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Why So Few Women in Politics? Evidence from India

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Abstract

In this paper we analyze women as political candidates in Indian democracy. Using 50 years of assembly elections data at the constituency level from the Indian states, we show that women are more likely to contest elections in those constituencies where gender ratio of the electors is less in favor of women. For example, women are more likely to contest elections in backward states like Bihar and Uttar Pradesh where the gender ratio of electors is in favor of men than in socially developed states like Kerala where the gender ratio of electors is more in favor of women. We present a "citizens candidates" model of representative democracy and show that our empirical results are consistent with the theoretical predictions of this model. Our results challenge existing policy of random reservation of seats for women.

JEL Classification: P16, J10, J11

Keywords: gender, median voter, political economy

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Introduction

The International Political Science Association reports that women representatives account for 20.3 percent of all parliamentarians in the world, as of January 2013 (figure 1). This highlights the severity of worldwide unrepresentation of women in political positions. According to Norris and Inglehart (2000), the gap between men and women has narrowed least in political representation when compared to education, legal rights and economic opportunities. However, despite the magnitude of this problem, there is little understanding regarding factors that might be causing this. Why are there so few female representatives in political positions, relative to their share in the population and electoral rolls? In this paper, we present an answer to this fundamental question.

We use a simple "citizen candidate" model of representative democracy to show women's decision to contest elections. We test the predictions of the model using data from assembly elections in India, over 50 years. We show that women are significantly more likely to contest elections in those constituencies where gender ratio of the electors is less in favor of women. For example, women are more likely to contest elections in backward states like Bihar and Uttar Pradesh where the gender ratio of electors is in favor of men than in socially developed states like Kerala where the gender ratio of electors is more in favor of women. The results also reveal that though more women contest in contituencies with unfavourable gender ratios, they are less likely to win in these contituencies. In the light of our findings, we would argue that blanket quotas for women might not be the best policy prescription to enhance political participation by women.

Over the last 20 years, 17 countries have legislated reservations in seats for women candidates and 44 countries have legislated quotas for women in political parties candidate lists (see figures 2 and 3). There is growing evidence in the literature to show that reservation policies have improved women's representation (Jones, 1998 and Norris, 2001). There is also evidence to show that women's reservation has an impact on policy decisions. While Chattopadhyay and Duflo (2004) exploit a randomized controlled setting in India to show that reservation of village council seats for women affects the type of public goods provided, Besley and Case (2000) control for state and year fixed effects and show that compensation for workers and child support policies are more likely to be introduced in places where there are more women in parliament. Dollar Fisman and Gatti (2001) do a cross sectional comparison and find a negative correlation between representation of women in parliament and corruption. However, despite growing evidence of causal effect of women's representation on policy decisions, we have little understanding of why so few women participate in active politics as representatives.

The rationale for reservation in favor of women is that women have higher costs of running for office than men. As a result, several countries have legislated randomly reserved seats for women. In India, one third of village council positions have been randomly reserved for women. Our results challenge such reservation policy, and instead, suggest that if the objective of reservation is to

promote and safeguard the interests women, then it should be aimed towards those constituencies where women are electorally a minority. Our results reveal that women are more likley to contest elections in places where the gender ratios of the electorate is stacked aginst them. For reservation policies to have a bite and affect the political representation of women, they must be implemented in contituencies where women are electoral minorities. Reservations should be for those contituencies which have unfavourable sex ratio of electorates because, though significantly more women candidates contest elections, yet the probability of winning is significantly lower in these places than elsewhere.

The rest of the paper is structured as follows: section 2 has the simple "citizen candidate" model of Chattopadhyay and Duflo (2004) which is build on the framework of Osborne and Slivinski (1996) and Besley and Coate (1997). Section 3 describes the empirical strategy. Section 4 has the details of the Election Commission of India data that we use for the analysis. Section 5 has the results and section 6 concludes.

Theory

For our empirical analysis we use the theoretical model developed by Chattopadhyay and Duflo (2004) (henceforth referred to as CD). Their model builds on the framework developed in Osborne and Slivinski (1996) and Besley and Coate (1997) where the political candidates are "citizen candidates." The political process is modeled as a three stage game. In stage one each citizen decides whether or not to become a political candidate. In the second stage, the citizens vote for the political candidates and in the third and final stage, the candidates with the maximum number of votes chooses the policy. This structure implies that the candidate who wins will implement their preferred policies and cannot credibly commit to do otherwise. While voting, citizens take this into account and vote for the candidates on the basis of their policy preferences and abilities. Citizens then decide whether or not to run for office depending on who else will enter the electoral race. The candidates, therefore, face a trade off between the probability of winning the election and the fixed cost of contesting the election.

The model developed by CD has two distinguishing features. Firstly, the cost of contesting an election is higher for a women than for men. Secondly, the the final policy outcome that is implemented by the winning candidate is the mixture of a preferred policy and a policy option preferred by a local elite (which is different from what the winning candidate would prefer). This could either reflect the "capture" of decentralized government by local elite (Bardhan and Mookherjee, 2000; Besley and Coate, 2001) or that the elected representative is under the control of the elected state government and assembly. This framework developed by CD captures to a very large extent the reality of the electoral process in India. Every citizen is eligible to vote and to contest election by standing as a political candidate. The political candidate who garners the maximum number of

votes wins the election and is in a position to implement policies, but is also subjected to control by elected state government and assembly.

The key features of the CD model are as follows. The citizens of a constituency will implement a policy which is chosen in the interval between $[0,1]$. Each citizen has a preferred policy option, ω_i, and women and men have different policy preferences. This aspect of the model is reflected in their detailed empirical work. More specifically, it is assumed that women's preferences are distributed over $[0,W]$ and the men's preference is distributed over the interval $[M,1]$. The cost of contesting the election for the women is δ_w, and the cost of contesting the election for the men is δ_m, where $\delta_w > \delta_m$.

The utility to citizen i with a preferred policy option ω_i, if the outcome x_j is implemented is $-|x_j - \omega_i|$ if citizen i is not a candidate, and $-|x_j - \omega_i| - \delta_i$ if citizen i is a candidate. The policy which is implemented by the winning candidate $x_j = \alpha\omega_j + (1-\alpha)\mu'$, where μ' is the policy option preferred by the local elite, and α is the weight given to the candidate's own preference. This implies that if no one runs for the election then citizen $i's$ utility is given by $-|\mu' - \omega_i|$. Its also assumed in the model $\mu' > m$, where m is the preference of the median voter. Citizens are fully aware of the lobbying process and take it into account for the voting decision.

In this paper, we will focus exclusively on the decision of female candidates to contest elections. Moreover, we will only analyze circumstances in which the woman candidate faces an opposition, if she chooses to contest elections. The reason for limiting our analysis to this scenario is because in our data on elections at the constituency level, we have not come across a single constituency where a women ran an election unopposed.

Besley and Coate (1997) have shown that if two candidates contest an election then each one of them should have an equal chance of winning, therefore, the policy outcome they would implement needs to be symmetrical around the median voter preference. In the CD framework this implies that a women who is the furthest away from the median voter has the policy preference 0 and would implement policy outcome $(1-\alpha)\mu'$ if she is elected. For another candidate to contest election against such a candidate implies that she would have to implement a policy outcome $2m-(1-\alpha)\mu'$, which is symmetric around the median voter, to have an equal probability of winning. This implies that for the women with preference 0 (who is furthest from the median voter) to contest election, it must be the case that she gets a higher utility from contesting the election than accepting the policy implemented by the opposing candidate. More specifically, this implies that

$$Expected\ utility\ from\ contesting = \frac{1}{2}(-|(1-\alpha)\mu'|) + \frac{1}{2}(-|2m-(1-\alpha)\mu'|) - \delta_w$$

$$Utility\ from\ not\ contesting = -|2m-(1-\alpha)\mu'|.$$

Hence, she will contest if and only if

$$\frac{1}{2}(-|(1-\alpha)\mu'|)+\frac{1}{2}(-|2m-(1-\alpha)\mu'|)-\delta_w>-|2m-(1-\alpha)\mu'|\,,$$

or

$$m-(1-\alpha)\mu'>\delta_w.$$

This implies that if the cost of contesting an election for a women candidate with an extreme policy preference 0 relative to the median voter preference is high, such that she will not contest the election, then no other women would contest the election. In other words if

$$\delta_w>m-(1-\alpha)\mu', \tag{1}$$

then there is no equilibrium where a women will contest the election.

Equation 1 captures the key factors that influence the women's decision to contest elections. In addition to the cost of contesting the election it depends on the median voter preference m, the lobbying effort of the political elite $(1-\alpha)$, and the policy option preferred by the local elite μ'. In particular the key implications of the model are (i) if the median voter preference is more in favor of the women then it is less likely that women will contest elections, cetris paribus. For example, consider two constituencies (say A and B) which are identical in all respects except that the median voter preference in A is more in favor of the women than in B, in other words $m_A<m_B$, then for given values of δ_w, $(1-\alpha)$ and μ' it is possible that

$$m_B-(1-\alpha)\mu'>\delta_w>m_A-(1-\alpha)\mu'.$$

This implies that in constituency B, women will contest the election while in constituency A she will not contest the election. This forms the fundamental basis of our empirical work. (ii) For a given cost of contesting election for women and the median voter preferences, the higher the lobbying effort of the political elite $(1-\alpha)$, and/or the policy option preferred by the local elite μ', then its less likely for the women to contest the election.

Empirical Strategy

Equation 1 forms the basis of our empirical strategy. We study the effect of the median voter preference on the probability of a women contesting the election at the constituency level using the PROBIT estimation. Since we do not directly observe the median voter preference we use the gender ratio of electors at the constituency level as a proxy for the median voter preference. The gender ratio of the electors is the total number of female electors divided by the total number

of male electors. Higher gender ratio of electors implies a median voter preference more towards the women. We use state fixed effects to control for other factors like the the lobbying effort of the political elite $(1-\alpha)$, and the policy option preferred by the local elite μ'. We also allow the state fixed fixed effects to interact with time dummies to capture any time varying changes in the lobbying effort of the political elite and also their policy preference.

In particular we run the following regression

$$\begin{aligned} Pr(y_{it} &= 1) = \Phi(const + \beta Gender\ ratio\ of\ electors_{it} + \\ &\quad state\ FE + time\ dummies_t + \\ &\quad state\ FE \times time\ dummies_t + error_{it}), \end{aligned} \tag{2}$$

where $y_{it} = 1$ is equal to 1 if the women contest elections in constituency i in year t, and 0 otherwise. $state\ FE$ is the state fixed effects which captures state level factors such as the extent of discrimination towards the women, lobbying efforts and the "capture" by the political elite , $time\ dummies_t$ is a dummy which controls for time effects. Typically, assembly elections are held every five years so there are two elections in a decade. Since we use the constituency level data from 1969 to 2012, we use a decade dummies which takes a value equal to 1 for the decade in which the election was held and 0 otherwise. We use 1970 to 1979 as a decade for the 70s, similarly from 1980 to 1989 is the decade for the 80s, 1990 to 1999 is the decade for the 90s, 2000 to 2009 is the decade for the 2000s and 2010 to 2012 is the decade of the 2010s. For example, consider the elections held in constituency i in 1972 then $time\ dummies_t$ would be $time\ dummies_{1970}$, which is equal to 1 and 0 for all other decades. Similarly if the election was held in 1982 then $time\ dummies_t$ would be $time dummies_{1980}$ which is equal to 1 while all other time dummies are 0. We also use an interaction term $state\ FE \times time\ dummies_t$, which captures all the time varying state level factors that could vary over time. For example, this could capture time varying changes in attitudes towards women, or the changes in the lobbying efforts of the political elite or the "capture" by the political elite.

Data

The data that we use for our analysis is from the Election Commission of India (ECI). The ECI was vested by the constitution of India to oversee, direct and control the entire process of the conduct of free and fair elections to the Parliament and the Legislative Assemblies of states and union terretories. The ECI collects and documents election data for each and every parliamentary and the state assembly constituency. For each constituency it reports data on the total number of electors and voters which are segregated by gender, the name and gender of each candidate contesting the election, party affiliation of each contestant and if the candidate is not affiliated to any party then the candidate is categorized as an independent, and the total number votes secured

by each candidate in the election. This data is available for every general election held in the parliamentary and the state assembly constituency from 1951 till 2012.

For our analysis we use data at the constituency level for the state assembly elections held for 16 large states from 1962 till 2012. These 16 large states represent more than 93 percent of the total electors in India. Next we describe the construction of the variables of interest using the data at the constituency level.

$$sex\ ratio\ of\ voters_{st} = \left(\frac{\sum_{i=1}^{N_s} female\ voters_{it}}{\sum_{i=1}^{N_s} male\ voters_{it}} \right) \times 1000, \tag{3}$$

$$sex\ ratio\ of\ electors_{st} = \left(\frac{\sum_{i=1}^{N_s} female\ electors_{it}}{\sum_{i=1}^{N_s} male\ electors_{it}} \right) \times 1000, \tag{4}$$

where s is the state, t is the year in which the election is held for the state assembly, i is the assembly constituency in state s, and N_s is the total number of assembly constituencies in state s.

We describe the trends in sex ratio of electors and voters in our data from 1970s through 2010s. In Table 1a, we show the number of female electors per 1000 male electors over time. As would be expected, there are no statistically significant changes in electorate sex raio over time. However, when we study each state separately, we note that Haryana, Madhya Pradesh, Rajasthan and Uttar Pradesh have witnessed worsening sex ratio of electorates since 1970. The sex ratio of electorate reflects the general sex ratio in the population and these are the traditionally backward states in India.

Insert Tables 1a

Table 1b shows the sex ratio of India voters over time. It has the number of female voters per 1000 male voters in the big states, over time. We discover a significant and persistent reduction in gender inequality when we analyze voter turnout in all state elections in India, over past 50 years. We study this trend and its implications in Kapoor and Ravi (2013). In order to understand whether this positive development has an impact on election outcomes, we study the Bihar state re-elections of 2005, which were held within a short span. Our results strongly suggest that an increase in the female voters turnout negatively effected the probability of re-election for a political party in a given constituency. And in contrast, the results also show that male voters increased the probability of re-election of political parties, in a given constituency. The two results together show that men and women voted differently. While women voted for change, the men voted for status quo. These results highlight the significant role of rising women voters in modern representative democracy.

Insert Tables 1b

Next, we show the data of the size of constituencies measured in number of electors and voters, over time. Table 2a and 2b show the trend in number of total electors and total voters per constituency in a state. As expected, the size of constituencies have increased significantly over time reflecting the increase in population in India over last 50 years.

Insert Tables 2a and 2b

Table 3, we have the average number of constituencies per state, over time. There have been some changes in the number of assembly constituencies in each state, over time, largely due to formation of newer states. Table 4a and 4b reveal the staggering difference in the average number of female and male candidates per election per constituency for every decade. While the average number of female candidates per constituency per election has been going up over time, the difference across states is persistent. Backward states like Bihar and UP have more than twice the number of female candidates per constituency compared to developed states like Kerala and Tamil Nadu. These differences across states have remained persistent over last 50 years.

Insert Tables 4a and 4b

Results

Following the empirical specification outlined in section 3, our main results are presented in Table 5, columns 1 to 4. This is a PROBIT analysis which explains the probability of female candidates contesting an assembly election in India. The unit of observation is a constituency in all state assembly elections, over 5 decades. The dependent variable takes value 1 if the constituency has at least one female contestant in the election and 0 otherwise.

We start with a very simple specification where (column 1) we only use the gender ratio of electors at the constituency level as an explanatory variable. Consistent with theory, we find that higher the gender ratio of the electors (that is, median voter preference is in favor of the women) then it is less likely that a woman candidate will contest the election. The coefficient is negative and highly significant at the conventional levels of significance at 1% level.

Insert Table 5

In column 2, we introduce the state fixed effects. Our results do not change - we find that with

higher gender ratio of electors, it is less likely that a woman candidate will contest the election in that constituency. Our findings are not affected when we introduce time dummies with and without the interaction effect. The results without the interaction term are presented in column 3 and with the interaction term are in column 4. The coefficients remain economically and statitically significant. It is important to note that changes in opportunity cost of contesting an election for women, as measured by female wages and labor force participation are controlled through the interaction of state and time dummies. These do not change our basic finding in any way.

Next, we run an OLS regression to study the determinants of actual number of female candidates who contest an election. The results are reported in Table 6. The dependent variable is logarithm of number of female candidates per constituency. There are several constituencies across various elections where no women candidates contested. To take care of this, we transform the dependent variable appropriately. We follow the same specifications as outlined in our empirical strategy and as used in the previous PROBIT analysis. In column 1, we only use the gender ratio of electors at the constituency level as an explanatory variable. Once again, consistent with theory, we find that higher the gender ratio of the electors (that is, median voter preference is in favor of the women) then it is less likely that a woman candidate will contest the election. The coefficient is negative and highly significant at the conventional levels of significance at 1% level.

Insert Table 6

As before, in column 2, we introduce the state fixed effects which not change our results. We find that with higher gender ratio of electors, it is less likely that a woman candidate will contest the election in that constituency. Our findings are not affected when we introduce time dummies with and without the interaction effect. The results without the interaction term are presented in column 3 and with the interaction term are in column 4. The coefficients remain economically and statistically significant.

Finally, we study the probability of winning an election for a female candidate. Table 7 reports the results of the PROBIT analysis where the dependent variable takes value 1 when a female candidate is declared winner in a constituency for an assembly election, and 0 otherwise. This analysis is conditional on women candidates contesting from a particular constituency. That is why the number of observations are fewer because there are several constituencies in different elections where no female candidates contested.

Insert Table 7

The results reveal a striking finding. Women are significantly less likely to win elections from constituencies where the sex ratio of electors are unfavorable. That is, when there are fewer female

electors compared to male electors, women candidates are less likely to win. Together with the previous results, this implies that though more female candidates contest elections from backward constituencies, fewer are likely to actually win and politically represent women electors.

Conclusion

The gender gap between men and women in political representation is significant and persistent over time. This is particularly puzzling given that the gender gap has been narrowing in other areas such as education, labor force participation and legal rights. In this paper, we address this problem and provide an explanation. Use a simple "citizen candidate" model of representative democracy to show women's decision to contest elections. We test the predictions of the model using data from assembly elections in India, over 50 years. We show that women are significantly more likely to contest elections in those constituencies where gender ratio of the electors is less in favor of women. For example, women are more likely to contest elections in backward states like Bihar and Uttar Pradesh where the gender ratio of electors is in favor of men than in socially developed states like Kerala where the gender ratio of electors is more in favor of women.

The results also reveal that though more women contest in contituencies with unfavourable gender ratios, they are less likely to win in these contituencies. In the light of our findings, we would argue that blanket quotas or random quotas for women might not be the best policy prescription to enhance political participation by women. Our results challenge such reservation policy, and instead, suggest that if the objective of reservation is to promote and safeguard the interests women, then it should be aimed towards those constituencies where women are electorally a minority.

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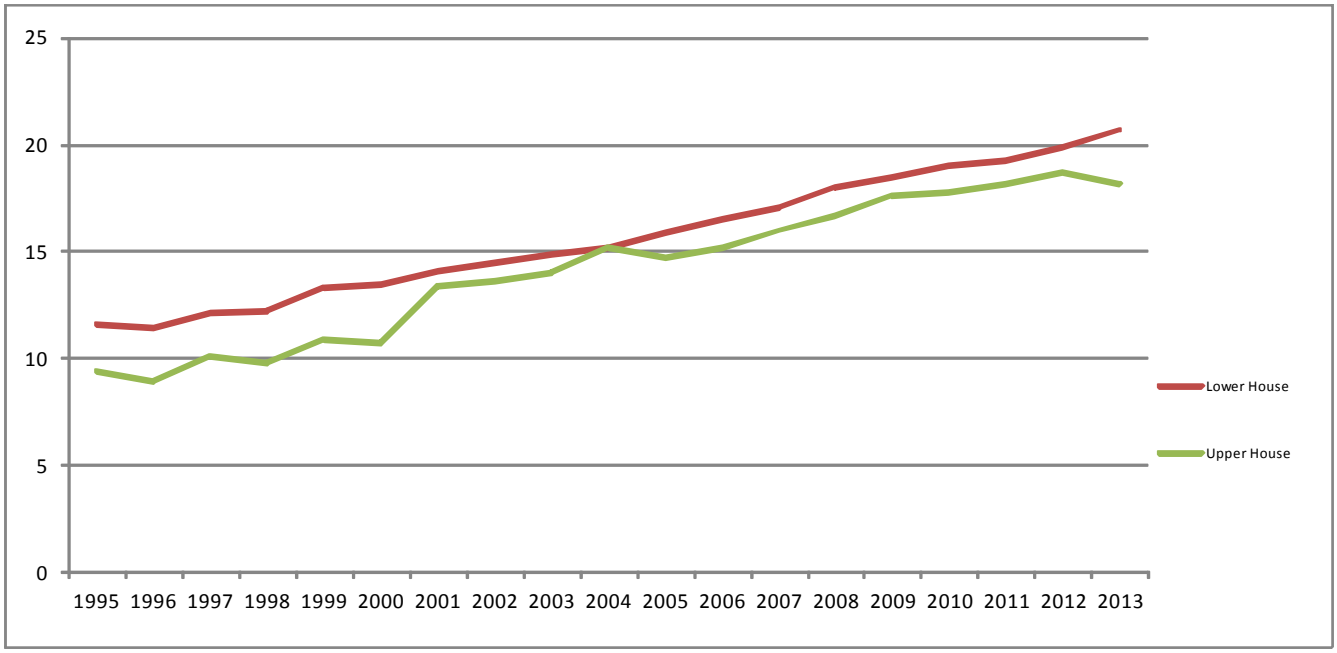
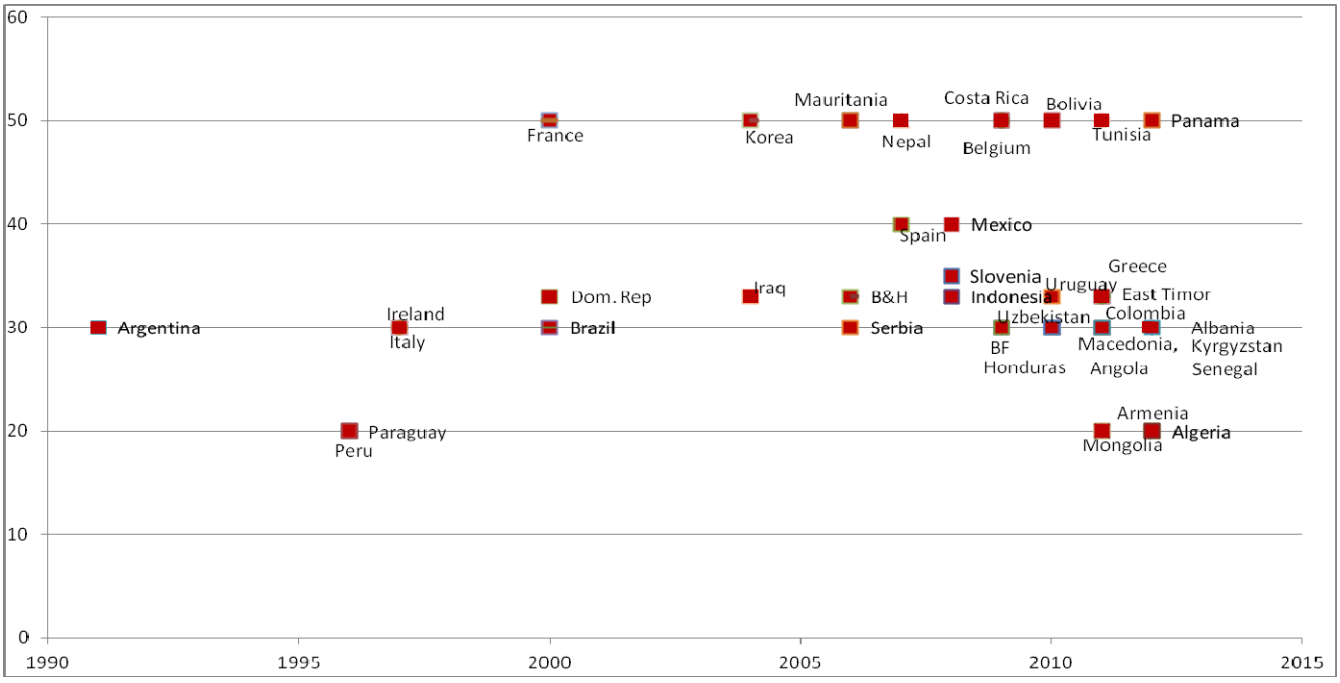
Figure 1: Percentage of female representatives in parliaments across the world



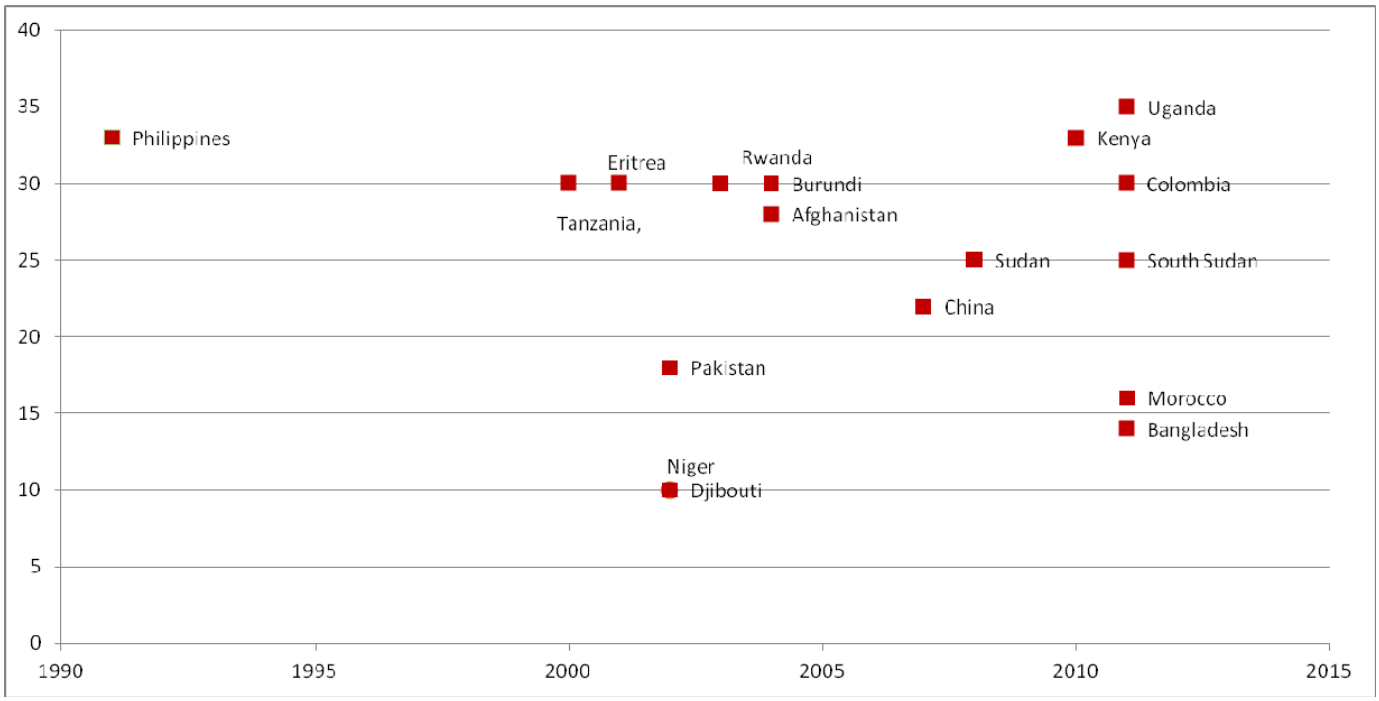
Note: data source is the Quota Project, International IDEA, Stockholm University and Inter-Parliamentary Union

Figure 2: Legislated quota (percentage) for women candidates in a political party



Note: data source is the Quota Project, International IDEA, Stockholm University and Inter-Parliamentary Union

Figure 3: Percentage seats reserved for women candidates in parliament



Note: data source is the Quota Project, International IDEA, Stockholm University and Inter-Parliamentary Union

Table1a: Number of female electors per 1000 male electors

	1970	1980	1990	2000
Andhra Pradesh	1012	1011	1007	1025
Assam	857	871	884	931
Bihar	568	622	709	738
Gujarat	977	980	953	955
Haryana	889	877	855	838
Himachal Pradesh	955	1024	993	973
Karnataka	965	966	972	973
Kerala	1018	1028	1044	1081
Madhya Pradesh	996	985	944	909
Maharashtra	985	976	945	925
Orissa	933	920	895	944
Punjab	856	841	898	916
Rajasthan	940	929	899	912
Tamil Nadu	991	980	983	1009
Uttar Pradesh	854	834	824	834
West Bengal	817	886	892	916

Table 1b: Number of female voters per 1000 male voters

	1970	1980	1990	2000
Andhra Pradesh	906	918	930	978
Assam	720	766	859	887
Bihar	568	622	709	738
Gujarat	822	793	827	859
Haryana	808	808	801	810
Himachal Pradesh	824	980	964	1063
Karnataka	845	859	891	918
Kerala	1008	1022	1031	1049
Madhya Pradesh	667	666	727	805
Maharashtra	871	829	871	857
Orissa	611	653	800	867
Punjab	814	816	875	906
Rajasthan	745	733	764	865
Tamil Nadu	917	928	923	949
Uttar Pradesh	670	665	683	724
West Bengal	707	833	868	871

Table2a: Average size of constituency in number of electors

	1970	1980	1990	2000
Andhra Pradesh	91340	123450	160499	185440
Assam	59711	74317	96754	126481
Bihar	106139	129273	170312	202672
Gujarat	75899	98599	147916	191844
Haryana	64502	88072	116040	137060
Himachal Pradesh	27962	33592	46454	67712
Karnataka	74995	105296	145356	176229
Kerala	79132	100806	144025	153457
Madhya Pradesh	71159	85166	127789	161312
Maharashtra	101978	124235	185859	246414
Orissa	81484	99477	142249	174683
Punjab	72466	87975	129950	139879
Rajasthan	76586	99203	141702	175505
Tamil Nadu	109377	135955	177858	201031
Uttar Pradesh	120246	159737	214276	264647
West Bengal	82743	110956	148025	164786

Table 2b: Average size of constituency in number of voters

	1970	1980	1990	2000
Andhra Pradesh	62751	84842	112412	131979
Assam	38580	44212	74628	95387
Bihar	70149	89200	123115	138654
Gujarat	44898	47931	86929	116261
Haryana	43363	62200	79326	97521
Himachal Pradesh	15233	23750	32385	48173
Karnataka	50379	70822	98983	114277
Kerala	61220	76370	104074	110619
Madhya Pradesh	38379	42130	74720	110088
Maharashtra	66032	70059	120832	150958
Orissa	37151	49543	93326	111089
Punjab	48645	58063	89435	98514
Rajasthan	43000	52706	85720	117063
Tamil Nadu	72451	94633	116178	130200
Uttar Pradesh	61794	76178	115827	131322
West Bengal	49216	84569	118440	129244

Table 3: Average number of constituencies

	1960	1970	1980	1990	2000
Andhra Pradesh	294	291	294	294	294
Assam	116	126	126	126	126
Bihar	318	321	324	324	270
Gujarat	161	175	182	182	182
Haryana	81	85	90	90	90
Himachal Pradesh	60	68	68	68	68
Karnataka	216	220	224	224	224
Kerala	133	137	140	140	140
Madhya Pradesh	296	308	320	320	230
Maharashtra	267	279	288	288	288
Orissa	140	145	147	147	147
Punjab	121	111	117	117	117
Rajasthan	180	192	200	200	200
Tamil Nadu	234	234	234	234	234
Uttar Pradesh	428	425	425	425	403
West Bengal	271	285	294	294	294

Table 4: Number of candidates per election

	1960		1970		1980		1990		2000		2010	
	Female candidate	Male Candidate	Female candidate	Male Candidate	Female candidate	Male Candidate	Female candidate	Male Candidate	Female candidate	Male Candidate	Female candidate	Male Candidate
Andhra Pradesh	23	1005	27	1249	67	1731	142	2519	231	3493		
Assam	5	446	11	697	16	784	45	1336	63	894	85	896
Bihar	40	1863	49	2440	90	3530	207	7313	114	2976	307	3216
Gujarat	17	550	8	828	33	1022	74	2144	63	1069	97	1569
Haryana	10	425	16	512	31	1178	67	2180	59	997		
Himachal Pradesh	2	267	8	306	10	358	17	415	25	311	34	425
Karnataka	20	684	15	978	73	1661	90	1829	105	1874		
Kerala	9	482	6	532	21	830	41	965	70	861	83	888
Madhya Pradesh	17	1536	24	1682	63	2163	162	3323	213	2460		
Maharashtra	28	1174	26	1482	65	1814	159	3338	184	4274		
Orissa	11	558	11	710	21	748	59	1105	81	1172		
Punjab	10	600	15	560	26	764	52	641	64	920	93	985
Rajasthan	13	879	19	994	38	1418	82	2238	136	1731		
Tamil Nadu		767	12	1057	43	1815	123	3618	134	2089	144	2604
Uttar Pradesh	64	3160	78	3448	151	5427	223	7108	357	5449	599	6432
West Bengal	19	994	9	1261	29	1322	94	1874	127	1539	174	1618

Table 5: Average female candidate per constituency

States	1960s	1970s	1980s	1990s	2000s	2010s
BIMARU						
Bihar	0.126	0.150	0.276	0.637	0.403	1.263
Madhya Pradesh	0.057	0.075	0.195	0.507	0.924	
Rajasthan	0.070	0.094	0.188	0.411	0.680	
Uttar Pradesh	0.150	0.183	0.357	0.529	0.885	1.486
Southern States						
Tamil Nadu	0.047	0.051	0.185	0.578	0.573	0.615
Karnataka	0.042	0.067	0.327	0.400	0.467	
Kerala	0.064	0.039	0.152	0.289	0.500	0.593
Andhra Pradesh	0.077	0.092	0.229	0.483	0.784	
Other Major states						
Punjab	0.082	0.135	0.222	0.444	0.545	0.795
Maharashtra	0.103	0.089	0.226	0.552	0.639	
Gujarat	0.103	0.042	0.182	0.404	0.343	0.533
West Bengal	0.069	0.031	0.099	0.320	0.430	0.592
Orissa	0.079	0.073	0.139	0.398	0.551	
Haryana	0.148	0.185	0.344	0.744	0.659	
Himachal Pradesh	0.033	0.118	0.140	0.245	0.368	0.500
Assam	0.043	0.087	0.129	0.364	0.496	0.675

Table 6: Ratio of female to male candidate

	1960	1970	1980	1990	2000	2010
Andhra Pradesh	0.032	0.028	0.047	0.067	0.074	
Assam	0.015	0.018	0.024	0.037	0.084	0.114
Bihar	0.027	0.022	0.028	0.030	0.045	0.107
Gujarat	0.045	0.012	0.039	0.038	0.070	0.072
Haryana	0.027	0.038	0.028	0.033	0.066	
Himachal Pradesh	0.009	0.037	0.036	0.049	0.112	0.093
Karnataka	0.032	0.020	0.052	0.058	0.064	
Kerala	0.026	0.014	0.031	0.052	0.102	0.113
Madhya Pradesh	0.014	0.018	0.034	0.056	0.099	
Maharashtra	0.031	0.022	0.042	0.052	0.048	
Orissa	0.025	0.021	0.035	0.063	0.080	
Punjab	0.021	0.035	0.043	0.098	0.080	0.107
Rajasthan	0.018	0.023	0.031	0.040	0.090	
Tamil Nadu	0.024	0.014	0.029	0.037	0.077	0.063
Uttar Pradesh	0.024	0.026	0.031	0.035	0.072	0.102
West Bengal	0.027	0.009	0.029	0.063	0.105	0.144

Table 7: Probability of Female Candidates Contesting an Election

DEPENDANT VARIABLE Female Candidate dummy	(1)	(2)	(3)	(4)
Gender ratio of electors	-0.649***	-0.493***	-0.665***	-0.757***
	[-9.025]	[-5.241]	[-7.034]	[-7.659]
Total Voters	0.000***	0.000***	0.000***	0.000***
	[38.572]	[38.347]	[6.752]	[5.644]
Time dummy 1970s			-0.221***	-0.050
			[-3.963]	[-0.265]
Time dummy 1980s			0.244***	0.583***
			[4.488]	[3.379]
Time Dummy 1990s			0.648***	1.264***
			[11.449]	[7.245]
Time Dummy 2000s			0.835***	1.358***
			[14.130]	[7.834]
Time dummy 2010s			1.150***	1.445***
			[16.389]	[10.285]
Constant	-0.811***	-0.753***	-0.718***	-0.944***
	[-11.684]	[-6.556]	[-5.647]	[-5.121]
State fixed effect	No	Yes	Yes	Yes
State *time fixed effects	No	No	No	Yes
Pseudo R2	0.0546	0.0782	0.1069	0.1148
Akaike's criterion	38577.13	38025.86	34627.16	34414.17
Schwartz's criterion	38594.34	38193.95	34837.28	35069.74
Observations	33,012	33,012	33,012	33,012

Note: dependent variable takes value 1 if the constituency has at least one female contestant in an election; 0 otherwise. Robust z-statistics in brackets; *** p<0.01, ** p<0.05, * p<0.1

Table 8: Determinant of female candidate contesting an election

DEPENDANT VARIABLE log (1+ number of female candidates per constituency)	(1)	(2)	(3)	(4)
Gender ratio of electors	-0.238***	-0.269***	-0.293***	-0.278***
	[-3.597]	[-3.155]	[-3.584]	[-3.405]
Total Voters	0.000***	0.000***	0.000**	0.000**
	[10.178]	[9.994]	[2.229]	[2.479]
Time dummy 1970s			-0.031*	-0.014
			[-1.851]	[-1.585]
Time dummy 1980s			0.059***	0.098***
			[2.679]	[6.737]
Time Dummy 1990s			0.226***	0.777***
			[5.595]	[40.136]
Time Dummy 2000s			0.227***	0.270***
			[6.549]	[11.298]
Time dummy 2010s			0.323***	0.281***
			[3.777]	[9.628]
Constant				
State fixed effect	No	Yes	Yes	Yes
State *time fixed effects	No	No	No	Yes
Pseudo R2	0.0436	0.0653	0.0893	0.1248
Observations	307351	307351	307351	307351

Note: OLS regression with number of female candidates per constituency as the dependent variable; Robust z-statistics in brackets;
*** p<0.01, ** p<0.05, * p<0.1

Table 9: Probability of winning an election for a female candidate

DEPENDANT VARIABLE Female candidate winning conditional on contesting	(1)	(2)	(3)	(4)
Gender ratio of electors	0.694***	0.784***	0.771***	0.741***
	[4.256]	[3.834]	[3.768]	[3.531]
Total Voters	-0.000***	-0.000***	-0.000***	-0.000***
	[-8.394]	[-8.14]	[-4.986]	[-4.509]
Time dummy 1970s			-0.016	-0.635
			[-0.120]	[-1.240]
Tme dummy 1980s			0.123	-0.058
			[0.964]	[-0.153]
Time Dummy 1990s			-0.221*	0.116
			[-1.676]	[0.311]
Time Dummy 2000s			0.001	0.211
			[0.007]	[0.567]
Time dummy 2010s			0.058	-0.051
			[0.386]	[-0.155]
Constant	-1.157***	-1.222***	-1.178***	-1.170***
	[-7.103]	[-4.91]	[-4.219]	[-2.840]
State fixed effect	No	Yes	Yes	Yes
State *time fixed effects	No	No	No	Yes
Pseudo R2	0.0129	0.0276	0.0349	0.0509
Akaike's criterion				
Schwartz's criterion				
Observations	8,990	8,990	8,990	8,990

Note: OLS Robust z-statistics in brackets;
*** p<0.01, ** p<0.05, * p<0.1

Figure 4 a) Number of female candidates per constituency: Backward (BiMaRU) states

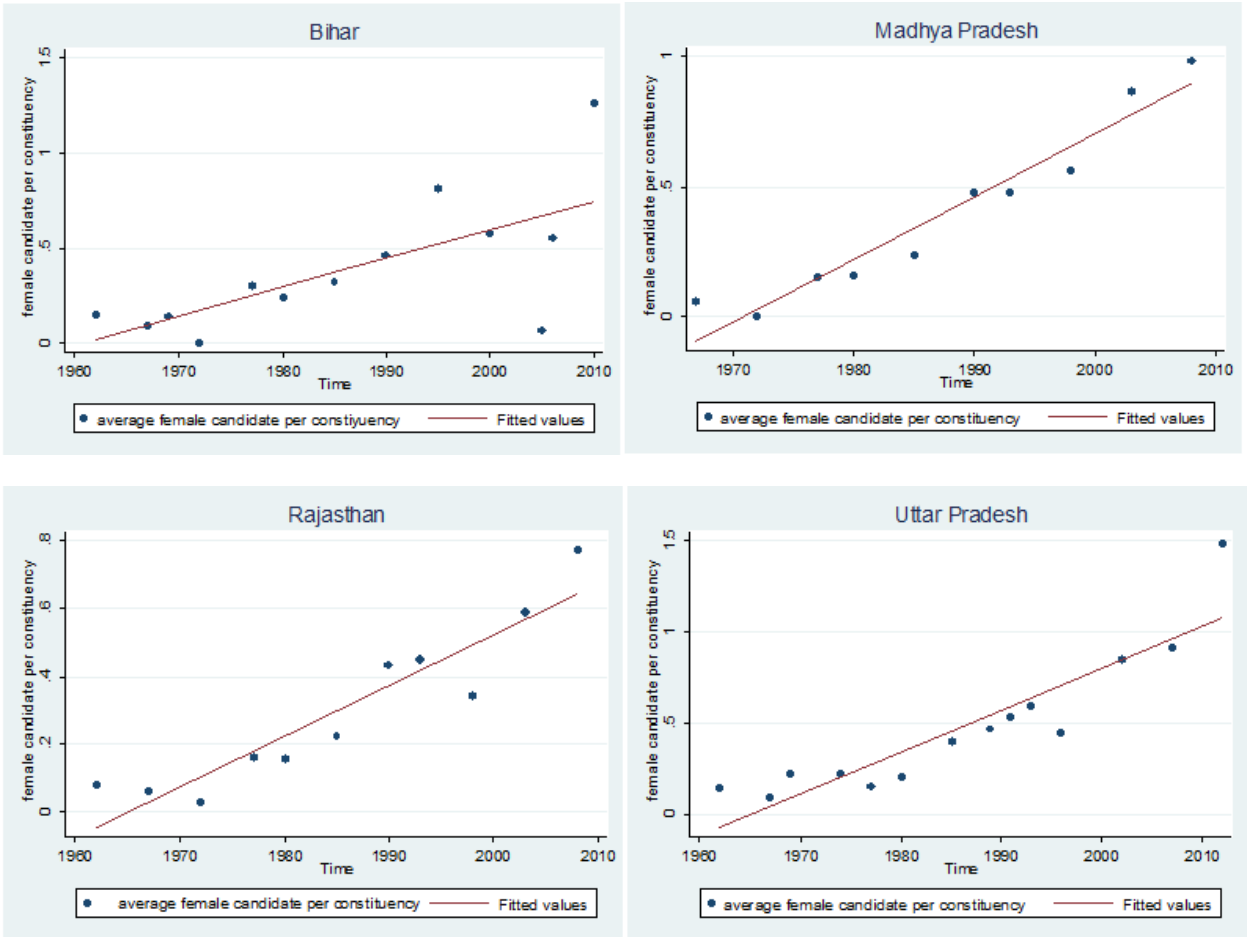


Figure 4b) Number of female candidates per constituency: Southern States

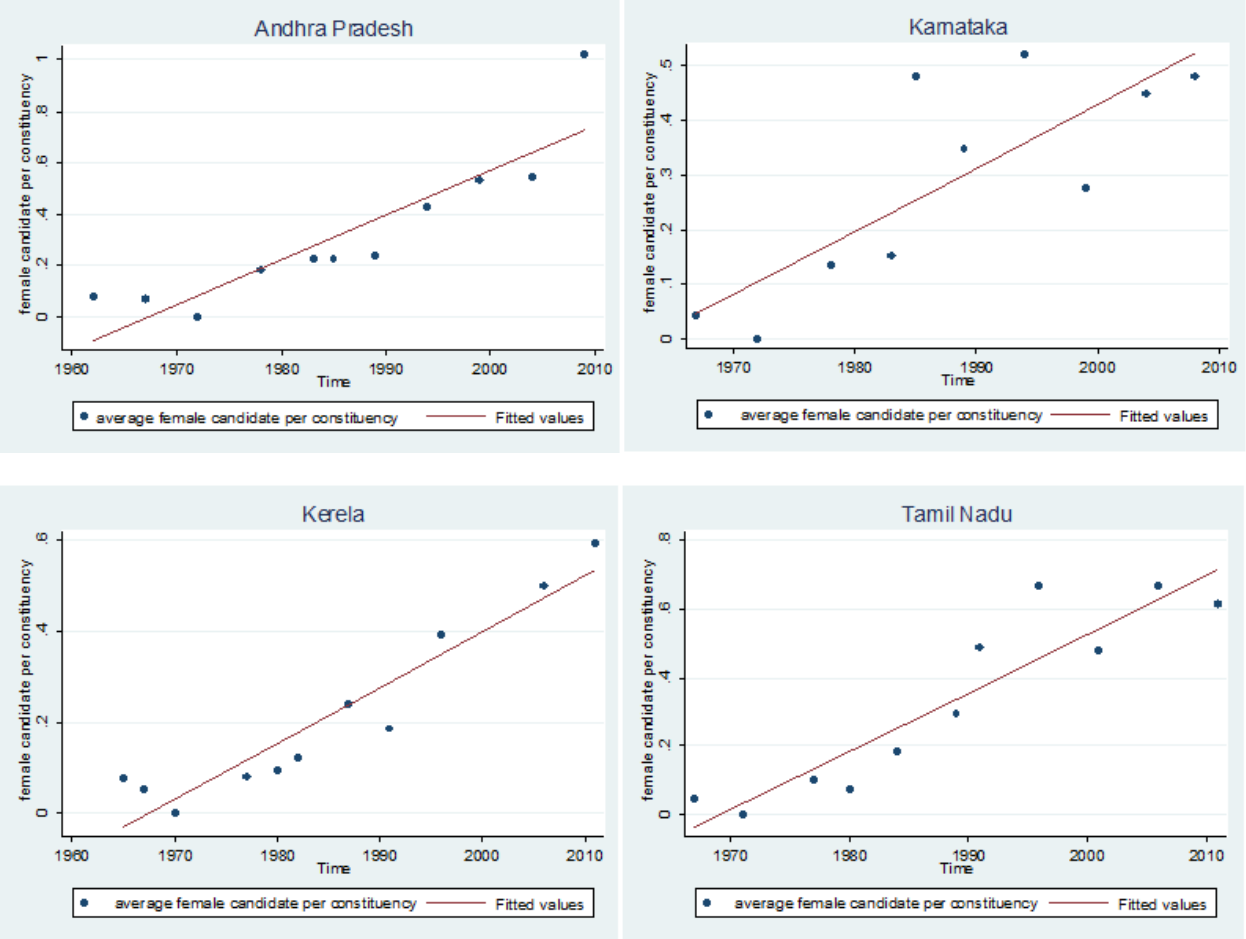
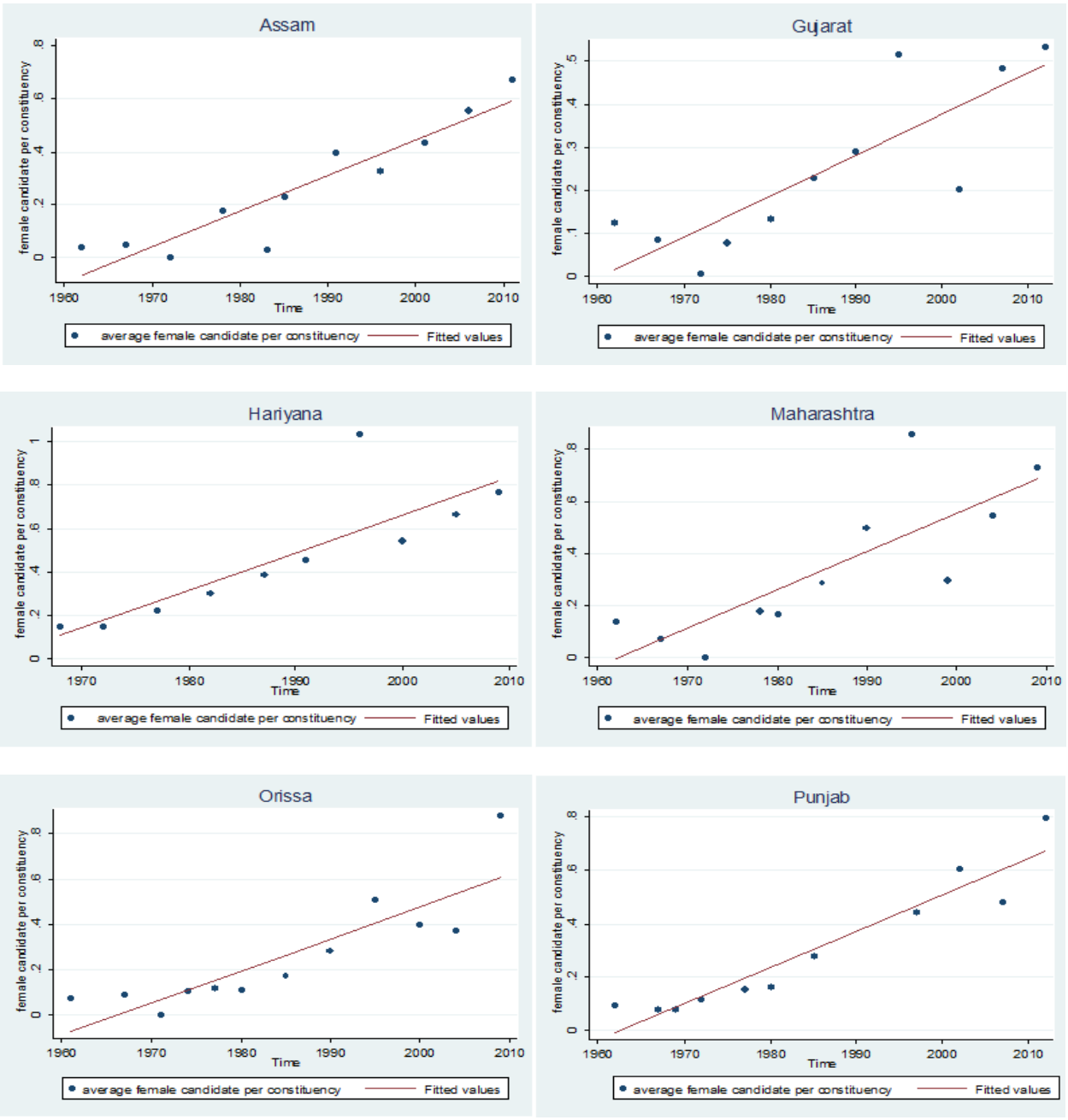
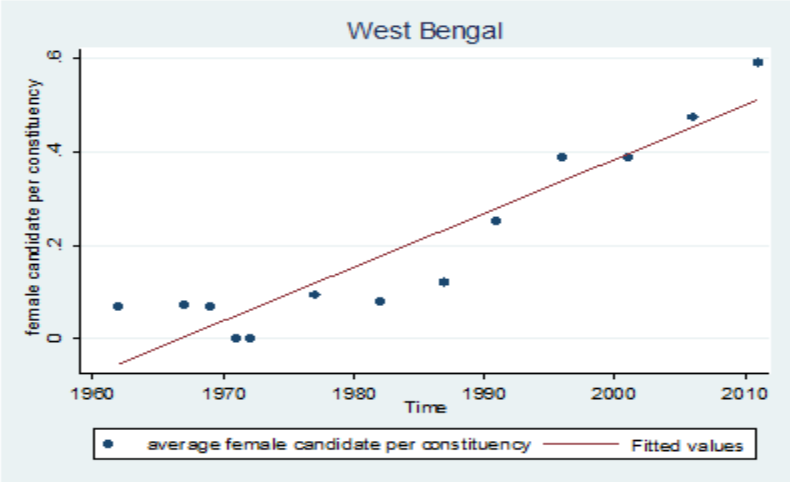


Figure 4c) Number of female candidates per constituency– Other large States




West Bengal
female candidate per constituency
0
.2
.4
.6
1960
1970
1980
1990
2000
2010
Time
average female candidate per constituency
Fitted values