 and a maximum of 34 electoral constituencies.¹⁴ The mean and median number of electoral constituencies in a district is 12.

Insert Table 1 here

Female political representation was generally low between 1977-2007, with an average of 5.4 percent of seats per district and electoral year with a standard deviation of 7.3 percent (Panel A Table 1). The distribution of female leaders is skewed, with a median of zero and 10 and 15.8 percent representation at seventy-fifth and ninetieth percentile respectively (Figure A1 in the Appendix). 66 percent of districts had at least one man-woman election and 46 percent of districts had at least one elected female politician during this time period. Over time, there has been an upward trend in the fraction of women in State Legislatures and the proportion of districts with at least one female politician (Figure 1). Men and women tend to win evenly out of the proportion of seats with close elections between male and female candidates.

Insert Figure 1 here

Labor market data.—The NSS has data on economic activity, and demographics such as age, education, gender, marital status, religion and social groups. The key outcomes of interest are women’s LFP and the type of work they are engaged in including self-employment, wage employment and casual work.¹⁵ FLFP is low at 33 percent but there is variation in participation rates between urban (25%) and rural (37%) areas. A look at FLFP by birth cohorts exhibits a similar pattern with more women working in rural areas (Figure 2). The composition of economic activities (Panel C Table 1) also varies by rural-urban location. A higher proportion of women

¹²234 out of a total of 405 districts (in the 15 states) and a total of 625 districts overall (2011).

¹³I obtained this data from Harvard Dataverse provided by RR.Bhavani.

¹⁴In Clots-Figueras (2012), Bhalotra et al. (2014) the maximum number of constituencies is 37.

¹⁵I use NSS definitions of these variables. See appendix for details.

are self-employed in rural areas (18%) but in urban areas more women work in wage employment (13%).

Insert Figure 2 here

Merged data and sample selection.— The NSS data is at the district level whereas the election data is at the constituency level. Districts contain several constituencies, so merging the two datasets required mapping and aggregating election data from the constituency to the district level. The ECI and the delimitation orders provide information on constituencies that are included in each district in each election year. The government suspended delimitation in 1976 and the first state assembly election to implement the new 2002 delimitation boundary was in 2008. Thus, electoral constituency boundaries generally remained fixed between 1977 to 2007 (Bhalotra et al., 2017).

The treatment effect of female political representation in a district is matched to individuals when they were young adults, between the ages of 15 to 24. I construct separate samples for each age-cohort, and assign the four-year average of female politicians in the district at those specific ages, to capture average tenure of a politician. To illustrate, if an individual was 19 in 1980, four year average of the political variable (1977-1980) is assigned to them. If an individual was 19 in 1981, four-year average of the political variable from 1978-1981 is assigned and so forth till 2007.

In Table A1 in the Appendix, I report descriptive statistics of districts not in the sample for individuals between 23-51 years of age. The sample of districts used in the paper has a higher LFP (33% vs 24%), self-employment (15% vs 12%), wage employment (6% vs 4%) and casual work (11% vs 7%) for women.

4 Empirical strategy

The key source of bias with estimating the causal effect of a female politician on female labor market outcomes is that there could be unobserved factors such as electoral preferences that correlate with both female political representation and labor market outcomes. For example, districts with less restrictive gender norms could elect more women to the State Legislative Assembly and also have a higher proportion of women working in the labor market. As a result, OLS regression estimates are likely to be biased upwards. To address endogeneity of electoral preferences, I follow the estimation strategy of Clots-Figueras (2012) and Bhalotra and Clots-Figueras (2014), and use the fraction of seats in the district won by a woman in a close election against a male candidate, as an instrument for the fraction of seats won by a female politician.

4.1 Identification

In first-past-the-post elections in single member constituencies, the vote difference between the winner and runner-up determines whether the candidate is elected. The identifying assumption is that the gender identity of the winner in close man-woman elections is quasi random as there is no clear indication of an electoral preference for either male or female politicians. It is assumed that constituencies in which female candidates win by a narrow vote margin against a male candidate are similar to constituencies in which the reverse happens.

Close electoral outcomes at the constituency level can be exploited to execute a sharp regression discontinuity (RD). However, the NSS labor data is only available at the district level. Thus, electoral data are aggregated from the constituency to the district level to match outcome data. This approximates a fuzzy RD which exploits discontinuity in the *probability* of treatment assignment to identify the causal effect of a female politician. In this paper, close elections are defined as elections in which the difference in votes between the winner and runner-up candidate is 3.5% or less than the total votes in the constituency. As a robustness check, I test if the results are sensitive to the choice of vote margins between 2.5% to 5% (see Table 8).

This empirical approach, where an instrument is derived from a regression discontinuity design has been used by Angrist and Lavy (1999) to estimate the effect of class size on educational outcomes, by Clots-Figueras (2012) and Bhalotra and Clots-Figueras (2014) to estimate the effect of female leaders on education and health, by Rehavi (2007) to estimate the impact of female politicians on state expenditures in the USA and by Bhalotra et al. (2014) to estimate the effect of Muslim politicians on constituent's health and education. The specification in this paper adapted from Clots-Figueras (2012) and Bhalotra and Clots-Figueras (2014) differs from Rehavi (2007). In Rehavi (2007), the instrument is defined as the fraction of close elections won by a female politician and instead of controls for electoral margins, a dummy variable is used to control for close elections between men and women. I show that the results are similar when I use the strategy used by Rehavi (2007) in the robustness section.

The empirical model to be estimated is as follows where equation (1) represents the second stage and equation (2) the first stage of the two stage least squares (2SLS) model.

$$Y_{idt} = \beta \hat{F} P_{dt} + \delta TC_{dt} + f(M_{jdt}) + I_{jdt} + \gamma X_{idt} + \theta_d + \phi_t + \epsilon_{idt} \quad (1)$$

$$FP_{dt} = \beta FPC_{dt} + \delta TC_{dt} + f(M_{jdt}) + I_{jdt} + \gamma X_{idt} + \theta_d + \phi_t + \mu_{idt} \quad (2)$$

Y_{idt} refers to labor market outcomes of individual i , residing in district d , belonging to cohort t . I specifically look at LFP and participation in different types of economic activity: self-employment, wage employment, and casual work. The primary variable of interest FP_{dt} captures the fraction of seats in the district that are won by a female politician. The instrument FPC_{dt} captures the fraction of seats in the district won by a woman in a close election against a male candidate with a vote difference of 3.5% or less. I use four¹⁶ year averages of these political variables in the model to capture the average tenure of a politician in a district. As observations in the same district can be correlated, the standard errors are clustered at the district level. The empirical specification relies on variation derived from differential exposure to female politicians across cohorts in a district.

TC_{dt} is the fraction of constituencies in a district with close elections between a male and female candidate. While the outcome of close elections can be considered random, the existence of close elections in a district may not be random if say there are more female candidates running for elections, so TC_{dt} is added as a control to satisfy the exclusion restriction. M_{jdt} is the electoral margin of victory or defeat, the forcing variable, for all man-woman elections j , in a district d , for the year t . Recent research by [Gelman and Imbens \(2018\)](#) has shown that higher order polynomials of the forcing variable can lead to noisy estimates so my preferred specification is controls with first and second-order polynomials. The main results are reported with these controls, but I show that estimates without control for electoral margins, and third-order polynomials are similar as a robustness check (Table 8). I_{jdt} is a dummy variable that equals one if there was a man-woman election j , in the district d , in the four years of time period t . There were at most nine elections between a male and female candidate in a given district over this time period from 1977-2007.

X_{idt} represents individual characteristics such as age, marital status, education, caste and religion. The education dummy variable captures whether individuals completed primary schooling or higher. The caste dummy includes individuals who are from scheduled caste (SC) and scheduled tribes (ST). I also include religion dummies for Hindus and Muslims. Inclusion of district fixed effects θ_d , controls for time-invariant district characteristics. Cohort fixed effects ϕ_t , account for aggregate cohort-year specific shocks and time variation in economic or political changes. To account for unobservable regional trends that change over time, I include $district \times year$ and $state \times year$ controls in the robustness section to check sensitivity of estimates. These results are reassuringly similar to the baseline (Table 8).

¹⁶Politicians are in power for a minimum of 2 and a maximum of 6 years in my data, for an average of four years.

There could be noise in the estimates due to migration of individuals between districts and across states. It would be preferable to drop migrants from the sample, but the 68th round of the NSS does not contain information on migration history of individuals, unlike previous rounds. However, women’s migrations are not widespread in India and are primarily due to marriage and not labor market opportunities. Using population migration data from the Census 1991-2001, [Biswas \(2017\)](#) finds that a total of only 13% of women moved across districts, which is considered low. If an individual migrated to their present district of residence as an adult, they would be attributed the treatment effect of past female politicians from their present district of residence, instead of the district where they grew up during adolescence. According to the Census 2001 data, inter-district migration is low in India (70% of migration occurred within the same district), which should mitigate this concern.

Validity of instrument and close election assumption.— The identification strategy assumes that close electoral outcomes are quasi-random. This assumption would be violated if there were vote manipulation such that the chances of winning are not equal between male and female candidates, even in close elections. To test for internal validity of the estimates, I verify that the distribution of the vote margin, the forcing variable, is continuous around the treatment threshold of zero (Panel A Figure 3). To test this formally, I use the McCrary test ([McCrary, 2008](#)) for differences in density around the zero cutoff (Panel B Figure 4). The test confirms that the estimated difference (point estimate -0.106 with standard error 0.103) is statistically insignificant.

Insert Figure 3 here

I show there is no discontinuity at the treatment threshold for a number of candidate and constituency characteristics. This includes the total number of votes received, total number of candidates and female candidates, and the total number of electors in a constituency. I plot these variables against the electoral margins of victory or defeat in man-woman elections, with a non-parametric fit on either side of the discontinuity (Figure A2).

4.2 First stage results

The results from the first stage regressions are shown without controls for electoral margins and with inclusion of electoral margins linearly and with second and third order polynomials in Table 2. Inclusion of electoral margins improves the R^2 of the regressions substantially. Overall, the results from the four specifications indicate

that the instrument, the fraction of seats in a district won by a female candidate in a close election against a male candidate, is a good predictor of the fraction of seats in the district won by a woman.

Insert Table 2 here

The results from column three (with second-order polynomials) indicate that if the fraction of seats won by a woman in a close election against a man is increased by 10 percentage points, it predicts an increase in the fraction of seats won by a woman by 9.2 percentage points. This assumes that the proportion of seats with close elections between women and men are held constant.

I illustrate the first stage in Figure 4, by plotting the fraction of constituencies won by a woman against the electoral margins of victory or defeat (M_{jdt}) in all man-woman elections in the data with a non-parametric fit. The size of the jump at $M_{jdt} > 0$ (implying that a woman won) mirrors the estimates obtained in Table 2. The data is aggregated into one-percentage point bins, so the magnitude of the jump indicates that a woman winning a close election increases the fraction of constituencies won by a female politician by approximately 9 percentage points.

Insert Figure 4 here

5 Empirical results and discussion

5.1 Main results: the effect of female politicians on women's economic activity

Estimates of the effect of exposure to female politicians for each age-cohort (15-24) using equation (1) shows a positive and statistically significant effect on women's wage employment for age-cohorts 18-20 only (Table A2 in the Appendix). The results for self-employment and casual work are not statistically significant. A plot of these regression estimates reveal an inverse U-shaped relationship between age of exposure and the probability of working in wage employment later in life (Figure 5). The largest magnitude of effect of 2.5 percentage points is found at age 19 across cohorts.¹⁷ The main results and analysis of this paper focus on this age cutoff.

Insert Figure 5 here

¹⁷At ages 18 and 20, the coefficients are 2.3 and 2 percentage points respectively.

Table 3 presents results for the main specification estimating the effect of exposure to female politicians at age 19 across cohorts from 1980-2007 on women’s choice of economic activity. The key coefficient reported is the fraction of seats in the district won by a female politician averaged over four years; the year an individual in the sample was 19 and three years prior. OLS estimates with full set of controls in Panel A shows that increasing women’s political representation by 10 percentage points, equivalent to an additional politician in the median district, is positively correlated with FLFP (1.2 percentage point) and whether they are self-employed (1 percentage point) at the 10% significance level. The effect on wage employment (negative sign) and casual work (positive sign) is statistically insignificant.

The 2SLS estimates, with linear and second-order electoral margins and full set of controls, are reported in Panel B. The key result in column 3 shows that increasing female political representation increases the likelihood of women working in wage employment. Specifically, a 10 percentage point increase in female politicians results in a 2.5 percentage point increase in female wage employment, corresponding to an increase of 42%. There is a positive, but not a statistically significant effect on overall FLFP of 1.5 percentage point. The negative signs on the coefficient for self-employment and casual work are indicative of substitution away from these activities towards wage employment. However, they are not estimated precisely to be conclusive evidence of labor re-allocation.

Insert Table 3 here

Next in Panel C, the sample is restricted to district-year observations with close electoral margins of 3.5% in man-woman elections, similar to a discontinuity sample used in [Angrist and Lavy \(1999\)](#), as identification hinges on districts close to the point of discontinuity at zero. The effect on women’s wage employment is larger in magnitude at 3.6 percentage points (a 58% increase). There is also a positive effect on overall FLFP of 6 percentage points (a 18% increase), significant at the 10% level.

Panel D reports results for a sample, which includes districts that had at least one man-woman election. The estimates produce results consistent with the baseline estimates. Again, there is only a positive effect on women’s wage employment of 2.4 percentage points with statistically insignificant effect on the other types of economic activity. Lastly, I show in Panel E that the reported results are not sensitive to the exclusion of outlier districts with unusually high female political representation of more than 30%.

A comparison of the OLS and 2SLS estimates for wage employment indicates that the OLS coefficient is biased downwards. This suggests that omitted variables

such as electoral preferences of a district is positively correlated with female representation and negatively correlated with female wage employment (or vice versa). This implies that more women are elected from areas where women’s wage employment is low or there are fewer women elected in areas with high female employment. [Kapoor and Ravi \(2014\)](#) find that female politicians in India are more likely to contest elections from areas with worse gender ratios. Areas with worse gender ratios are likely to have more restrictive gender norms with correspondingly lower FLFP. It should also be noted that the 2SLS effects are identified off from politicians who won in politically competitive environments. They are likely to be more visible to constituents and behave differently in comparison to the average female legislator reflected in the OLS estimates.

I show that female politicians also have a positive effect on men’s economic activity in a district (Table A3 in Appendix). However, the effect on men for the same age-cohort appears to be distinctly different from that on women. For men, exposure between 16 to 18 years of age has a positive effect on overall LFP but not on any specific type of economic activity. The estimated effect ranges from 3.3 to 4.1 percentage points. At older ages of exposure, between 20 to 23 years, I find evidence of labor re-allocation away from casual work towards self-employment, with no effect on overall LFP or wage employment. This is in contrast to the results for women, where I do not find any effect at older ages of exposure. This finding is consistent with [Baskaran et al. \(2018\)](#) who find that female politicians increase constituency growth rates which is likely to influence overall district economic activity.

Next, I investigate heterogeneity in treatment effect by sector of employment, area characteristics, politician’s identity and time period to shed light on the causal mechanisms underlying the employment effects.

5.2 Heterogeneity: public versus private sector wage employment

Politicians can reward their own ethnic groups due to altruistic preferences ([Pande, 2003](#)), ([Nye et al., 2014](#)) or engage in patronage to reward their political supporters with public sector jobs ([Robinson and Verdier, 2013](#)). A natural question to investigate is whether the results are driven by wage employment in the public sector. Column 1 in Table 4 shows that the effect on public sector employment is positive but close to zero while the effect on private sector employment (an increase of 2.3 percentage points) in column 2 is almost identical to the baseline estimates. While the estimation strategy does not account for potential electoral cycles in public sector hiring, I do not find any evidence to indicate that the results are driven by

increased opportunities in the public sector. Furthermore, the casual work category includes work in government public works program but the results show a statistically insignificant effect of female politicians on casual work. Moreover, [Asher and Novosad \(2017\)](#) find that political favoritism by ruling party politicians in State Legislatures lead to higher employment in the private sector and not in the public sector.

Insert Table 4 here

5.3 Heterogeneity: effect on wage employment by district sex ratios

Due to prevalence of son preference and sex-selective abortions, sex ratios are skewed in India and can be a proxy for the extent of gender bias in a district. [Charles et al. \(2018\)](#) find that women in the USA born in areas with sexist attitudes tend to work and earn less as adults due to internalization of social norms, even if they move to less sexist areas. The finding suggests that the beliefs women grow up with can shape their future behavior and preferences. Thus the external environment can play an important role in determining women's employment outcomes ([Roy et al., 2018](#)).

Using district sex ratio data from the 2011 Census, I split the sample in two, consisting of districts with higher than average sex ratio (≥ 950) and those below. Column 3 of Table 4 shows that there is a 4.42 percentage point increase in wage employment for women in districts with higher than average sex ratios. These estimates are larger in magnitude in comparison to the baseline estimates. For districts with below average sex ratio, the effect of female politicians on wage employment is positive and smaller in magnitude but not statistically significant (column 4).

The results appear to be largely driven by districts with higher sex ratios. A statistically insignificant effect in areas with lower than average sex ratio indicate that the employment effects are not due to changes in broader social norms. Rather, the effects appear potent in areas where women are less likely to face constraints on their labor market participation. Another possibility which I cannot test directly is that in areas with greater gender bias, women's aspirations may be affected by female politicians, but they may not be translated into observable outcomes due to social constraints that are harder to overcome.

5.4 Political heterogeneity: effect of gender and caste of politicians

The literature suggests that role models of a similar background have a larger impact on outcomes as they are seen to be personally relevant (Ray, 2006), (Bertrand and Duflo, 2017). If perceptibly similar individuals form relatable role models, shared traits such as caste, gender, ethnicity and religion can be important determinants of aspirations (Lybbert and Wydick, 2018). The majority of female state legislative members in India tend to come from middle-class, urban family backgrounds (Kumari and Dubey, 1994). Poorer, disadvantaged groups are less likely to identify with them. However, female politicians' elected from reserved SC/ST seats (from non-elite backgrounds) can be a more relevant role model for them.

To investigate this dual role of class and gender, I estimate the effect of SC/ST female politicians elected from reserved seats on women's economic activity. I instrument the fraction of seats won by SC/ST female politicians with the fraction of seats won by a SC/ST female candidate in a close election against a SC/ST male candidate using the same specification as before. The political variable is interacted with SC/ST and non-SC/ST status of individuals to estimate the effects separately.

Insert Table 5 here

The pooled sample of all female politicians in Panel A of Table 5 shows a 2.6 percentage point increase in wage employment of non-SC/ST individuals only (column 3). The results for general seats only (not shown) are similar to the pooled sample estimates. Panel B shows that SC/ST female politicians increase self-employment of SC/ST individuals by 14.5 percentage points (column 2). This appears to reflect a substitution away from casual work (column 4) as the decline is fully offset in magnitude by the increase in self-employment. These results appear to support the role model hypothesis, but they could also be driven by targeted redistribution of resources to favored groups.

To verify this, a similar analysis is done for men's labor market outcomes (Table A5 in Appendix). The analysis is restricted to age cutoffs of 17 and 22, where I previously find the largest effect on men's LFP and labor re-allocation respectively. The results do not show evidence of the employment effects being transmitted to favored groups. Column 1 in Panel A shows that female politicians from the pooled sample affect LFP of SCST men, while SCST female politicians increase wage employment of non SCST men (column 3 Panel B). Panel C shows that female politicians affect labor re-allocation away from casual work towards self-employment for both SCST

and non-SCST individuals. While role modeling appears to be a plausible explanation for women’s employment patterns, alternative factors that are influencing men’s outcome could be relevant for women too.

5.5 Short term effect on women’s employment

Finally, I show that the short-term effect on women’s employment is distinctly different from the long-term impact. Table 6 reports estimates of exposure to female politicians between 2008-2010 on labor market outcomes, using variation derived from differential exposure between districts within a state. The results shows that female politicians do not affect economic activity (columns 1-3) of women between 15-64 years of age (working age population), except for a negative and statistically significant effect on casual work (column 4) of 2.5 percentage points (10% significance).

In the short term, it may not be feasible for women to make changes to their employment status. However, women may respond to changing aspirations with nominal changes at the margins. To assess this, I examine whether women whose primary activity is domestic work engage in subsidiary economic activity. I find a 9.5 percentage point increase in the likelihood of women working in subsidiary activities (column 5) significant at the 5% level. This has important implications for the underlying causal mechanisms as they are borne out only in the long term.

Insert Table 6 here

5.6 Policy channel: long term effect on education outcomes

One important channel through which employment effects can be influenced in the long term is education investment. To assess the role of this policy channel, I investigate whether exposure to female politicians in the years prior to starting different levels of schooling affect subsequent attainment for boys and girls.

Education is an important determinant of LFP, particularly for high-paying jobs (Heath and Jayachandran, 2016). The literature finds a U-shaped relationship between education and FLFP in India, particularly in urban areas (Klasen and Pieters, 2015). The rising portion of FLFP is associated with higher secondary (high school equivalence) and tertiary levels of education. Educated women are more likely to work as wage employees in India (Mammen and Paxson, 2000) which would be consistent with the findings in this study. In contrast to women, there is a positive relationship between education and men’s LFP (Fletcher et al., 2017).

As higher levels of schooling are relevant for FLFP, I focus the analysis to lower secondary, higher secondary and tertiary education. [Clots-Figueras \(2012\)](#) finds a positive effect of female politicians on primary education attainment in urban areas for both boys and girls using electoral data from 1967 to 2001. Similar to her empirical strategy, I exploit the timing of the age at which an individual starts these levels of schooling (14, 16 and 18 respectively) to apply treatment effect. The main specification remains the same, except that the political variable is interacted with a gender dummy to identify effects on men and women separately.

The results in Table 7 show that female politicians increase the probability that girls in urban areas attain lower secondary schooling by 8 percentage points, higher secondary by 12 percentage points and college education by 11 percentage points. For boys, I only find a positive effect on lower secondary schooling (equivalent to passing 10th grade) of 5.7 percentage points. The coefficient for higher secondary is close to zero and there is a negative but statistically insignificant effect on college education. There is no effect on education attainment in rural areas for either boys or girls (results not shown).

Insert Table 7 here

A predominant effect on girls' schooling, with limited effect on boys, is consistent with prior literature which finds that role modeling of female politicians changed girl's education aspirations ([Beaman et al., 2012](#)), ([O'Connell, 2018](#)). This provides suggestive evidence that changed aspirations could have influenced both education and employment choice of young girls. However, it is important to recognize that the effect on schooling could also be mediated through greater investment in education by female politicians that are particularly conducive for girls.

Alternative policy channels could include provision of public infrastructure that create job opportunities, the returns to which are also likely to manifest in the long term. Female politicians effect on constituency growth rates in [Baskaran et al. \(2018\)](#) is attributed to them being less corrupt, more effective at attracting state-level resources and providing improved access to roads, which could facilitate job creation. Evidence from political reservations show that female politicians provide infrastructure directly relevant to women's needs ([Chattopadhyay and Duflo, 2004](#)) including more proximate drinking water sources which can alleviate time constraints to LFP.

5.7 Robustness

This section performs robustness checks on the main specification restricting focus to the key result of the paper on female wage employment. The reported baseline results hold up to a number of specification checks.

Insert Table 8 here

Close election margins.—In the main analysis, close elections are defined as elections in which the vote difference between the winner and runner-up in a man-woman election is 3.5% or less. To check sensitivity of estimates to how the vote margin is defined, I apply cutoffs of 2.5%, 3%, 4%, 4.5% and 5%. The impact on female wage employment (Panel A Table 8) is similar to the baseline estimates for vote margins of 4.5% and 5% but not statistically significant at margins of 2.5% and 3%. There are fewer close elections at narrower vote margins, which could lead to imprecise estimates. For vote margin of 4%, the coefficient is smaller, but still within one standard error of the baseline estimate.

Regional time trends.—Cohort-year fixed effects are used in the main specification to control for aggregate time variation in economic and political environment and trends in the status of women. To account for regional time trends, I add *state* \times *year* and *district* \times *year* fixed effects to the main specification (Column 1 and 2 in Panel B of Table 8). The key results hold up to inclusion of both time trends. This provides reassurance that district-year varying time trends are not driving the main results. The relevant source of variation I use in my model is at the district-level so this is a much more demanding specification check.

Electoral margin polynomial.—In columns 3 and 4 of Panel B, I show that the effect on wage employment without controls for electoral margins and with third-order polynomials are equivalent in magnitude to the baseline results. The results do not appear to be sensitive to inclusion of higher third-order polynomial controls. The reduced form estimate (Column 5 in Panel B) is also similar to the 2SLS results, which is reassuring as reduced form OLS estimates are unbiased.

Alternative instrument specification.—In Panel C of Table 8, I apply an alternative instrumental variable specification used by [Rehavi \(2007\)](#) to examine the effect of female politicians on state expenditures in the USA. She instruments fraction of female politicians with fraction of close elections won by a female politician and interacts it with a dummy that equals one for close elections between a male and female candidate. This specification does not use controls for electoral margins, but controls for close elections between male and female candidates in both the first and second stage regressions. Using this instrument, I find a 2.6 percentage point

increase in female wage employment (significant at the 10% level), which is again similar in magnitude to the baseline estimate.

6 Conclusion

This paper is among the first to provide evidence of the effect of competitively elected female political leadership in a developing country on economic outcomes for women. Exposure during young adulthood is found to result in increased likelihood of selecting into wage employment as adults, but not in self-employment and casual work. The employment effects are primarily concentrated in the private sector and in areas with less entrenched gender bias.

Previous work using evidence from a national reservation policy emphasizes a role model effect of female politicians on education and employment aspirations of young girls. The findings from this paper are consistent with this hypothesis, while concurrently acknowledging a policy role of female politicians. This is of relevance to policymakers as targeting gender representation can have important social and economic spillovers.

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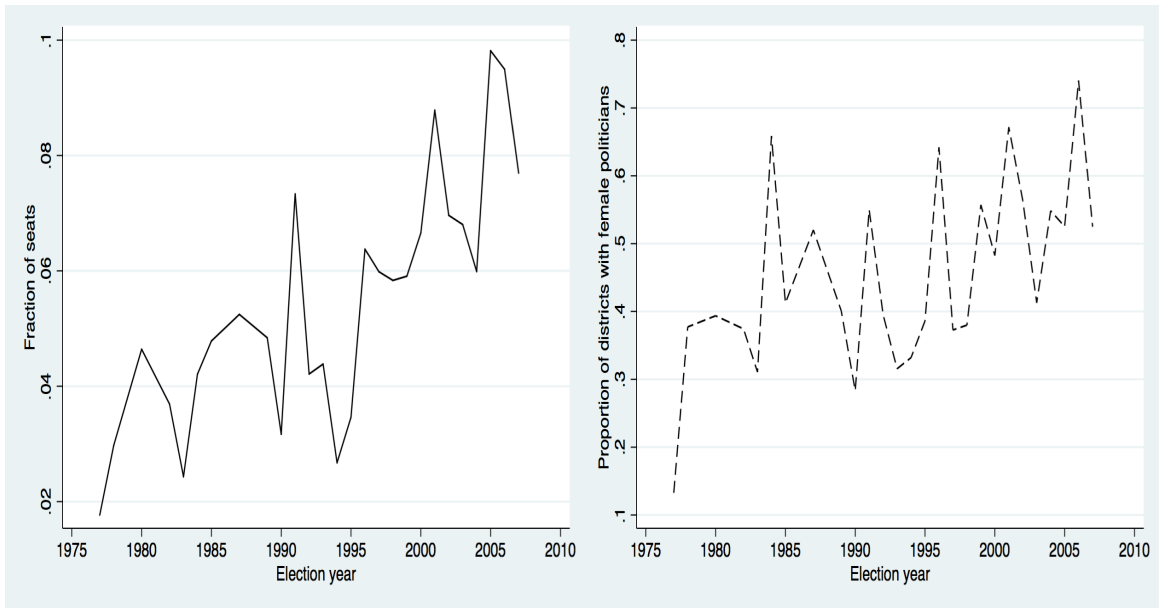
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Tables and Figures



(a) Fraction of women in state legislatures (b) Fraction of districts with female politician

Figure 1: Female Political Representation

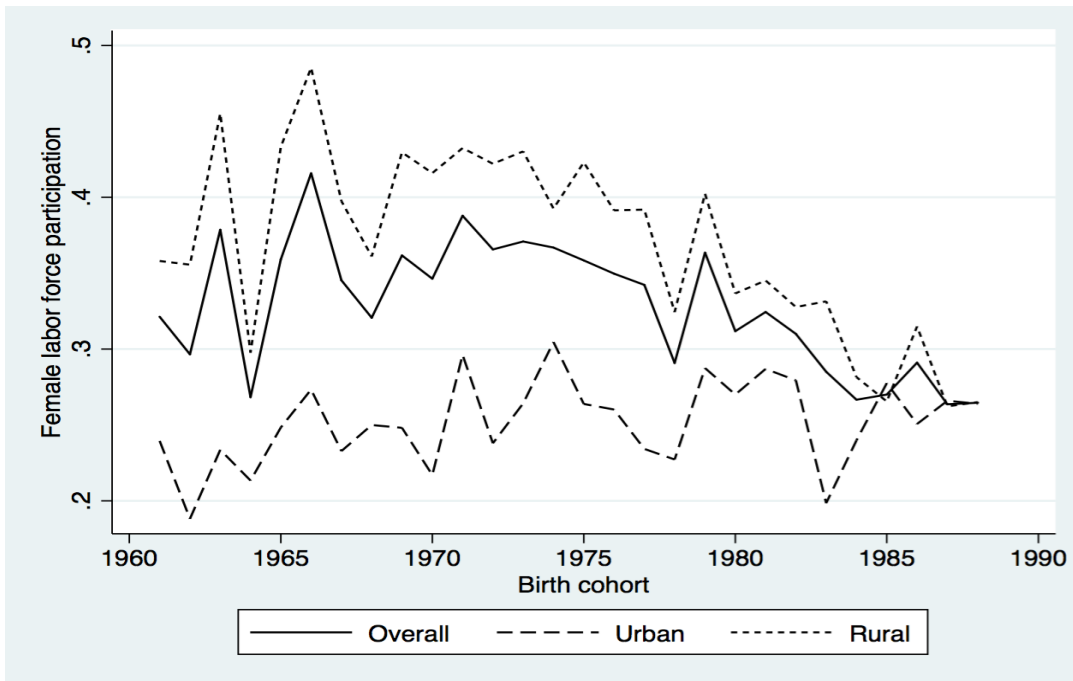
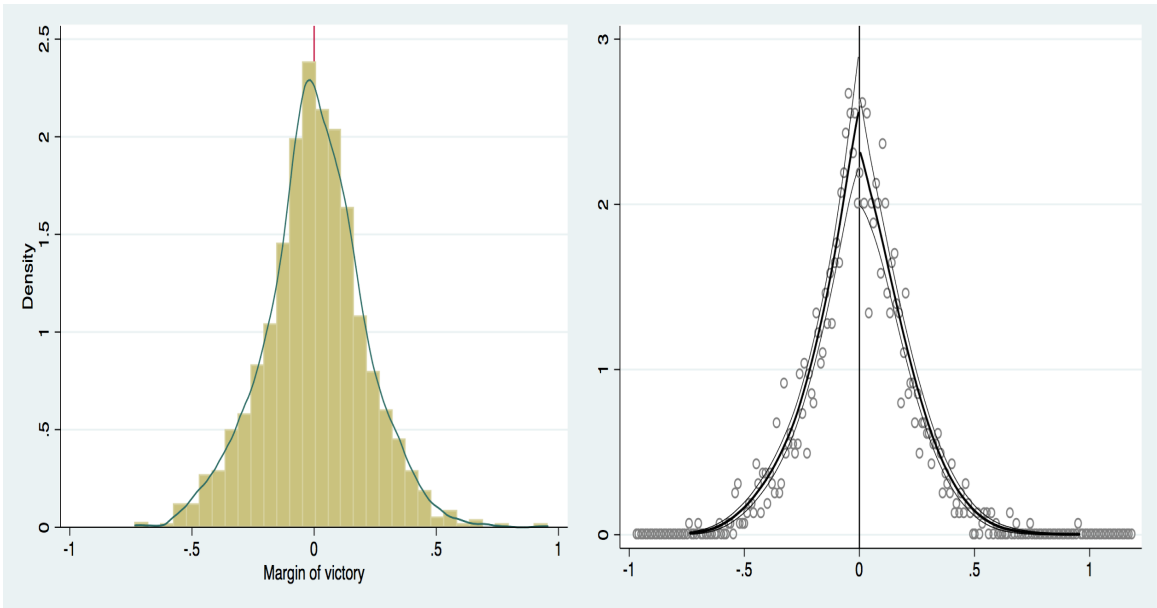


Figure 2: Female labor force participation by cohort



(a) Density of electoral margin

(b) McCrary test of discontinuity

Figure 3: Electoral Margin in Male-Female Candidate Elections

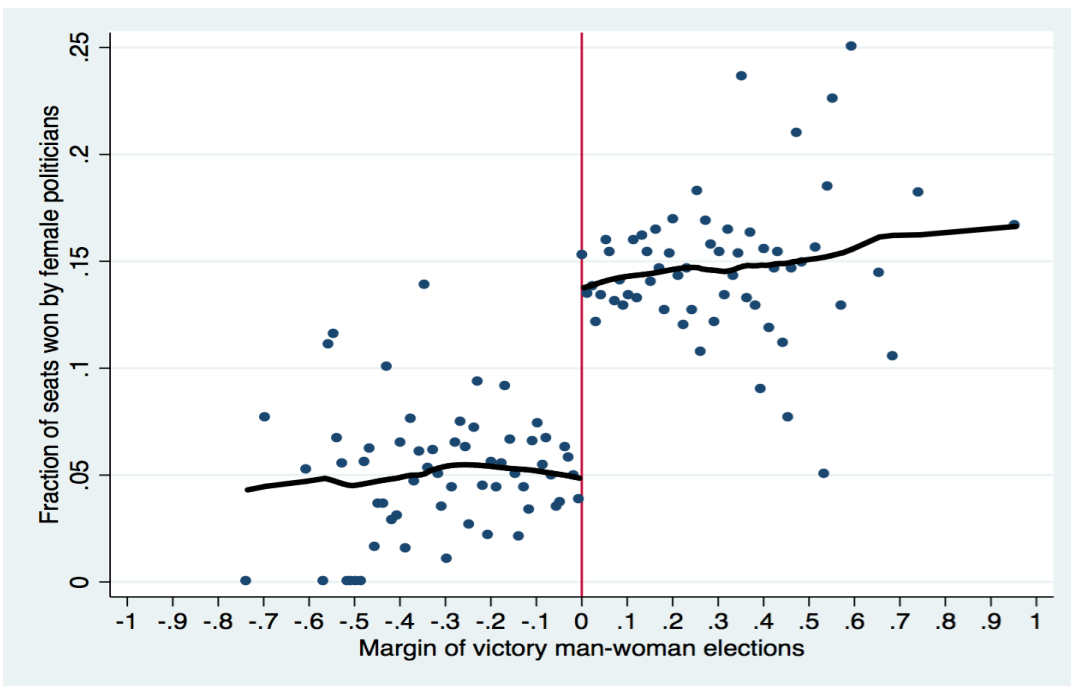


Figure 4: First Stage in Graph

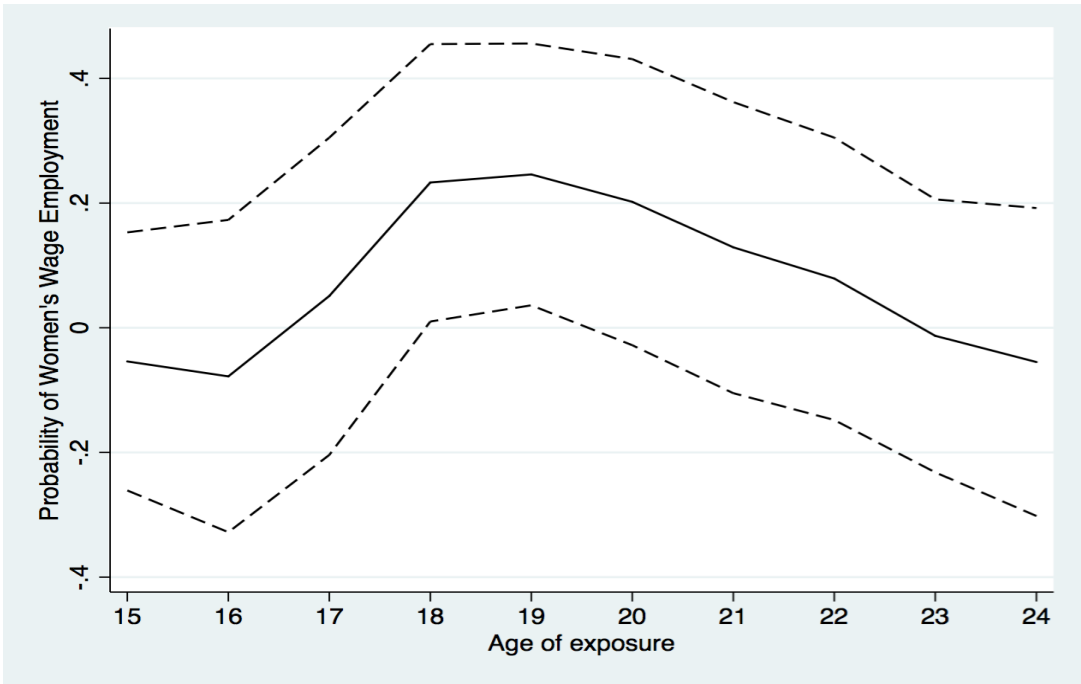


Figure 5: Effect of past exposure on female wage employment

Notes: Displays 2SLS regression estimates of likelihood of working in wage employment for women, estimated separately for each age across cohorts. Dotted lines represent 95% confidence intervals clustered at the district level.

Table 1: Descriptive Statistics

Panel A: District political dataset				
Unit of observation: district in an electoral year				
Variable (fraction of total seats in district)				
1,544 observations	Mean	SD		
Proportion of seats won by a woman	0.054	0.073		
Proportion of seats with close election between men and women (3.5%)	0.016	0.040		
Proportion of seats won by women in a close election against a man (3.5%)	0.008	0.028		
Proportion of districts that had at least one election between a woman and a man	0.659	0.474		
Proportion of districts that had at least one woman politician	0.459	0.498		
Proportion of seats reserved for SC/ST	0.211	0.166		
Proportion of seats won by SC/ST women	0.013	0.035		
Panel B: NSS 68th Round 2011-2012				
Unit of observation: individuals aged 23-51 years				
	Male Mean	SD	Female Mean	SD
Age	35.93	7.99	35.66	7.89
Married	0.85	0.36	0.90	0.30
Primary or higher	0.71	0.45	0.53	0.50
Hindu	0.83	0.37	0.82	0.38
Muslim	0.12	0.32	0.12	0.32
Scheduled Caste/Scheduled Tribe (SCST)	0.26	0.44	0.25	0.43
Labor Force	0.97	0.16	0.33	0.47
Self Employed	0.44	0.50	0.15	0.36
Employee	0.25	0.43	0.06	0.24
Casual Workers	0.28	0.45	0.11	0.31
Observations	41,607		42,422	
Panel C: Female rural/urban employment				
	Urban Mean	SD	Rural Mean	SD
Labor Force	0.25	0.44	0.37	0.48
Self Employed	0.08	0.28	0.18	0.39
Employee	0.13	0.33	0.03	0.17
Casual Workers	0.03	0.18	0.15	0.35
Observations	17,874		24,548	

Notes: Weighted using NSS weights

Table 2: First stage regressions

Dependent variable: fraction of seats in the district won by a woman				
	(1) No Margins	(2) Linear	(3) Second	(4) Third
Fraction of seats in the district won by a woman in close election against a man	0.971*** (0.091)	0.931*** (0.057)	0.917*** (0.056)	0.907*** (0.055)
Proportion of seats that had close elections between women and men	-0.169** (0.077)	-0.366*** (0.049)	-0.342*** (0.049)	-0.344*** (0.047)
F statistic	113	268	264	273
R^2	0.462	0.739	0.747	0.767
District dummies	Yes	Yes	Yes	Yes
Individual controls	Yes	Yes	Yes	Yes
Cohort-year dummies	Yes	Yes	Yes	Yes
Observations	84,029	84,029	84,029	84,029
District-election year	1,544	1,544	1,544	1,544
District-year	6,552	6,552	6,552	6,552

Notes: Robust standard errors clustered at the district level in parentheses. Close elections defined as the vote difference of 3.5%. All controls included in the second-stage regressions, except for individual age, marital status and education, are included here in the first-stage. Weighted using NSS weights. *Significance levels* *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table 3: Baseline estimates for women (age cohort 19 across 1980-2007)

Dependent variable: (1= if engaged in economic activity, 0=otherwise)					
Coefficient: fraction of seats in the district won by a woman					
	(1)	(2)	(3)	(4)	
	LFP	Self Employed	Employee	Casual Worker	N
Panel A: OLS					
OLS Regression	0.124*	0.100*	-0.0268	0.0584	42,422
	(0.064)	(0.057)	(0.028)	(0.049)	
R^2	0.252	0.171	0.094	0.181	
Panel B: full sample					
2SLS Regression: linear margins	0.151	-0.051	0.248**	-0.044	42,422
	(0.224)	(0.209)	(0.105)	(0.131)	
R^2	0.256	0.175	0.098	0.186	
2SLS Regression: second order	0.121	-0.082	0.246**	-0.041	
	(0.232)	(0.216)	(0.107)	(0.136)	
R^2	0.257	0.176	0.100	0.188	
Panel C: discontinuity sample +/- 3.5%					
2SLS Regression: linear margins	0.600*	0.290	0.360**	-0.060	10,217
	(0.332)	(0.281)	(0.154)	(0.186)	
R^2	0.206	0.181	0.098	0.210	
2SLS Regression: second order	0.593*	0.282	0.349**	-0.061	
	(0.335)	(0.270)	(0.150)	(0.180)	
R^2	0.211	0.189	0.103	0.215	
Panel D: districts with at least one m-w election					
2SLS Regression: linear margins	0.231	0.003	0.242**	-0.044	31,182
	(0.236)	(0.224)	(0.103)	(0.134)	
R^2	0.251	0.172	0.106	0.188	
2SLS Regression: second order	0.198	-0.030	0.241**	-0.043	
	(0.245)	(0.233)	(0.107)	(0.141)	
R^2	0.253	0.174	0.107	0.190	
Panel E: exclude districts with female representation (>30%)					
2SLS Regression: linear margins	0.146	-0.050	0.253**	-0.056	42,241
	(0.232)	(0.217)	(0.108)	(0.136)	
R^2	0.256	0.175	0.099	0.186	
2SLS Regression: second order	0.115	-0.082	0.251**	-0.052	
	(0.240)	(0.224)	(0.110)	(0.141)	
R^2	0.258	0.177	0.100	0.188	
Individual controls	Yes	Yes	Yes	Yes	
District dummies	Yes	Yes	Yes	Yes	
Cohort dummies	Yes	Yes	Yes	Yes	

Notes: Clustered standard errors at district level in parentheses. Close elections defined as vote difference of 3.5%. Regressions include fraction of seats in districts with close m-w elections. Individual controls: age, education, marital status, religion, caste. Weighted using NSS weights. *Significance levels* ** p<0.05, * p<0.1

Table 4: Heterogeneity in wage employment

Dependent variable: (1= engaged in wage employment, 0=otherwise)				
Coefficient: fraction of seats in the district won by a woman				
	(1)	(2)	(3)	(4)
	Public	Private	Sex Ratio	Sex Ratio
	Sector	Sector	≥ 950	< 950
2SLS Regression: linear margins	0.006	0.226***	0.442***	0.100
	(0.066)	(0.084)	(0.116)	(0.173)
R^2	0.043	0.100	0.081	0.129
2SLS Regression: second order	0.007	0.226***	0.482***	0.126
	(0.068)	(0.085)	(0.124)	(0.176)
R^2	0.044	0.101	0.083	0.132
Observations	42,422	42,422	24,037	18,385
Individual controls	Yes	Yes	Yes	Yes
District dummies	Yes	Yes	Yes	Yes
Cohort dummies	Yes	Yes	Yes	Yes

Notes: Clustered standard errors at district level in parentheses. Close elections defined as vote difference of 3.5% . Regressions include fraction of seats in district with close m-w elections. Individual controls: age, marital status, education, religion, caste. For $SR < 950$, Andhra Pradesh, Tamil Nadu, Kerala, Karnataka drops out except for one district in Karnataka. For $SR \geq 950$, Haryana drops out. Weighted using NSS weights. *Significance levels* *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table 5: Political heterogeneity: effect of gender and caste

Dependent variable: (1= if engaged in economic activity, 0 otherwise)				
Coefficient: fraction of constituencies in the district won by a woman				
	(1)	(2)	(3)	(4)
	LFP	Self Employed	Employee	Casual Worker
Panel A: All Politicians				
Effect on SCST	0.477 (0.397)	0.541 (0.382)	0.240 (0.162)	-0.188 (0.285)
Effect on non SCST	0.006 (0.253)	-0.296 (0.196)	0.258** (0.120)	0.008 (0.173)
R^2	0.257	0.174	0.100	0.187
Panel B: SCST Politicians				
Effect on SCST	0.106 (0.588)	1.452** (0.622)	0.187 (0.287)	-1.453*** (0.552)
Effect on non SCST	-0.345 (0.662)	0.132 (0.599)	-0.071 (0.248)	-0.355 (0.338)
R^2	0.257	0.173	0.100	0.183
Observations	42,422	42,422	42,422	42,422
Electoral margins	second order	second order	second order	second order
Individual controls	Yes	Yes	Yes	Yes
District dummies	Yes	Yes	Yes	Yes
Cohort dummies	Yes	Yes	Yes	Yes

Notes: Clustered standard errors at district level in parentheses. Close elections defined as vote difference of 3.5% or less. Regressions include fraction of seats in districts with close m-w elections. Individual controls for age, education, marital status, religion. Weighted using NSS weights. *Significance levels* *** p<0.01, ** p<0.05, * p<0.1

Table 6: Short term effect of female politicians

Dependent variable: (1= if engaged in economic activity, 0=otherwise)					
Coefficient: fraction of seats in the district won by a woman					
	(1)	(2)	(3)	(4)	(5)
	LFP	Self Employed	Employee	Casual Worker	Domestic Subsidiary
Panel A: 15-64 years of age					
2SLS Regression: second order	-0.635 (0.493)	-0.417 (0.434)	0.064 (0.097)	-0.251* (0.139)	0.948** (0.463)
R^2	0.168	0.090	0.065	0.134	0.138
Observations	67,369	67,369	67,369	67,369	67,369
Individual controls	Yes	Yes	Yes	Yes	Yes
State dummies	Yes	Yes	Yes	Yes	Yes
Cohort dummies	Yes	Yes	Yes	Yes	Yes

Notes: Clustered standard errors at district level in parentheses. Close elections defined as vote difference of 3.5%. Regressions include fraction of seats in districts with close m-w elections. Individual controls: age, education, marital status, religion, caste. Weighted using NSS weights. *Significance levels* ** p<0.05, * p<0.1

Table 7: Education attainment by gender in urban areas

Dependent variable: (1=completed education level or higher, 0 otherwise) Coefficient: fraction of seats in the district won by a woman			
	(1) Lower Secondary	(2) Higher Secondary	(3) Tertiary College
2SLS Regression: Effect on women	0.814** (0.343)	1.133*** (0.422)	1.053* (0.568)
2SLS Regression: Effect on men	0.573* (0.335)	0.0089 (0.327)	-0.0134 (0.417)
R^2	0.116	0.120	0.091
Observations	34,394	32,900	30,701
Electoral margins	second order	second order	second order
Individual controls	Yes	Yes	Yes
District dummies	Yes	Yes	Yes
Cohort dummies	Yes	Yes	Yes

Notes: Clustered standard errors at district level in parentheses. Close elections defined as vote difference of 3.5%. Regressions include fraction of seats in districts with close m-w elections and individual controls for age, religion, and caste. Weighted using NSS weights.

Significance levels *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table 8: Robustness checks

Dependent variable: (1=if engaged in wage employment, 0 otherwise)					
Coefficient: Fraction of seats in a district won by a woman					
	(1)	(2)	(3)	(4)	(5)
Panel A					
2SLS Regression: linear margins	0.095	0.158	0.193*	0.225**	0.282**
	(0.119)	(0.105)	(0.107)	(0.105)	(0.120)
R^2	0.099	0.099	0.099	0.099	0.098
2SLS Regression: second order	0.089	0.156	0.185*	0.217**	0.255**
	(0.120)	(0.108)	(0.110)	(0.107)	(0.120)
R^2	0.100	0.100	0.100	0.100	0.099
<i>Robustness check: margins</i>	2.5%	3%	4%	4.5%	5%
Panel B					
2SLS Regression	0.226**	0.241**	0.247**	0.245**	0.227**
	(0.106)	(0.121)	(0.105)	(0.108)	(0.010)
R^2	0.101	0.108	0.091	0.101	0.100
<i>Robustness check</i>	<i>state</i> × <i>year</i>	<i>district</i> × <i>year</i>	<i>no</i> <i>margins</i>	<i>third</i> <i>order</i>	<i>reduced</i> <i>form</i>
Panel C					
	LFP	Self Employed	Employee	Casual Worker	
2SLS Regression: Rehavi instrument	0.324	-0.019	0.263*	0.097	
	(0.371)	(0.316)	(0.144)	(0.203)	
R^2	0.252	0.171	0.091	0.181	
Observations	42,422	42,422	42,422	42,422	42,422
Individual controls	Yes	Yes	Yes	Yes	Yes
District dummies	Yes	Yes	Yes	Yes	Yes
Cohort dummies	Yes	Yes	Yes	Yes	Yes

Notes: Clustered standard errors at district level in parentheses. Except for Panel A, close elections defined as vote difference of 3.5%. Regressions include fraction of seats in districts with close m-w elections. Individual controls include: age, marital status, education, religion, caste. Weighted using NSS weights.

Significance levels *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Appendix

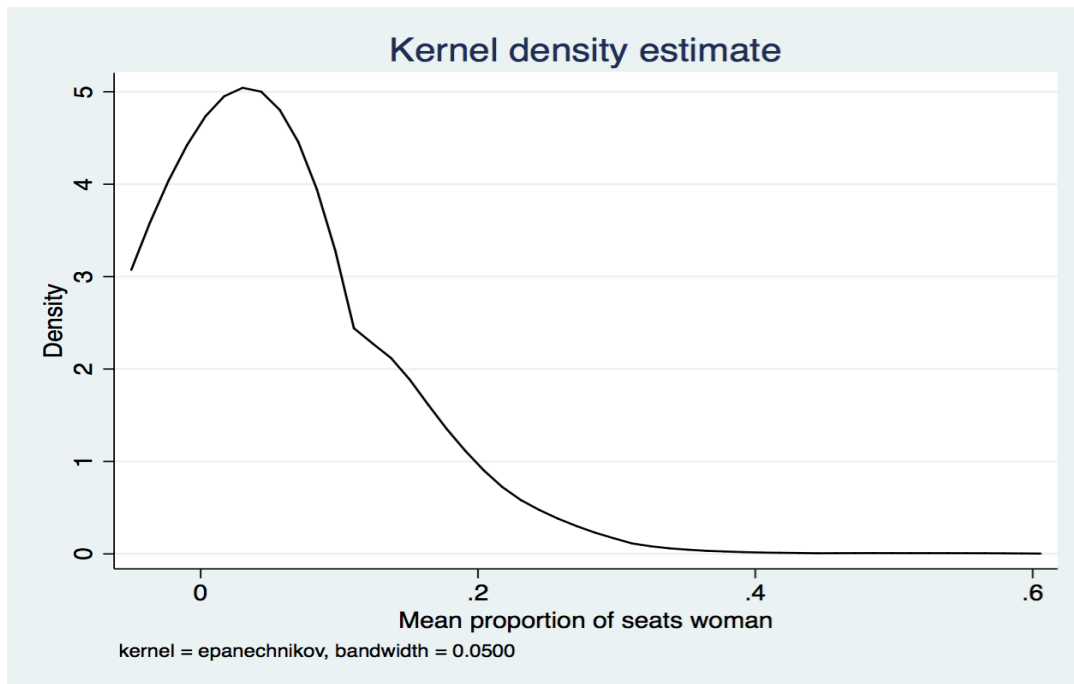


Figure A1: Fraction of seats in the district won by a woman

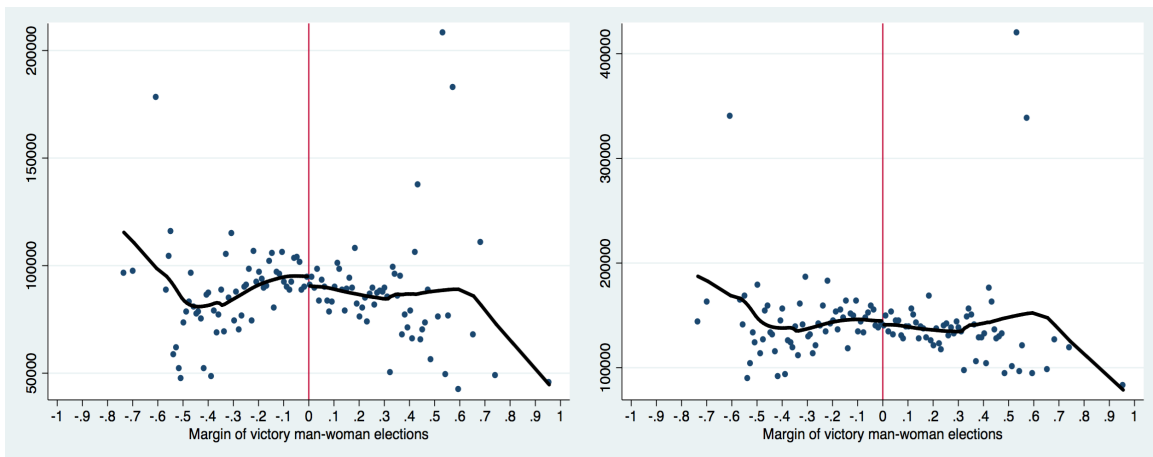
Variable Description

Self-employment refers to work on own farm or non-farm household enterprises either on your own, with partners, or by hiring employees. It also includes family members who work on household enterprises (with or without remuneration).

Wage employment refers to work in other's farm or non-farm enterprises (both household and non-household) and receiving remuneration in salary or wages on a regular basis.

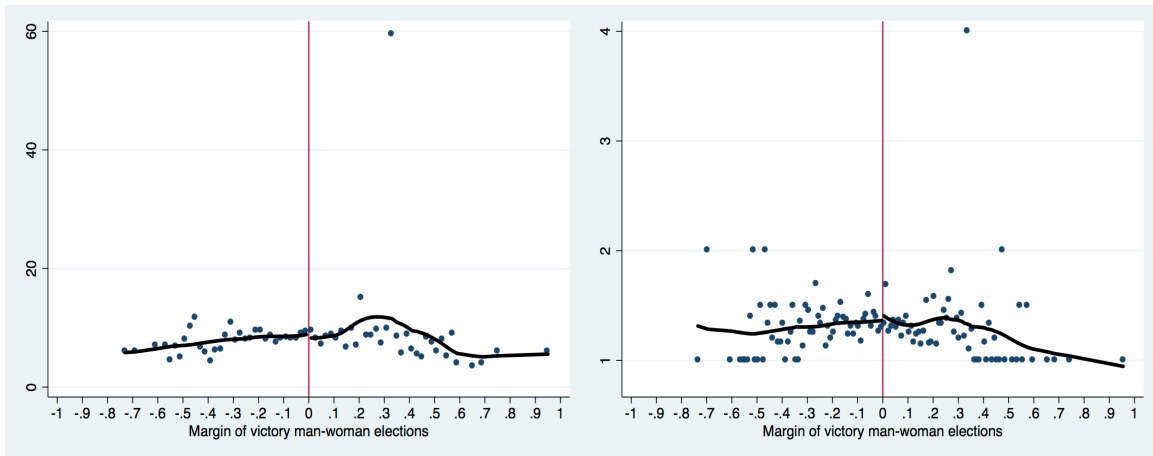
Casual workers are classified as workers who work in other's farm or non-farm enterprises (both household and non-household) and receive wages according to the terms of the daily or periodic work contract. This category of work also include engagement in public works programs.

Figure A2: Continuity in Political Characteristics



(a) Total Votes Cast in Constituency

(b) Total Electors in Constituency



(c) No. of Candidates in Constituency

(d) No. Female Candidates in Constituency

Table A1: Descriptive Statistics of Districts Not in Sample

Panel A: All Districts Not in Sample				
	Male		Female	
Unit of observation: individuals aged 23-51	Mean	SD	Mean	SD
Age	36.00	7.89	35.40	7.75
Married	0.87	0.34	0.92	0.27
Primary or higher	0.67	0.47	0.45	0.50
Hindu	0.82	0.38	0.82	0.38
Muslim	0.13	0.34	0.13	0.34
Scheduled Caste/Scheduled Tribe (SCST)	0.29	0.45	0.29	0.45
Labor Force	0.97	0.16	0.24	0.43
Self Employed	0.50	0.50	0.12	0.33
Employee	0.17	0.38	0.04	0.19
Casual Workers	0.28	0.45	0.07	0.26
Observations	51,554		51,704	
Panel B: Districts in State Not in Sample				
	Male		Female	
Unit of observation: individuals aged 23-51	Mean	SD	Mean	SD
Age	36.23	7.94	35.54	7.78
Married	0.87	0.34	0.92	0.28
Primary or higher	0.67	0.47	0.48	0.50
Hindu	0.86	0.35	0.86	0.35
Muslim	0.10	0.30	0.10	0.30
Scheduled Caste/Scheduled Tribe (SCST)	0.29	0.45	0.29	0.45
Labor Force	0.98	0.14	0.26	0.44
Self Employed	0.49	0.50	0.11	0.32
Employee	0.16	0.37	0.04	0.19
Casual Workers	0.31	0.46	0.10	0.30
Observations	19,934		19,901	

Notes: Weighted using NSS weights

Table A2: Baseline Estimates For Women (All Age Cutoff)

Dependent variable: (1= if engaged in economic activity, 0=otherwise)					
Coefficient: Fraction of constituencies in the district won by a woman	(1)	(2)	(3)	(4)	N
	LFP	Self Employed	Employee	Casual Worker	
Panel A: Age Cutoff 15					
2SLS Regression: second order polynomial	0.0920	0.183	-0.0536	-0.0917	44,964
R^2	(0.267)	(0.204)	(0.105)	(0.184)	
	0.242	0.173	0.097	0.173	
Panel B: Age Cutoff 16					
2SLS Regression: second order polynomial	-0.0280	0.237	-0.0775	-0.269	44,277
R^2	(0.280)	(0.199)	(0.128)	(0.194)	
	0.245	0.175	0.098	0.174	
Panel C: Age Cutoff 17					
2SLS Regression: second order polynomial	-0.0476	0.122	0.0507	-0.302	43,398
R^2	(0.294)	(0.209)	(0.130)	(0.195)	
	0.252	0.175	0.103	0.178	
Panel D: Age Cutoff 18					
2SLS Regression: second order polynomial	0.151	0.0775	0.233**	-0.178	42,956
R^2	(0.273)	(0.226)	(0.114)	(0.152)	
	0.256	0.176	0.101	0.185	
Panel B: Age Cutoff 20					
2SLS Regression: second order polynomial	-0.0357	-0.212	0.202*	-0.0246	41,521
R^2	(0.246)	(0.232)	(0.117)	(0.147)	
	0.261	0.174	0.099	0.191	
Panel B: Age Cutoff 21					
2SLS Regression: second order polynomial	-0.0710	-0.180	0.129	0.00524	40,295
R^2	(0.293)	(0.275)	(0.119)	(0.183)	
	0.259	0.174	0.094	0.196	
Panel B: Age Cutoff 22					
2SLS Regression: second order polynomial	-0.299	-0.359	0.0785	0.0532	38,795
R^2	(0.282)	(0.256)	(0.116)	(0.206)	
	0.263	0.175	0.093	0.198	
Panel B: Age Cutoff 23					
2SLS Regression: second order polynomial	-0.219	-0.269	-0.0130	0.154	38,364
R^2	(0.270)	(0.233)	(0.112)	(0.214)	
	0.261	0.173	0.089	0.197	
Panel B: Age Cutoff 24					
2SLS Regression: second order polynomial	-0.0554	-0.0532	-0.0546	0.126	37,721
R^2	(0.242)	(0.232)	(0.126)	(0.213)	
	0.263	0.169	0.086	0.201	
Individual controls	Yes	Yes	Yes	Yes	
District dummies	Yes	Yes	Yes	Yes	
Cohort dummies	Yes	Yes	Yes	Yes	

Notes: Robust clustered standard errors at district level in parentheses. Close elections defined as vote difference of 3.5%. Regressions include fraction of constituencies in districts with close man-woman elections and individual controls for age, education, marital status, religion and caste.

Weighted using NSS weights.

Significance levels *** p<0.01, ** p<0.05, * p<0.1

Table A3: Effect of Female Leaders on Male Constituents

Dependent variable: (1= if engaged in economic activity, 0=otherwise)					
Coefficient: Fraction of constituencies in the district won by a woman	(1)	(2)	(3)	(4)	(5)
	LFP	Self Employed	Employee	Casual Work	N
Panel A: Age cutoff 15					
2SLS Regression: second order polynomial	0.125 (0.185)	-0.0166 (0.285)	-0.128 (0.219)	0.265 (0.256)	44,135
R^2	0.283	0.141	0.180	0.214	
Panel B: Age cutoff 16					
2SLS Regression: second order polynomial	0.343* (0.178)	-0.0469 (0.313)	0.0847 (0.202)	0.377 (0.272)	43,358
R^2	0.223	0.132	0.180	0.215	
Panel C: Age cutoff 17					
2SLS Regression: second order polynomial	0.409** (0.166)	0.113 (0.308)	0.151 (0.206)	0.255 (0.272)	42,509
R^2	0.158	0.129	0.179	0.218	
Panel D: Age cutoff 18					
2SLS Regression: second order polynomial	0.325* (0.178)	0.128 (0.324)	0.0921 (0.214)	0.211 (0.274)	41,991
R^2	0.120	0.126	0.181	0.217	
Panel E: Age cutoff 19					
2SLS Regression: second order polynomial	0.167 (0.147)	0.233 (0.317)	0.232 (0.233)	-0.234 (0.263)	41,607
R^2	0.083	0.122	0.182	0.216	
Panel F: Age cutoff 20					
2SLS Regression: second order polynomial	0.156 (0.111)	0.378 (0.308)	0.271 (0.219)	-0.465* (0.266)	40,918
R^2	0.068	0.117	0.182	0.217	
Panel G: Age cutoff 21					
2SLS Regression: second order polynomial	-0.00465 (0.0952)	0.641** (0.292)	0.197 (0.225)	-0.829*** (0.281)	39,741
R^2	0.052	0.110	0.178	0.216	
Panel H: Age cutoff 22					
2SLS Regression: second order polynomial	0.0545 (0.101)	0.681** (0.292)	0.271 (0.239)	-0.861*** (0.305)	38,410
R^2	0.051	0.109	0.176	0.217	
Panel I: Age cutoff 23					
2SLS Regression: second order polynomial	0.0357 (0.111)	0.523* (0.317)	0.221 (0.240)	-0.695** (0.318)	38,097
R^2	0.052	0.110	0.176	0.217	
Panel J: Age cutoff 24					
2SLS Regression: second order polynomial	0.0683 (0.109)	-0.0275 (0.298)	0.287 (0.253)	-0.167 (0.275)	37,572
R^2	0.054	0.111	0.172	0.221	
Individual controls	Yes	Yes	Yes	Yes	
District dummies	Yes	Yes	Yes	Yes	
Cohort dummies	Yes	Yes	Yes	Yes	

Notes: Robust clustered standard errors at district level in parentheses. Close elections defined as vote difference of 3.5%. Regressions include fraction of constituencies in districts with close man-woman elections and individual controls for age, marital status, education, religion and caste. Weighted using NSS weights. *Significance levels* *** p<0.01, ** p<0.05, * p<0.1

Table A4: Effect by Birth Cohort

Dependent variable: (1= if engaged in economic activity, 0=otherwise)				
Coefficient: Fraction of constituencies in the district won by a woman (second-order)	(1)	(2)	(3)	(4)
	LFP	Self Employed	Employee	Casual Worker
2SLS Regression: Birth Cohort 1960's	-0.0186	-1.100	0.434	0.823
	(1.064)	(1.175)	(0.344)	(0.774)
R^2	0.315	0.218	0.124	0.246
Observations	10,863	10,863	10,863	10,863
2SLS Regression: Birth Cohort 1970's	-0.473	0.104	0.264	-0.852*
	(0.508)	(0.435)	(0.244)	(0.492)
R^2	0.290	0.207	0.095	0.223
Observations	15,366	15,366	15,366	15,366
2SLS Regression: Birth Cohort 1980's	0.940**	0.495	0.433**	0.0246
	(0.391)	(0.346)	(0.196)	(0.338)
R^2	0.249	0.192	0.149	0.204
Observations	16,193	16,193	16,193	16,193
Individual controls	Yes	Yes	Yes	Yes
District dummies	Yes	Yes	Yes	Yes
Cohort dummies	Yes	Yes	Yes	Yes

Notes: Robust clustered standard errors at district level in parentheses. Close elections defined as vote difference of 3.5%. Regressions include fraction of constituencies in districts with close man-woman elections and individual controls for age, marital status, education, religion and caste. Weighted using NSS weights. *Significance levels* *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table A5: Effect of Political Heterogeneity on Men

Dependent variable: (1= if engaged in economic activity, 0=otherwise)				
Coefficient: Fraction of constituencies in the district won by a woman	(1) LFP	(2) Self Employed	(3) Employee	(4) Casual Worker
Panel A: All female politicians (age cutoff 17)				
Effect on SCST: second order	0.699*** (0.237)	0.0071 (0.461)	0.352 (0.253)	0.465 (0.431)
Effect on non-SCST: second order	0.230 (0.204)	0.0390 (0.357)	0.0306 (0.234)	0.237 (0.290)
R^2	0.218	0.132	0.178	0.214
Panel B: SCST female politicians (age cutoff 17)				
Effect on SCST: second order	0.387 (0.638)	0.0960 (0.792)	0.0589 (0.383)	0.570 (0.584)
Effect on non-SCST: second order	-0.138 (0.379)	-0.552 (0.589)	0.807** (0.375)	-0.455 (0.369)
R^2	0.221	0.132	0.178	0.215
Observations	44,427	44,427	44,427	44,427
Panel C: All female politicians (age cutoff 22)				
Effect on SCST: second order	-0.111 (0.157)	0.936* (0.500)	0.200 (0.315)	-1.237*** (0.467)
Effect on non-SCST: second order	0.120 (0.101)	0.608** (0.309)	0.308 (0.270)	-0.749** (0.331)
R^2	0.050	0.109	0.176	0.216
Panel D: SCST female politicians (age cutoff 22)				
Effect on SCST: second order	0.002 (0.080)	0.500 (0.823)	-0.639 (0.421)	0.103 (0.718)
Effect on non-SCST: second order	0.092 (0.107)	-0.164 (0.495)	0.243 (0.451)	0.0723 (0.483)
R^2	0.051	0.110	0.176	0.221
Observations	38,410	38,410	38,410	38,410
Individual controls	Yes	Yes	Yes	Yes
District dummies	Yes	Yes	Yes	Yes
Cohort dummies	Yes	Yes	Yes	Yes

Notes: Robust clustered standard errors at district level in parentheses. Close elections defined as vote difference of 3.5%. Regressions include fraction of constituencies in districts with close man-woman elections and individual controls for age, education, marital status, and religion. Weighted using NSS weights. *Significance levels* *** p<0.01, ** p<0.05, * p<0.1