



Women in politics Evidence from the Indian States[☆]

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ABSTRACT

This paper uses panel data from the 16 larger states in India during the period 1967–2000 to study the effects of female political representation in the State Legislatures on public goods, policy and expenditure. It finds that politicians' gender affects policy, but that their social position, i.e., their caste, should be taken into account as well. Female legislators in seats reserved for lower castes and disadvantaged tribes invest more in health and early education and favor “women-friendly” laws, such as amendments to the Hindu Succession Act, which was designed to give women the same inheritance rights as men. They also favor redistributive policies, such as land reforms. In contrast, female legislators from higher castes do not have any impact on “women-friendly” laws, oppose land reforms, invest in higher tiers of education and reduce social expenditure. The causal effect of female legislators is estimated using close elections between women and men.

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1. Introduction

In India, as in many other countries in the world, women are underrepresented in all political positions even though they make up approximately one-half of the population. While the proportion of women who voted increased during the 1990s, women are still not well represented in political life. In a representative democracy, all sectors of the society should have a say in the policy-making process. However, the question remains as to whether female representation affects policy determination. Do parliaments where women have higher representation adopt different policies?

In political economy models where candidates can commit to specific policies and only care about winning elections, political decisions reflect the electorate's preferences (Downs, 1957). In this case, female political representation should not have a differential impact on policy decisions because the median voter equilibrium will prevail. Additionally, as long as women vote, their preferences will be represented by the elected

candidate, irrespective of the candidate's gender. However, if complete policy commitment is absent, the identity of the legislator does matter for policy decisions (Besley and Coate, 1997; Osborne and Slivinski, 1996). In particular, increasing a group's political representation will increase its influence on policy.

The issue of female political representation has become increasingly important in India. Seats are reserved for women in Panchayats (local governments), but not in State and National governments. In September 1996, the Indian government introduced a Bill in Parliament that proposed reserving for women one-third of the seats in the Lok Sabha (Central Government) and in the State Assemblies. This proposal has since been widely debated in several parliamentary sessions, but no agreement has yet been reached.¹ Those who are in favor of reserving seats argue that increasing female political representation will ensure that women's needs are better represented, and even those who oppose the bill acknowledge that female politicians behave differently than male politicians. Clearly, reserving seats would change the nature of political competition by changing the set of candidates available for each seat, thereby altering voters' preferences or changing the quality of the candidates. This paper explores the effect of an exogenous increase in female representation that took place without any institutional change.

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¹ The current government has reaffirmed its commitment to the women's reservation bill, and the Upper house approved it in March 2010. The Lower House will vote on it on a later date.

The identification strategy used in this paper takes advantage of the detailed data collected on female candidates in India from 1967 until 2001. It is based on the fact that female candidates who won in a close election against a man were elected by similar constituencies as male candidates who won a close election against a woman. As an instrument for the fraction of seats in the state won by a female politician, I use the fraction of seats in the state won by a female politician in a close election against a man.

The idea behind the instrument is that the gender of the candidate who wins in a close election can be considered largely random, so the effect of the legislator's gender can be correctly identified by comparing constituencies where a woman was elected to those where a man was elected. However, even if the outcomes of close elections can be considered nearly random, the occurrence of close elections between a man and a woman in a given state and year is not random. Therefore, I control for the fraction of seats in the district that had close elections between women and men in both the first and second stages. The effect on the policy variables of the existence of close elections between women and men is controlled for in the second stage and partialled out of the instrument in the first stage.

I focus on state governments because these control the majority of the social and economic expenditure and have the power to implement most development policies in India. Importantly, the different Indian states use the same budgetary classification, and have similar institutional and electoral settings. Thus, using panel data from these states not only offers the advantage of data comparability, but it also solves the unobserved heterogeneity problems present in cross-country studies.

In state and national parliaments, some seats can only be contested by Scheduled Caste or Scheduled Tribe candidates (SC/ST). These two population groups constitute the most disadvantaged sectors of Indian society, both socially and economically. In Indian society, caste determines economic and social opportunities and can be an important aspect of a politician's identity that shapes his or her policy behavior. Thus, in this paper, the impact of gender on both general and SC/ST legislators will be identified separately because they may have different policy preferences.

In addition, if the cost of running for election is higher for women than for men, female legislators will probably belong to the elite sectors of society. Thus, the fact that some seats are reserved for low castes, which are not part of the elite, allows me to separately identify the effect of low-caste female legislators and to distinguish gender effects from class effects.

To create a complete picture of the effect of female legislators, I use data on different types of public goods and two types of laws: one that is targeted toward the poor and another that is targeted toward women. I have also collected detailed data on state budgets to identify legislators' expenditure priorities.

I find that female legislators have a differential impact on public goods, policy and expenditure decisions compared to their male counterparts. They invest more than men in schools, female teachers, primary education and beds in hospitals and dispensaries. More importantly, whether these female legislators hold seats reserved for a Scheduled Caste or Scheduled Tribe also has an impact. In particular, Scheduled Caste and Scheduled Tribe female legislators invest more in health and in lower levels of education and favor "women-friendly" laws such as amendments to the Hindu Succession Act that were designed to give women the same inheritance rights as men. They also favor redistributive policies such as land reforms. In contrast, general female legislators do not have any impact on "women-friendly" laws, they oppose land reforms, they invest in higher tiers of education and they reduce social expenditure.

The fact that men and women have different political preferences has been documented in the literature. For instance, women have been shown to favor redistribution, to support child-related expenditures, and to be more liberal; see, for example, [Lott and Kenny \(1999\)](#), [Edlund and Pande \(2002\)](#), [Edlund et al. \(2005\)](#), [Alesina and La Ferrara \(2005\)](#) and [Miller \(2008\)](#). It has also been shown that women tend to direct their income toward children in the household more

than men do. See, for example, [Lundberg et al. \(1997\)](#). In addition, there is evidence that an increase in women's income improves girls' wellbeing in the family; see [Duflo \(2003\)](#) and [Thomas \(1990\)](#).

These findings can be translated into women's behavior in government. This paper contributes to a larger body of literature that analyzes similar issues using US data. [Thomas \(1991\)](#) shows that states with higher female representation introduce and pass more priority bills dealing with issues of women, children and families than their male counterparts or than women in states with lower female representation. [Thomas and Welch \(1991\)](#) find that women in state houses in 12 states in the US place greater priority than men on legislation concerning women, family issues and children. [Case \(1998\)](#) finds that the state's child support enforcement policies strengthened as the number of female legislators in the state increased. [Besley and Case \(2000\)](#) show that the fractions of women in the upper and lower state houses are highly significant predictors of a state's workers' compensation policy. [Besley and Case \(2003\)](#) find that women in the legislature apply pressure to increase family assistance and to strengthen child support laws. However, electorates that elect women are likely to be different from electorates that do not, and the characteristics that differ can influence political decisions through other channels.

Very few papers try to estimate the causal effect of female political representation. [Rehavi \(2007\)](#), who also uses close elections between women and men, finds that an increase in female representation during the 1990s led to an increase in the public welfare expenditure. [Svaleryd \(2002\)](#), using changes in the number of seats, finds that a greater share of women in the majority in Swedish municipalities increases expenditure on childcare relative to care for the elderly. In addition, other papers show that the identity and the preferences of politicians affect policy; see, for example, [Levitt \(1996\)](#), [Lee et al. \(2004\)](#) or [Washington \(2008\)](#). This paper contributes to this literature by separately identifying the effect of the gender and the caste of legislators and finds that both matter for policy decisions.

The existing literature on India focuses on the effect of different reservation policies. In a recent paper, [Chattopadhyay and Duflo \(2004b\)](#) show that the reservation of one third of the seats for women in the Panchayats (local governments) of West Bengal and Rajasthan has a positive impact on investment in infrastructures relevant to women's needs. [Pande \(2003\)](#) analyzes how the reservation of seats for Scheduled Castes and Scheduled Tribes in the State Assemblies increases the volume of transfers that these groups receive. [Chattopadhyay and Duflo \(2004a\)](#) also analyze the effect of caste reservations in Panchayats. To the best of my knowledge, this is the first paper to analyze the causal effect of female representation in the state governments of India on policy outcomes. It also contributes to the literature on female representation in India by analyzing the effect of female politicians over a long time period in the 16 major states of India, covering more than 95% of the total Indian population.² Decisions made by state governments are very important because they decide most of the development policies in India. More generally, this paper contributes to the literature on legislators' identity in India by identifying the effects of gender by caste on a wide range of policy outcomes, which had not been done previously.

This paper is organized as follows: [Section 2](#) provides the institutional background and describes the data used in this study. [Section 3](#) discusses the empirical strategy. [Section 4](#) describes the results. [Section 5](#) shows some robustness checks and [Section 5](#) concludes the paper.

2. Background and data

2.1. Institutions

The Vidhan Sabhas (State Legislative Assemblies) are directly elected bodies that carry out the administration of the government in

² The total population is estimated to be more than 1 billion.

Table 1

Descriptive statistics: state political dataset. Unit of observation: state in an electoral year: 128 observations.

Variable (as a fraction of the total seats in the state)	Mean	Sd
Proportion of seats won by women	0.0362	0.0246
Proportion of seats won by SC/ST women	0.0085	0.0094
Proportion of seats won by general women	0.0278	0.0201
Proportion of seats reserved for SC/ST	0.2154	0.0787
Proportion of seats won by women in close elections against men (3.5% margin)	0.0040	0.0060
Proportion of seats won by SC/ST women in close elections against SC/ST men (3.5% margin)	0.0007	0.0019
Proportion of seats won by general women in close elections against general men (3.5% margin)	0.0033	0.0053
Proportion of seats that had close elections between women and men (3.5% margin)	0.0085	0.0104
Proportion of seats won by women in close elections against men (4% margin)	0.0047	0.0069
Proportion of seats won by SC/ST women in close elections against SC/ST men (4% margin)	0.0008	0.0021
Proportion of seats won by general women in close elections against general men (4% margin)	0.0040	0.0063
Proportion of seats that had close elections between women and men (4% margin)	0.0097	0.0119
Proportion of seats won by women in close elections against men (3% margin)	0.0036	0.0054
Proportion of seats won by SC/ST women in close elections against SC/ST men (3% margin)	0.0006	0.0019
Proportion of seats won by general women in close elections against general men (3% margin)	0.0029	0.0046
Proportion of seats that had close elections between women and men (3% margin)	0.0074	0.0091
Proportion of seats won by women in close elections against men (2.5% margin)	0.0030	0.0051
Proportion of seats won by SC/ST women in close elections against SC/ST men (2.5% margin)	0.0006	0.0018
Proportion of seats won by general women in close elections against general men (2.5% margin)	0.0018	0.0034
Proportion of seats that had close elections between women and men (2.5% margin)	0.0061	0.0081
Proportion of seats won by Congress	0.4179	0.2533
Proportion of seats won by Hard Left	0.0819	0.1496
Proportion of seats won by Soft Left	0.0153	0.0417
Proportion of seats won by Hindu	0.0874	0.1428
Proportion of seats won by Janata	0.1405	0.2126
Proportion of seats won by Regional	0.1448	0.2377
Proportion of seats won by Others	0.0477	0.0804
Proportion of seats won by Independent	0.0645	0.0488
Proportion of seats won by Congress (women)	0.5035	0.3677
Proportion of seats won by Hard Left (women)	0.0877	0.2275
Proportion of seats won by Soft Left (women)	0.0140	0.0613
Proportion of seats won by Hindu (women)	0.0722	0.1661
Proportion of seats won by Janata (women)	0.1342	0.2555
Proportion of seats won by Regional (women)	0.1105	0.2384
Proportion of seats won by Others (women)	0.0438	0.1357
Proportion of seats won by Independent (women)	0.0340	0.0725

the Indian states that have the freedom to decide the expenditure and budget they will allocate to development policies.

India is a federal country, and the constitution gives considerable autonomy to the states and union territories. The average Indian state in the sample used in this paper has 58 million inhabitants. The State Legislative Assemblies have the power to make laws, amend central government laws, manage local governments and allocate government expenditure. States have power to deal with issues like public order and police, health, agriculture, irrigation, land rights, fisheries, industry and minerals. Other issues are shared between state and central governments; however, state governments have more influence over issues such as education, transportation and social security. State expenditures account for more than half of total government expenditures in India. In addition, state governments undertake around 85% of the education expenditure, more than 90% of the medical and health expenditure and around 60% of the expenditure on economic services. See Rao and Singh (1998).

The states and union territories are divided into single-member constituencies where first-past-the-post elections are held. The boundaries of assembly constituencies are drawn to make sure that constituencies have the same population size. Thus, assemblies vary in size according to the population. Members of the assembly serve five-year terms. Electors can cast one vote each for a candidate, and the winner is the candidate who receives the most votes. The democratic system in India is based on the principle of universal adult suffrage, and any Indian citizen who is registered as a voter and is over 25 years of age is allowed to run for election to the Central Government or to the State Legislative Assemblies. Candidates for the State Legislative Assemblies should be residents of the same state as the constituency they wish to represent. State elections are constitutionally scheduled

to take place every 5 years; however, in some cases and mostly due to shifting political alignments, elections have been called before the 5-year term. The minimum voting age has been 18 since 1989, before that time, it was 21.

The reservation of seats for women in the State Legislative Assemblies has been debated since September 1996, when the Government introduced a bill in Parliament proposing the reservation of one third of the seats for women both in the Central Government and in the State Legislative Assemblies. In the preceding elections, almost all parties promised seat reservation for women in their manifestos. To date, an agreement has not been reached even though the reservation of seats for women in Panchayats (local governments) is already in place, the new central government has reaffirmed its commitment to women's empowerment and the Women's Reservation Bill and the Upper House has approved it. Even if there is no "feminist party" in India, the Congressional coalition in power supports the reservation bill without any opposition from another major party, the BJP.

As in Besley and Burgess (2000, 2002, 2004), I group political parties in India into 8 party groupings: Congress, Hard Left, Soft Left, Janata, Hindu, Regional, independent candidates and other parties.³ Chhibber and Nooruddin (2004) classify Janata, Regional and Congress as centrist parties and Hindu as a right-wing party. Over the time period under consideration, Congress held the majority of seats, followed by the Regional and Janata parties; see Table 1. Table 1 also shows the proportion of seats won by women belonging to each party group. Consistent with the situation for all seats, seats won by women are mostly won by Congress women, followed by seats won

³ The political parties included in each group are defined in the Data appendix.

by the Janata and Regional parties. Thus, female politicians do not seem to be disproportionately represented in a particular party, and all parties have female candidates winning seats in elections.

The 1950 Indian constitution provides for the political reservation of seats for Scheduled Castes and Scheduled Tribes. According to Articles 330 and 332 of the constitution, prior to every national and state election, a number of jurisdictions will be reserved for these population groups. Both Scheduled Castes and Scheduled Tribes tend to be socially and economically disadvantaged, and they constitute about 25% of the total population in India. Scheduled Tribe (ST) seats are reserved according to the concentration of the ST population in that particular constituency. Scheduled Caste (SC) seats are reserved according to two standards: the concentration of the SC population and the dispersal of reservations in a given state.

The Constitution Scheduled Castes Order and the Constitution Scheduled Tribes Order 1950 provide a list of Scheduled Castes and Tribes, respectively, for each Indian state. These lists have been modified over time.

Scheduled Castes and Tribes are not formally defined as such in the Constitution. According to Article 341 of the Constitution, the Scheduled Castes are the castes, races or tribes or groups within castes, races or tribes deemed by public notification to be Scheduled Castes by the President in relation to that State or Union territory. According to Article 342, the Scheduled Tribes are the tribes or tribal communities or groups within these tribes and tribal communities that have been declared as such by the President through public notification. The lists of Scheduled Castes and Tribes have changed little over time.

Scheduled Tribes live in geographic isolation, have a distinct culture, are reserved with respect to communicating with the rest of the community and are economically underdeveloped. Scheduled Castes cannot be served by clean Brahmans or by those who serve caste Hindus. They are believed to pollute a high-caste Hindu by contact or proximity and a Hindu cannot be served water from their hands. Scheduled Castes are prevented from using public amenities such as roads and schools and are not treated as equals by high-caste men with the same education. In addition, they suffer from poverty and illiteracy in a greater proportion than the rest of the population and have traditionally been employed in menial occupations.^{4,5}

2.2. Female politicians in India

Several studies have documented the backgrounds and activities of female politicians in India, with information mainly derived from interviews of female politicians in some states. This information can be useful to interpret results found in this paper and to think about the mechanisms through which female politicians can have an effect on policy outcomes, even if these mechanisms cannot be specifically tested with the available data.

Although female political representation is very low in all Indian states, both general and SC/ST female representatives are shown to have an effect on policy decisions. Due to the manner in which decisions are made in the State Legislatures in India, even if female legislators do not constitute a “critical mass” in any voting procedure, they can still convince other legislators during or before the discussions, and they can also introduce proposals that are then voted on by the legislature. Mishra (2000) presents evidence from the debates in the Orissa Legislative Assembly showing that female legislators introduce proposals in the legislature, participate in the debates and try to convince their male counterparts of their ideas. This is true for both general and SC/ST female legislators. When asked what they had done to promote women's rights and progress, 41% tried to

convince other party members in private, 27.3% sought support outside their parties, 50% spoke on the floor, 13.63% offered amendments, 13.63% worked in committees and 4.54% sponsored bills. According to Singh (2003), female politicians appear to be active members of their parties, and they also raised a number of women's issues and managed to get them included in their parties' manifestoes. Female politicians acted as representatives on both women's and general concerns, as demonstrated by Singh's (2003) finding that women leaders in parliament raise both women-specific issues and general issues. Kumari and Dubey (1994) find that female politicians seem to unite on women's issues, irrespective of their parties.

Female politicians can also influence the construction of public goods. Pundir and Singh (2002) conducted a survey of female legislators in the Indian state of Uttar Pradesh and found that most female legislators who were in power between 1952 and 1996 were able to open schools and provide local amenities in their areas. They were also able to help their constituencies get grants from various government agencies to build infrastructure and for social welfare activities. Moreover, some of them were also engaged in programs to improve education. In summary, Pundir and Singh report that female politicians acted as a bridge between the state and the people, and that most projects in that state were developed under the influence of female legislators.

Data on politicians' incomes are not available for 1967–2001; however, some studies have analyzed the background of female politicians. Bhatt (1995); Kumari and Dubey (1994) and Kaushik (1993, 1996) find that female politicians generally come from middle-class backgrounds. This is more likely to be the case for general seats than for SC/ST reserved seats, where female politicians had lower education levels (Singh, 2003). Mishra (2000) finds that female legislators are less typical of the population in general than male legislators in Orissa. In particular, female legislators can be said to represent the upper-income section of the state's population.

If the cost of entering an election is higher for female than for male legislators, female legislators will tend to be from higher economic backgrounds, which seem to be confirmed by these studies. Given that SC/ST individuals tend to be poorer than general individuals, the same condition will apply to SC/ST legislators. The advantage of analyzing the effect of female legislators from lower economic backgrounds is that as a group they will be more comparable, i.e., SC/ST female legislators will probably be more similar to SC/ST male legislators than general female legislators will be to general male legislators. In addition, given that SC/ST legislators are likely to be poorer than general legislators, the gender effect will be estimated from those female legislators who are poorer, which means that this effect will be less likely to be contaminated by the class effect. Table A1 in the appendix confirms that indeed, SC/STs are a poorer and a more homogeneous group. Using data from the 55th Round of the National Sample Survey Data from India, I obtained information on monthly per capita expenditure and the amount of land owned at the household level. I then computed the mean and the standard deviation of these variables for SC/ST households and for general households. As expected, SC/ST households are poorer in that they own less land and they spend less money, but the standard deviation for the SC/ST group is also lower, and the difference is statistically significant. In general, however, politicians are more likely to come from the top of the expenditure (or land) distribution. I therefore performed the same calculations but divided the sample according to whether households were in the top decile up to the top five deciles. As before, SC/STs are a poorer and more homogeneous group. The same conclusion is also reached when considering the expenditure and land distributions of SC/ST legislators and general legislators separately, that is, comparing individuals who are at the top of the general distribution to individuals who are at the top of the SC/ST distribution. Politicians may also be more likely to come from urban areas. When the sample is divided according to whether individuals

⁴ Source: www.indianngos.com, Pande (2003) and Jain and Ratnam (1994). This is based on the Census Report of 1931(1).

⁵ For a more precise definition of Scheduled Castes and Scheduled Tribes see Pande (2003).

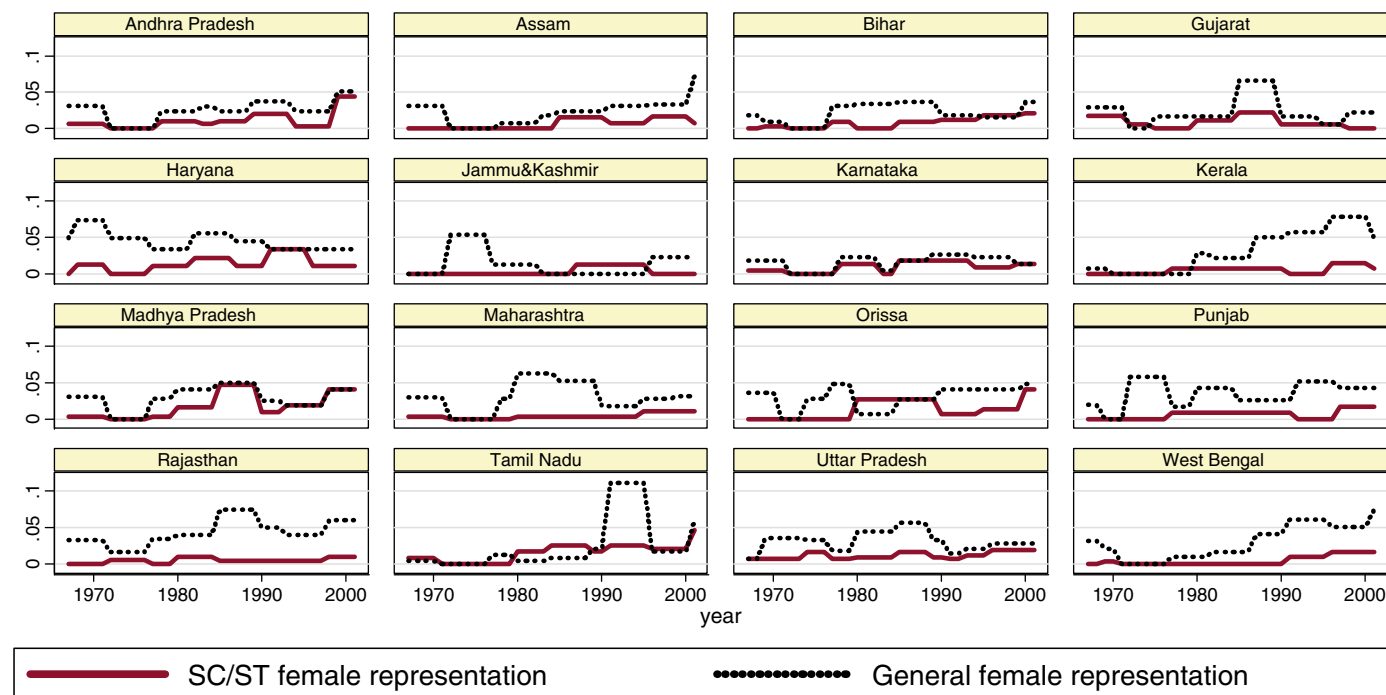


Fig. 1. SC/ST and General Female Representation.

live in urban or rural areas, SC/STs are still a poorer and more homogeneous group. Given that politicians may also come from more educated families, I divided households according to whether the household head had more than a secondary education, and the same conclusions apply.^{6,7}

2.3. Electoral data

The aim of this paper is to estimate the causal effect of female representation in the State Legislatures, both in general seats and in Scheduled Caste and Scheduled Tribe seats, on expenditure, public goods and various state laws. To do so, I use a dataset collected on state politicians in the 16 major Indian states⁸ during the period of 1967–2000, combined with data on laws, public goods and expenditures.

The electoral data were collected from the electoral reports published by the Election Commission of India. From these reports, information was gathered on individual candidates for the state elections in India from 1967 to 2001 in terms of their gender, political party and whether they ran for an SC/ST reserved seat. For female candidates, information was gathered on the votes they received and on their opponents, including their gender, political party and votes received. More details on the construction of the variables used in this study are shown in the Data appendix.

Fig. 1 shows variation across election years and states in terms of both SC/ST and general female representation. SC/ST and general female representation was low in all states during the time period under consideration. Between 1967 and 2001, a maximum of 11% of

the seats were won by a general woman and 5% of the seats were won by an SC/ST woman. Moreover, different states follow different trends in both general and SC/ST female political representation.⁹

Table 1 shows the descriptive statistics on the electoral variables used in this study. During this time period, 3.6% of the seats were won by women, 2.8% in general seats and 0.85% in SC/ST reserved seats.

2.4. Outcome variables

This section explains the choice of outcome variables used in this paper and describes the variables used.

The fact that men and women have different political preferences has been documented in the literature. According to citizen-candidate models, in the absence of complete policy commitment, the preferences of the legislator will matter for policy. Women seem to care more than men about issues such as redistribution, children, social welfare and poverty. See, for example, Lott and Kenny (1999); Edlund and Pande (2002); Edlund et al. (2005); Alesina and La Ferrara (2005) and Miller (2008).

It has also been shown that women tend to direct their income toward children in the household more than men do. See, for example, Lundberg et al. (1997). In addition, there is evidence that an increase in women's income improves girls' wellbeing in the family, as shown by Duflo (2003) and Thomas (1990).

Sometimes, differences in preferences may derive from women's socioeconomic status and interests (Edlund and Pande, 2002). Even if male and female legislator's preferences are not different, female politicians may be more sensitive to women's needs.

⁶ It should be noted that that expenditure and land variables are only available at the household level in the NSS data. In addition, the NSS does not provide income measures, so land and monthly per capita expenditure are an approximation of income.

⁷ In all cases, the difference in standard deviations is statistically significant, according to the Levene and Brown and Forsythe tests.

⁸ These 16 states account for more than 95% of the total population in India. They are Andhra Pradesh, Assam, Bihar, Gujarat, Haryana, Jammu & Kashmir, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Orissa, Punjab, Rajasthan, Tamil Nadu, Uttar Pradesh and West Bengal.

⁹ The proportion of seats won by SC/ST female politicians may depend on the amount of reserved seats, which in turn depends on the proportion of the population that is SC/ST in the state. Neither the SC/ST population nor the proportion of reserved seats by state has changed much during the time period under consideration. The proportion of SC/ST reserved seats and population, respectively, in each one of the states has been the following: Andhra Pradesh (0.18, 0.20), Assam (0.20, 0.20), Bihar (0.23, 0.22), Gujarat (0.21, 0.22), Haryana (0.19, 0.19), Jammu & Kashmir (0.09, 0.10), Karnataka (0.15, 0.19), Kerala (0.10, 0.11), Madhya Pradesh (0.36, 0.36), Maharashtra (0.13, 0.17), Orissa (0.38, 0.38), Punjab (0.24, 0.27), Rajasthan (0.28, 0.29), Tamil Nadu (0.19, 0.20), Uttar Pradesh (0.21, 0.21) and West Bengal (0.26, 0.27).

According to Mishra (2000), 86.36% of female politicians in Orissa received requests from women. As a first outcome variable, and to obtain direct evidence on whether female politicians favor women in policymaking, I use a variable that summarizes state amendments to a law that defines succession rights by gender. These amendments directly benefit women in that they grant women the right to inherit property. Specifically, the variable is a dummy variable that equals one if a given state made an amendment to the Hindu Succession Law on that year or before, with data taken from 1968 to 2000. These amendments are designed to ensure that both women and men have the same inheritance rights. If female politicians favor women in policymaking more than male politicians, or respond to women's requests more than male politicians, we would expect the effect of female politicians on this variable to be positive.

Mishra (2000) also finds that female politicians claimed to be interested in protecting and promoting the interests of the people and in fostering economic development. In particular, 14% were in favor of a socio-economic reform to eradicate social injustice. Because female politicians seem to care about the interests of the poor, I test for this possibility using as a dependent variable the land reforms passed by the different states that were designed as redistributive policy. In particular, I use the cumulative number of land reforms designed to tackle poverty enacted by the different states in India during 1968–1992. The types of land reforms used are Tenancy Reforms, Abolition of Intermediaries reforms and Land Ceiling legislation.¹⁰ Given that these types of land reforms were designed to reduce poverty, if female politicians care more about social injustice than men, we would expect the effect of female politicians on this variable to be positive. Further, because SC/ST individuals are poorer than the rest, female SC/ST legislators would be expected to have a larger effect than general female legislators.

I then use medical and educational public goods as outcome variables. Chhibber et al. (2004) conducted a survey in which they show that medical and educational public goods are perceived as very important by citizens. However, even if both men and women show preferences for these public goods, there are recognized gender differences in access to these public goods. Some important indicators such as literacy rates and health indicators show persistent gender and caste differences in access. For example, the adult female literacy rate in India is around 55% while the male literacy rate is 77%. Survival and immunization rates are also lower for girls and low-caste children. In addition, state governments are perceived by respondents as the most important institution to deliver these public goods. More importantly, according to their study, more than 90% of those interviewed by Chhibber et al. (2004) say that the government, or the government with the help of the community, should provide these public goods.

For this reason, I first analyze the effect of female representation on some educational inputs. I use the number of teachers per 1000 individuals in primary, middle and secondary institutions together with the fraction of female teachers in each type of institution. This second measure seems to be an important predictor of girl's school attendance, so it is interesting to analyze whether female politicians affect the gender composition of the teaching corps. In addition I use information on the number of secondary, middle, and primary schools per every thousand individuals. This will give an approximate idea of the supply of education.

I also use data on health public goods measures, such the number of hospitals, dispensaries and beds in hospitals and dispensaries per every 1000 individuals. This will give information on health provisions.

Female politicians would be more likely to invest on health and educational public goods than male politicians if, either they have stronger preferences for these goods, or if they are sensitive to the

educational and health gender and caste inequalities present in India. Given that these inequalities are more present among SC/STs, one could expect SC/ST female legislators to have a larger effect than general female legislators for these outcome variables.

Descriptive statistics for all these variables are shown in Table 2.

Finally, for completeness and to provide a broader view of the effects of female representation, I analyze the impact of female legislators on different components of the state budget. To do so, I collected data on the actual revenue and capital expenditure for each state and year. All states in India use the same budgetary classification, so expenditures from different states can be safely compared.

Revenue expenditure is defined as expenditure on the current consumption of goods and services by governmental departments, on Legislature, on State Administration, on tax collection, on debt servicing, on interest payments and on grants-in-aid to various institutions. Capital expenditure is defined as expenditure devoted to acquiring or creating assets of a material and permanent nature or to reducing liability.

The revenue expenditure in each state's budget is divided among two main categories: development expenditure and non-development expenditure. Development expenditure is money allocated to the maintenance of capital assets, both economic and social. Non-development expenditure is directed toward the current and consumption expenditures of the government.

Total capital disbursements are divided into two main categories: total capital outlay and discharge of internal debt. Total capital outlay is mainly composed of the development expenditure, which includes both social and economic Services. Discharge of internal debt includes different types of loans. Fig. 2 graphically depicts how the different expenditure categories are organized in both the capital and the revenue budgets of the Indian states.

The larger expenditure categories for which there were enough observations in both the capital and revenue budgets are selected, and capital and revenue expenditures are aggregated for each. I then use the share of the total expenditure devoted to each type of expenditure as an expenditure measure. This measure can be used to understand whether female politicians have an effect on the overall budget allocation. One could expect an effect on the budget allocation if female politicians are not satisfied with the current allocation. However, budget data does not provide information on whether female politicians want to change the expenditure allocation within each expenditure type. Descriptive statistics for the expenditure variables appear in Table 2. A budget reclassification took place in 1972, which means that budget data for the period 1967–1972 cannot be safely compared to budget data from later periods for all expenditure categories. For this reason, I focus on the time period 1972–2000 for the expenditure variables. The nominal variables are deflated using the Consumer Price Index for Agricultural Laborers (CPIAL) and the Consumer Price Index for Industrial Workers (CPIIW). The reference period is October 1973–March 1974.

3. Empirical strategy

To analyze the effects on government expenditures, public goods and laws enacted of having female representation in both SC/ST and general seats in the State Assemblies, I use panel data for the 16 main states in India during the period 1968–2000. The main difficulty is assessing the causal effect of female representation on the different policy outcomes.

To illustrate this, assume that the first empirical specification to be tested is:

$$Y_{it} = \alpha_i + \beta_t + \gamma F_{it} + X_{it}\delta + u_{it}. \quad (1)$$

Where Y_{it} is the measure of expenditure, public goods or policy for state i in year t . α_i and β_t are state and year fixed effects, F_{it} is the

¹⁰ I use the land reform measure created by Besley and Burgess (2000). Details on this variable can be found in that paper.

Table 2

Descriptive statistics: dependent variables and socio-economic characteristics. Unit of observation: state and year.

Variable (laws)	Obs.	Mean	Sd
Land reforms	400	3.2825	2.6477
Hindu succession law	528	0.1269	0.3332
Variable (educational inputs and expenditure)	Obs.	Mean	Sd
Primary schools per 1000 individuals	464	0.7443	0.3133
Middle schools per 1000 individuals	464	0.1955	0.1131
Secondary schools per 1000 individuals	400	0.0911	0.0330
Teachers in primary education per 1000 individuals	400	0.4104	0.1416
Teachers in middle education per 1000 individuals	400	0.2818	0.1403
Teachers in secondary education per 1000 individuals	400	0.3078	0.1068
Proportion of teachers that are women—primary	400	0.2883	0.1364
Proportion of teachers that are women—middle	400	0.2938	0.1266
Proportion of teachers that are women—secondary	400	0.2618	0.1144
Variable (health)	Obs.	Mean	Sd
Number of hospitals per 1000 individuals	478	0.0120	0.0137
Number of dispensaries per 1000 individuals	364	0.0293	0.0287
Number of beds in hospitals and dispensaries per 1000 individuals	339	0.7940	0.4448
Variable (expenditure—defined as a fraction of total expenditure)	Obs.	Mean	Sd
Total expenditure in the state per capita (log)	457	−3.5517	0.4777
Share of total expenditure devoted to capital investment	472	0.2522	0.0821
Development expenditure (both revenue and capital as a fraction of total expenditure)	472	0.6093	0.0636
Non-development expenditure (both revenue and capital as a fraction of total expenditure)	472	0.2424	0.0751
Social expenditure (both revenue and capital as a fraction of total expenditure)	472	0.3070	0.0490
Economic expenditure (both revenue and capital as a fraction of total expenditure)	472	0.2993	0.0731
Education expenditure (both revenue and capital as a fraction of total expenditure)	472	0.1599	0.0353
Health expenditure (both revenue and capital as a fraction of total expenditure)	472	0.0592	0.0199
Family welfare expenditure (both revenue and capital as a fraction of total expenditure)	431	0.0083	0.0035
Housing expenditure (both revenue and capital as a fraction of total expenditure)	471	0.0060	0.0039
Social security and welfare expenditure (both revenue and capital as a fraction of total expenditure)	365	0.0209	0.0148
Agriculture expenditure (both revenue and capital as a fraction of total expenditure)	470	0.0850	0.0447
Industry and minerals expenditure (both revenue and capital as a fraction of total expenditure)	471	0.0173	0.0098
General economic services expenditure (both revenue and capital as a fraction of total expenditure)	471	0.0162	0.0175
Variable (other controls)	Obs.	Mean	Sd
Real net state domestic product per capita	528	0.1274	0.0545
Fraction of the population that is SC/ST	528	0.2232	0.0778
Fraction of the population that is rural	528	0.7698	0.0796

fraction of seats occupied by women in the state assemblies¹¹ elected in previous elections, and X_{it} represents other control variables included in the regression, which vary across states and over time and can also have an effect on the dependent variables of interest.

Even though state fixed effects control for permanent differences across states in female representation and the outcome variables, and year fixed effects control for nationwide shocks in female representation and the outcome variables, I cannot rule out the existence of an omitted variable that varies across states and over time and affects both female representation and the outcome variables. Thus, the OLS estimates reported in this econometric specification will be biased, and specification 1 will not allow the effect of female representation on the dependent variables of interest to be correctly identified.

The same identification challenge is faced when dividing female politicians according to whether or not they contested for a reserved SC/ST seat:

$$Y_{it} = \alpha_i + \beta_t + \varphi Fgen_{it} + \theta Fscst_{it} + X_{it}\delta + u_{it}. \quad (2)$$

Where $Fgen_{it}$ is the fraction of seats won by general women elected in the previous elections and $Fscst_{it}$ is the fraction of seats won by SC/ST women elected in the previous elections.

¹¹ If each legislator has one vote, the fraction of legislators that are female will represent the weight that female politicians have in the legislature.

As before, the omitted variable might affect the dependent variable and be correlated with the fraction of seats in the state won by general and SC/ST female politicians. To be clear, if women are elected in constituencies where there is a “preference for female politicians,” this variable will affect how many general and SC/ST female legislators are elected, thus, biasing the results obtained.

3.1. Identification strategy

To identify the causal effect of female politicians, what is needed is an exogenous variation on who ultimately wins the seat. For this, I take advantage of the existence of close elections between a female and a male candidate, elections in which the winner beat the runner up by a very small number of votes.¹²

As an instrument for the fraction of seats won by a female politician, I use the fraction of seats won by a female politician in a close election against a male politician. Female candidates who barely won the elections against a man do so in constituencies where there is no clear “preference for female politicians,” and are ex ante comparable to constituencies in which male candidates win by a very small margin of votes against female candidates. In very close elections, if there is an element of uncertainty about the final

¹² Close elections are defined as those in which the winner beats the runner up by less than 3.5% of votes. In the [Robustness checks](#) section, I run the regressions such that close elections are defined by different margins and results do not change.

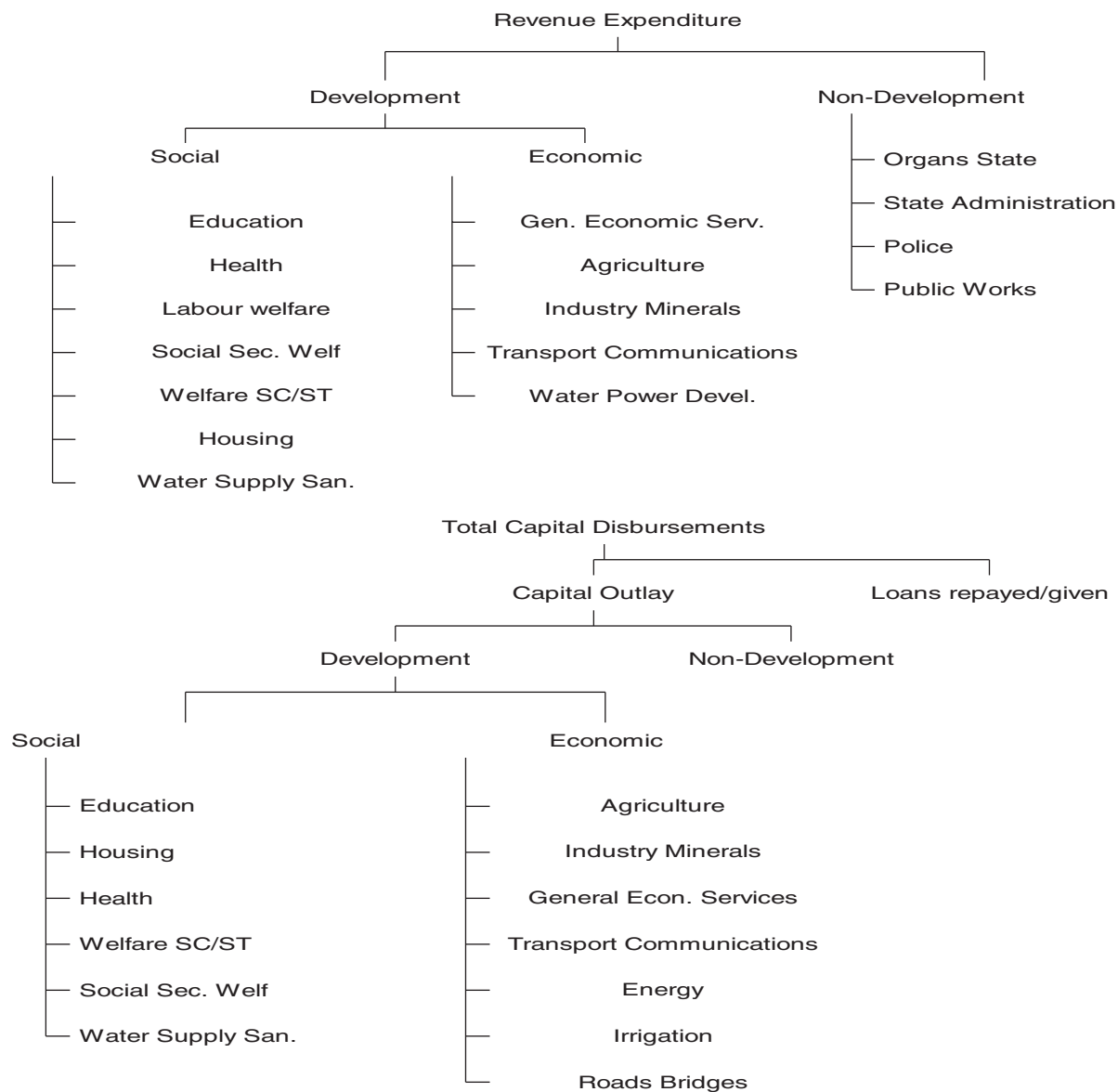


Fig. 2. State Budgets.

outcome, the winner will be determined by chance (turnout or other elements related to the election day). Then, in elections for which the first two candidates are of different genders, either the female or the male candidates could have won the election, and thus, the fact that the female candidate won the seat instead of the male can be considered as good as random. I use as an instrument for the fraction of seats won by female politicians the fraction of seats won by female politicians who won “by chance” or due to this randomness.

However, to take advantage of this randomness to identify the causal effect of the gender of politicians, a strong assumption has to hold: male and female politicians winning close elections will be similar in all observable and unobservable variables that might determine policy preferences. They will only differ in gender. In particular, if female politicians winning close elections have more income, ability or education than male politicians winning close elections, or if they belong to different political parties and these characteristics matter for policy determination, the effect of gender will be biased. The direction of the bias would in principle be unknown, as it would depend on how those characteristics affect policy determination and whether they are more important for female or male politicians. In the following subsection, I discuss the validity of

the identification strategy, and I show that, in general, men and women winning close elections are similar in observable characteristics and do so in similar constituencies. Differences in political affiliation are also discussed in the [Robustness checks](#) section. There may still be differences in other unobserved variables, but the fact that male and female politicians are similar in observable characteristics is reassuring. In addition, in what follows I demonstrate that the outcome of a close election cannot be predicted and that states and elections where more men won in close elections are very similar to those where more women won in close elections. Finally, states and elections that had close elections between women and men are very similar to the rest, which is important to argue in favor of the external validity of the results obtained.

3.2. Validity of the identification strategy

3.2.1. Predictability of the outcome

For this to be a valid identification strategy, one should demonstrate that the fraction of close elections won by women in a given state and year cannot be predicted by any other state characteristic. This fraction is shown in [Table 3](#). I have tried to predict

Table 3

Probability of women winning in close elections against men. Dependent variable: proportion of women who won in a close election against a man per state and election year. Unit of observation: state and election year. Sample 1967–2001. Sample with close elections.

	All	General	SC/ST
Turnout	–0.4463 [0.5156]	–0.3858 [0.5595]	0.2696 [0.3245]
Proportion of seats contesting close elections Congress	0.2470 [0.4351]	0.2462 [0.4596]	–0.0425 [0.2396]
Proportion of seats contesting close elections Hard Left	–0.2527 [0.4299]	–0.2697 [0.4397]	–0.1830 [0.2747]
Proportion of seats contesting close elections Soft Left	–0.9954 [0.8147]	–0.5826 [0.8308]	–0.3386 [1.1474]
Proportion of seats contesting close elections Hindu	0.3175 [0.3606]	–0.2166 [0.4417]	0.5408 [0.4280]
Proportion of seats contesting close elections Regional	0.0674 [0.4060]	–0.0660 [0.4163]	–0.1106 [0.3218]
Proportion of seats contesting close elections Janata	–0.1525 [0.3727]	–0.1819 [0.3884]	–0.2844 [0.2942]
Proportion of seats contesting close elections Others	–0.2421 [0.3361]	–0.3375 [0.3839]	–0.0595 [0.2974]
Proportion of seats reserved for SC/ST	–0.5344 [0.6368]	–0.5040 [0.6804]	0.5376 [0.5011]
Political competition in the state	–0.0089 [0.2342]	–0.0934 [0.2439]	0.1211 [0.2090]
Proportion of seats that had close elections in the past	1.9208 [2.3657]	1.4581 [2.3957]	2.3858 [2.2097]
Proportion of seats won by women in the past	–0.8424 [0.6208]	–0.4085 [0.7170]	–0.6360 [0.7645]
Literacy rate	0.4932 [0.3796]	0.3047 [0.3955]	0.0683 [0.3962]
Observations	89	89	89

Robust standard errors are reported in parentheses.*Significant at the 10%, **significant at the 5%, ***significant at the 1%.

the fraction of close elections between women and men won by women per state and election year (in states and elections for which there were close elections between women and men). This analysis is done for all seats, and then separately for SC/ST reserved seats and general seats. I run a regression with these variables as dependent variables and different state characteristics on the right hand side. Even though this is not proof of exogeneity, reassuringly, variables such as electoral turnout, the proportion of seats in close elections contested by the different parties, the proportion of reserved seats, political competition,¹³ the proportion of seats that had close elections in the past, the proportion of seats won by women in the past and literacy rates do not have any effect on the fraction of close elections between women and men that are won by women.

3.2.2. State characteristics

In addition, if the outcome of a close election is to be considered random, it should be observed that states and electoral years in which more men than women won in close elections have similar characteristics, compared to states and electoral years in which more women than men won. In other words, both types of states and years should only differ in the fraction of close elections won by female politicians. In Table 4, different characteristics are compared for both types of states and years for three cases: considering all seats, considering only SC/ST reserved seats and considering only general seats. I report the difference between the mean of each variable for both groups together with the corresponding standard error. I use information on the proportion of seats won by female politicians in elections that were not close, the number of female candidates per seat, male and female turnout, the proportion of reserved seats,

newspaper circulation per capita and real net state domestic product. None of the differences is significant, and they are in general small.

3.2.3. External validity

Identification comes from variation across states and years in the proportion of seats won by women in a close election against a man, having controlled for the fraction of seats that had close elections between women and men. To derive policy implications from the results obtained, it is useful to check that states and electoral years that had more close elections between women and men do not have different characteristics than the rest. In Panel A of Table 5, I compare different characteristics for states and years that had more or fewer close elections than the median. I use information on the fraction of urban population, male and female literacy rates, the fraction of seats that are reserved for SC/STs, male and female turnout, newspaper circulation per capita and the proportion of seats won by the different political parties. Given that both types of states and electoral years are very similar in those characteristics, I can argue in favor of the external validity of the results obtained.¹⁴ In fact, differences are not significant and quite small, compared to the average of the variables and their range.

3.2.4. Political parties, candidate and constituency characteristics

Given that there may be concerns that the existence of close elections or the gender of the winner in close elections might affect the composition of political parties in power, I use data on candidates contesting and winning in close elections in Panels B and C of Table 5. In Panel B, I demonstrate that the distribution of seats won by parties in close elections between women and men is very similar to the distribution of seats won in other circumstances. This finding is reassuring, as it indicates that close elections are not dominated by a particular set of parties. In Panel C, I present the distribution of seats won by female politicians belonging to the different political parties, both in close elections and in elections that were not close. The distribution of parties is as well quite similar.¹⁵

Finally, candidate and constituency characteristics should be very similar as well, whether female or male candidates won the election. This analysis is presented in Table 6. Male and female candidates who won in close elections against a candidate of the other gender did so in constituencies where there were the same number of female candidates in the past,¹⁶ in constituencies that had the same number of close elections in the past, and where turnout was the same and the winner received the same number of votes. This happens for all seats, for general seats and for reserved SC/ST seats. Interestingly, the winner receives approximately 40% of the votes, while the runner up receives more than 36.5% of the votes; this leaves any other potential candidates with 23.5% of the votes, which is a large difference between the winner and the runner up. In this table, the mean and standard deviation of each variable are reported. All differences are small with respect to the mean, except for the dummy variable for whether or not the winner was the incumbent. In fact, there are very few candidates who were the incumbent and win again, consistent with the explanation that there is incumbency disadvantage in India (see Linden, 2004). Men seem to be slightly more likely to be the incumbent, consistent with the explanation that men have more political experience, but the difference is not statistically significant.

¹⁴ It is still important to include the fraction of seats won in close elections between women and men in both stages in the 2SLS, as the test in Table 5 does not take into account intertemporal variation.

¹⁵ Female politicians tend to belong to Congress parties. In the Robustness checks section, I return to this issue.

¹⁶ This is very important, as previous exposure to female politicians might reduce voter bias and increase the likelihood of female politicians winning the election. See Beaman et al. (2009).

¹³ Political competition is defined as minus the absolute value of the difference in the share of seats occupied by the dominant political party and its main competitor. See Besley and Burgess (2002).

Table 4

State characteristics: men contesting against women and women contesting against men in close elections. Unit of observation: state and election year. Sample 1967–2001. Sample with close elections.

	All seats	SC/ST seats	General seats
Difference in the proportion of seats won by women in elections that were not close (States in which more men than women won in close elections compared to States in which more women than men won)	–0.0036 [0.0047]	–0.0040 [0.0080]	–0.0075 [0.0043]
Average (whole sample)	0.0396	0.0398	0.0397
Standard deviation (whole sample)	0.0222	0.0249	0.0196
Difference in the number of female candidates per seat (States in which more men than women won in close elections compared to States in which more women than men won)	–0.0457 [0.0413]	–0.0342 [0.0521]	–0.0715 [0.0443]
Average (whole sample)	0.3037	0.3381	0.3047
Standard deviation (whole sample)	0.1960	0.1615	0.2014
Difference in male turnout (States in which more men than women won in close elections compared to States in which more women than men won)	–0.0239 [0.0276]	–0.0040 [0.0255]	0.0064 [0.0308]
Average (whole sample)	0.7149	0.6687	0.7235
Standard deviation (whole sample)	0.1261	0.0736	0.1327
Difference in female turnout (States in which more men than women won in close elections compared to States in which more women than men won)	–0.0464 [0.0288]	–0.0045 [0.0375]	–0.0247 [0.0322]
Average (whole sample)	0.5780	0.5806	0.6405
Standard deviation (whole sample)	0.1333	0.1083	0.1390
Difference in the proportion of seats reserved for SC/ST (States in which more men than women won in close elections compared to States in which more women than men won)	–0.0122 [0.0160]	0.0010 [0.0240]	–0.0167 [0.0171]
Average (whole sample)	0.2218	0.2331	0.2203
Standard deviation (whole sample)	0.0759	0.0738	0.0769
Difference in newspaper circulation per capita (States in which more men than women won in close elections compared to States in which more women than men won)	–0.0031 [0.0115]	–0.0037 [0.0096]	–0.0129 [0.0128]
Average (whole sample)	0.0632	0.0546	0.0642
Standard deviation (whole sample)	0.0505	0.0267	0.0530
Difference in real net state domestic product per capita (States in which more men than women won in close elections compared to States in which more women than men won)	–0.0025 [0.0122]	–0.0028 [0.0179]	–0.0048 [0.0134]
Average (whole sample)	0.1279	0.1291	0.1272
Standard deviation (whole sample)	0.0554	0.0523	0.0568
Number of state-elections	90	39	81

3.3. Empirical strategy: 2SLS

To identify the effect of female politicians, both in the aggregate and in general and SC/ST seats, I take advantage of the fact that some of these female politicians won in close elections against men. In this subsection, I will explain in more detail the model to be estimated. The methodology used is based on the fact that close elections between a female and a male candidate generate “near-experimental” causal estimates of the effect that female political representation has on the policy variables. The first stage regression is:

$$F_{it} = \alpha_i + \beta_t + \kappa FC_{it} + \mu TC_{it} + X_{it}\delta + \varepsilon_{it}. \quad (3)$$

F_{it} is the fraction of seats in the state that were won by a female politician elected in the previous elections. The instrument for this variable is FC_{it} , the fraction of seats in the state won by a woman in a close election against a man. To construct the instrument, I use data on the vote share received by each one of the female candidates in state elections in India during the period 1967–1999, together with the margins of votes obtained against the winner or, in the case that they won the elections, data on the runners-up and the margin of votes obtained against them. For the election years, I use female representation as it was in the previous elections, under the assumption that newly elected legislators may not have much power during the first year. Moreover, this controls for the fact that some of the elections are held at the end of the year, when decisions have already been made.¹⁷

¹⁷ The results are robust to including the contemporaneous female representation variable in the election years. The results are also robust to specifications in which the average female representation is computed for the two or three years before an election. This finding would account for the fact that more time may be needed to build some public goods. These results are available from the author on request.

The year fixed effects control for nationwide shocks or policies that were implemented in all states at the same time. The state fixed effects control for state-specific characteristics that do not vary over time.

The second stage regression is specification 4, Y_{it} is the policy outcome variable for state i at time t . Because observations in the same state and electoral cycle can be correlated, I compute the robust standard errors clustered at the state and electoral cycle.¹⁸

$$Y_{it} = \alpha_i + \beta_t + \gamma F_{it} + \lambda TC_{it} + X_{it}\delta + u_{it}. \quad (4)$$

I control for TC_{it} , the fraction of seats in the state in which there were close elections between women and men in both stages. The fraction of seats that had close elections between men and women controls for the fact that the existence of this type of close election may not be a random event. However, the outcome of a close election can be considered as good as random, meaning that the winner's gender in close elections between women and men can be considered as good as random as well. To be clear, the impact of the existence of close elections between women and men on the policy variables should be controlled for in specification 4 and partialled out of the instrument in specification 3.

To identify the effects of female politicians who contested for SC/ST seats separately from the effect of female politicians who contested for general seats, a similar strategy is used, but I now take advantage of the fact that some seats in the State Assemblies are reserved for the Scheduled Castes and Tribes. I then divide the female representation variable according to whether or not female politicians were

¹⁸ I cannot cluster at the state level, as I only have included 16 states in the sample. In the **Robustness checks** section, I present results with different clustering procedures.

Table 5

Comparison between close elections and elections that are not close.

Panel A: State characteristics: states which had more and fewer close elections between women and men			
Unit of observation: state and election year. Sample 1967–2001.			
(Difference between states with more and fewer close elections than the median)	All seats	Mean of variable	Sd of variable
Urban population	0.0044 [0.0141]	0.2256	0.0818
Male literacy rate	1.4583 [2.6901]	54.6739	13.3603
Female literacy rate	−0.6978 [3.1047]	26.1263	15.3992
Proportion of seats reserved for SC/ST	−0.0060 [0.0136]	0.2157	0.0788
Female turnout	−0.0322 [0.0242]	0.5769	0.1320
Male turnout	−0.0189 [0.1074]	0.6545	0.1172
Newspaper circulation per capita	−0.0094 [0.0088]	0.0590	0.0487
Proportion of seats won by Congress	0.0657 [0.0435]	0.4081	0.2537
Proportion of seats won by Hard Left	0.0095 [0.0261]	0.0837	0.1513
Proportion of seats won by Soft Left	0.0008 [0.0070]	0.0145	0.0408
Proportion of seats won by Regional	−0.0182 [0.0401]	0.1413	0.2322
Proportion of seats won by Hindu	−0.0180 [0.0243]	0.0874	0.1407
Proportion of seats won by Janata	0.0031 [0.0362]	0.1338	0.2091
Number of state-elections	135	135	135
Panel B: Political parties and winners in close and no close elections			
Unit of observation: candidate. Sample 1967–2001	All	All	All
	Close (N°.)	Close (%)	No close (N°.)
Congress	113	38.44	11,859
Hard Left	31	10.54	2587
Hindu	34	11.56	3024
Independent	18	6.12	1743
Janata	30	10.2	4144
Regional	32	10.88	3144
Soft Left	9	3.06	721
Others	27	9.18	2234
Total	294	100	29,456
Panel C: Political parties and female winners in close and no close elections			
Unit of observation: candidate. Sample 1967–2001	Women	Women	Women
	Close (N°.)	Close (%)	No close (N°.)
Congress	80	57.97	556
Hard Left	17	12.32	105
Hindu	9	6.52	92
Independent	4	2.9	34
Janata	9	6.52	121
Regional	11	7.97	105
Soft Left	0	0	17
Others	8	5.8	112
Total	138	100	1142

contesting in a reserved SC/ST seat. The reason behind dividing female representatives is that female legislators who won the election for a general seat might have different policy preferences than female legislators who won the election for an SC/ST seat. India provides the opportunity of exploiting mandated political reservation for SC/STs to divide the female representation variable according to the type of seat for which they contested. The comparison of SC/ST and general female legislators provides evidence on whether or not the identity of the legislator is defined by both gender and caste, allowing for the distinction between gender and caste effects.

If the cost of running for election is higher for women than for men, female legislators will be of comparatively higher classes than male legislators. Thus, the female representation variable may only

indicate class, not gender. As it is explained in [Section 2.2](#), this will not be the case for SC/ST female legislators, as they come from the poorest section of the society, and SC/ST legislators are a more homogeneous group.

I use as an instrument for the fraction of seats won by SC/ST female politicians the fraction of seats won by SC/ST women in a close election against an SC/ST man, defining close elections in the same way as previously.¹⁹ Similarly, I use as an instrument for the fraction of seats won by a general woman the fraction of seats won by a general woman

¹⁹ There has almost never been a case in which an SC/ST legislator won a non-reserved seat. This finding implies that knowing whether a seat is reserved or not, one can signal the caste of the legislator who wins that seat.

Table 6

Constituency and candidate characteristics: close elections between women and men. Unit of observation: candidate. Sample 1967–2001. 90 state-years of election with close elections between women and men.

Group	All			General			SC/ST		
	Obs	Mean	Std. err.	Obs	Mean	Std. err.	Obs	Mean	Std. err.
Other female candidates in the constituency in the past									
Man won in close election	156	3.8013	0.2531	115	3.5565	0.2655	41	4.4878	0.6040
Woman won in close election	138	3.9203	0.2443	114	3.7719	0.2529	24	4.6250	0.7244
Difference		−0.1190	0.3538		−0.2154	0.3668		−0.1372	0.9649
Whole sample	Obs 294	Mean 3.8571	Std. dev. 3.0232	Obs 229	Mean 3.6638	Std. dev. 2.7713	Obs 65	Mean 4.5385	Std. dev. 3.7252
Winner was the incumbent									
Man won in close election	156	0.1154	0.0257	115	0.0870	0.0264	41	0.1951	0.0627
Woman won in close election	138	0.0652	0.0211	114	0.0614	0.0226	24	0.0833	0.0576
Difference		0.0502	0.0337		0.0256	0.0348		0.1118	0.0931
Whole sample	Obs 294	Mean 0.0918	Std. dev. 0.2893	Obs 229	Mean 0.0742	Std. dev. 0.2627	Obs 65	Mean 0.1538	Std. dev. 0.3636
Number of close elections in the constituency in the past									
Man won in close election	156	0.2628	0.0408	115	0.2609	0.0495	41	0.2683	0.0701
Woman won in close election	138	0.2826	0.0436	114	0.3158	0.0503	24	0.1250	0.0690
Difference		−0.0198	0.0597		−0.0549	0.0706		0.1433	0.1058
Whole sample	Obs 294	Mean 0.2721	Std. dev. 0.5101	Obs 229	Mean 0.2882	Std. dev. 0.5338	Obs 65	Mean 0.2154	Std. dev. 0.4143
Votes received by the winner									
Man won in close election	156	32,411.7900	1221.6050	115	32,821.3900	1448.3570	41	31,262.9300	2277.8770
Woman won in close election	138	33,617.5200	1275.2640	114	34,309.7300	1426.0410	24	30,329.5400	2770.1810
Difference		−1205.7270	1767.9480		−1488.3370	2032.7450		933.3852	3655.6720
Whole sample	Obs 294	Mean 32,977.7500	Std. dev. 15,114.7500	Obs 229	Mean 33,562.3100	Std. dev. 15,364.7000	Obs 65	Mean 30,918.2900	Std. dev. 14,119.3000
Total votes in the constituency									
Man won in close election	156	83,402.1100	2535.6380	115	84,884.8300	2853.4360	41	79,243.2400	5396.4440
Woman won in close election	138	81,680.8800	2521.5470	114	82,777.8200	2807.4240	24	76,470.4200	5692.6460
Difference		1721.2320	3590.6830		2107.0190	4003.3270		2772.8270	8296.5690
Whole sample	Obs 294	Mean 82,594.1800	Std. dev. 30,685.5300	Obs 229	Mean 83,835.9300	Std. dev. 30,242.3100	Obs 65	Mean 78,219.4300	Std. dev. 32,055.6300

in a close election against a general man. I then estimate a first stage regression similar to specification 3, separately for SC/ST and general female politicians, and a second stage regression of the form:

$$Y_{it} = \alpha_i + \beta_t + \varphi Fgen_{it} + \theta Fscst_{it} + \lambda TC_{it} + X_{it}\delta + u_{it}. \quad (5)$$

In these regressions, I also control for TC_{it} in both stages, as the existence of close elections cannot be considered a random event.

In all regressions, I include as control variables the proportion of seats won by each of the parties in each election in order to distinguish the effect of gender from the effect of party ideology.²⁰ Other control variables include the real net state domestic product per capita, the share of rural population over total population, and a dummy for the year before the elections took place.

²⁰ There are eight main party groups: Congress, Hard Left, Soft Left, Janata, Hindu, Regional, Independent candidates and other parties. Congress parties include Indian National Congress Urs, Indian National Congress Socialist Parties and Indian National Congress. Hard Left parties include the Communist Party of India and Communist Party of India Marxist. Soft Left parties include Praja Socialist Party and Socialist Party. Janata parties include Janata, Lok Dal, and Janata Dal parties. Hindu parties include the Bharatiya Janata Party. Regional parties include Telegu Desam, Asom Gana Parishad, Jammu & Kashmir National Congress, Shiv Sena, Uktal Congress, Shiromani Akali Dal and other state specific parties.

All of these variables might affect the dependent variable in different ways: the rural population variable and the real net state domestic product per capita might offer perspective on the economic backwardness of the state, which can also influence the policy decisions adopted. The dummy variable for the year before the elections takes into account that legislators might adopt different policies just before elections to increase their probability of being re-elected.

Other controls are the fraction of seats reserved for SC/STs, as this can also affect the type of policies applied. As reservation for lower castes is a function of the SC/ST population, it is also controlled for in the regressions. I also include state-specific time trends in the regressions, which allow for omitted trends that vary by state.²¹

The identification strategy is based on the regression discontinuity design, although it is not directly used in this study. To do this, I would need to relate each particular legislator to a policy decision, and decisions are made by the whole legislature. Because in India, State Assemblies are composed of many legislators who choose a single expenditure measure or policy each year, I used close elections as an

²¹ Thus, the identification assumption relies on the fact that, conditional on the fraction of close elections in the state, state and year fixed effects, state-specific time trends and all the other controls, the fraction of seats in the state won by a woman in a close election against a man only affects the outcome variable through its effect on the fraction of seats in the state won by a woman.

Table 7

Laws. Dependent variables: land reforms and Hindu Succession Law.

	1	2	3	4	5	6	7	8
	Hindu Succession Law				Land reform laws			
	OLS	OLS	2SLS	2SLS	OLS	OLS	2SLS	2SLS
Fraction of seats won by a woman	0.8717 (0.6535)		0.7825 (1.2142)		−0.9383 (1.7623)		−2.0330 (2.3924)	
Fraction of seats won by an SC/ST woman		0.6633 (1.3732)		12.9295** (5.8790)		−9.6025 (6.1563)		23.6979** (11.3356)
Fraction of seats won by a general woman		0.9043 (0.7924)		−1.4433 (1.3574)		0.1022 (1.7813)		−6.3982** (2.8492)
Fraction of seats that had close elections between women and men			−2.2432* (1.3271)	−1.3854 (1.5007)			1.1890 (3.9009)	6.0973 (4.6810)
SC/ST reserved seats	−0.8963 (0.7046)	−0.8777 (0.7214)	−0.9752 (0.6541)	−2.0338** (1.0290)	−3.9243 (3.1141)	−3.5109 (2.9911)	−3.6192 (2.9951)	−3.7217 (3.5984)
SC/ST population (proportion)	−1.7467* (0.9326)	−1.7810* (0.9651)	−1.6693* (0.9060)	0.3969 (1.2875)	−6.4611 (4.0107)	−7.1315* (4.0961)	−6.4476* (3.6403)	−4.8468 (3.8800)
Rural population (proportion)	0.7502 (3.6377)	0.7732 (3.5927)	1.1736 (3.3779)	−0.2976 (3.9255)	12.1303 (15.8104)	13.4496 (15.6195)	12.3328 (14.4768)	9.0348 (15.1149)
Year before elections dummy	−0.0111 (0.0171)	−0.0112 (0.0172)	−0.0130 (0.0151)	−0.0041 (0.0160)	0.0817 (0.0693)	0.0747 (0.0702)	0.0796 (0.0629)	0.1023 (0.0651)
Real per capita NSDP	2.0120** (0.9539)	2.0126** (0.9540)	2.0047** (0.8553)	1.9329* (1.0230)	−5.8983* (2.9971)	−5.9642** (2.9099)	−6.0400** (2.7251)	−5.8397* (3.1920)
Prop seats Hard Left	−0.7903** (0.3216)	−0.7939** (0.3254)	−0.8479*** (0.2793)	−0.6031* (0.3176)	−0.7720 (1.1903)	−0.8181 (1.1702)	−0.6705 (1.1401)	−0.2695 (1.2437)
Prop seats Congress	−0.6155*** (0.1867)	−0.6149*** (0.1860)	−0.5951*** (0.1677)	−0.6251*** (0.2061)	−0.6980 (0.6114)	−0.6442 (0.5905)	−0.6440 (0.5811)	−0.6820 (0.6572)
Prop seats Regional	−0.4598** (0.1931)	−0.4600** (0.1934)	−0.4125** (0.1821)	−0.4132** (0.2035)	−0.3144 (0.5653)	−0.3044 (0.5622)	−0.2949 (0.5325)	−0.2406 (0.5783)
Prop seats Hindu	−0.4880** (0.2176)	−0.4898** (0.2199)	−0.5081** (0.2145)	−0.4042 (0.2685)	0.2545 (0.6988)	0.0727 (0.7286)	0.2127 (0.6495)	0.8602 (0.8416)
Prop seats Janata	−0.5360*** (0.1780)	−0.5374*** (0.1800)	−0.5271*** (0.1580)	−0.4368** (0.1861)	−1.3452** (0.5816)	−1.3942** (0.5837)	−1.3028** (0.5519)	−1.0221* (0.6108)
Prop seats Soft Left	−1.3713*** (0.4506)	−1.3794*** (0.4503)	−1.2219*** (0.4051)	−0.7947 (0.5272)	−7.8814*** (1.9678)	−8.2914*** (1.9809)	−7.9568*** (1.7629)	−6.9059*** (1.9822)
Observations	528	528	528	528	400	400	400	400
R-squared	0.817	0.817	0.796	0.742	0.979	0.979	0.977	0.972

Robust standard errors clustered at the state-elections level are reported in parentheses. *Significant at the 10%, **significant at the 5%, ***significant at the 1%. Columns 1, 2, 5 and 6 are OLS regressions. The rest are 2SLS regressions in which the fraction of seats won by a woman in a close election against a man is used to instrument the fraction of seats won by a woman. Close elections are defined as those in which the winner beat the runner up by less than 3.5% of votes. Regressions include state and year fixed effects, together with state-year trends.

instrument. Regression discontinuity has been widely used and was first introduced in the context of elections by Lee (2001 and 2008) for incumbency advantage and Pettersson-Lidbom (2001 and 2008) for the effect of party control on fiscal policies. Regression discontinuity has been used as an instrument by Angrist and Lavy (1999) to estimate the impact of class size on educational achievements and by Rehavi (2007), who used close elections between women and men in the US as an instrument to estimate the effect of female politicians at the state level on expenditures. In the same spirit, to identify the causal effect of female politicians, I use as an instrument for female representation the fraction of seats in the state won by a woman in a close election against a man.

4. Results

4.1. Laws

As a first step, in this section, I explore the effects of having female representation in the State Assemblies in India in two types of policies, one that is directly targeted to women and another one that targets the poor. The different states in India have had the power to amend different national laws and to implement different types of land reforms during the time period under consideration.

The first policy to be analyzed directly favors women, as it gives them inheritance rights. The Hindu Succession Act (1956) deals with interstate succession among Hindus.²² It includes the concept of the Mitakshara Joint Family, under which, at birth, the son acquires a right and interest in

the family property. According to this, a son, grandson and great grandson constitute a class of coparceners, based on birth in the family. Under this system, joint family property devolves by survivorship within the coparcenary, but no female is a member of the coparcenary.

During the time period under consideration, five states in India have recognized that a daughter needs to be treated equally and become a coparcener in her own right in the same way as the son. In 1975, the state of Kerala abolished the right to claim any interest in any property belonging to an ancestor during his or her lifetime. They abolished the Joint Hindu Family system, resolving the gender differences in inheritance rights.²³ The other four states, namely, Andhra Pradesh, Tamil Nadu, Maharashtra and Karnataka amended the Hindu Succession Law by removing the gender discrimination in the Mitakshara Coparcenary system.²⁴ To conduct the analysis, a variable is created that is equal to one if the state has legislated in favor of the abolition of gender discrimination in that particular year or in the past, and zero otherwise.

The results for this policy are reported in Table 7. Columns 1 and 2 contain results for the OLS regressions, while columns 3 and 4 contain results for the 2SLS regressions.

The OLS results do not indicate any correlation between female political representation and the Hindu Succession Law, whether considered in the aggregate or dividing female legislators according to whether or not they contested a reserved SC/ST seat. However, as

²³ The Kerala Joint Family System (Abolition) Act, 1975.

²⁴ The Hindu Succession (Tamil Nadu Amendment) Act 1989. The Hindu Succession (Maharashtra Amendment) Act 1994. The Hindu Succession (Karnataka Amendment) Act 1994. The Hindu Succession Act was further amended in 2005 to give women equal inheritance rights as men. However, 2005 is not included in the time period studied here.

²² Hindus constitute approximately 80% of the population in India. However, this law applies to anyone who is not a Muslim, Christian, Parsi or Jew by religion.

Table 8

First stage regressions: laws. Dependent variables: proportion of seats won by female politicians.

	1	2	3	4	5	6
	All seats	SC/ST seats	General seats	All seats	SC/ST seats	General seats
	(Hindu Succession Law sample)			(Land reform sample)		
Fraction of seats won by a woman in a close election against a man	1.9177*** (0.3092)			2.0762*** (0.3589)		
Fraction of seats won by an SC/ST woman in a close el against an SC/ST man		1.7518*** (0.4491)	−0.5464 (0.6513)		1.6008*** (0.4927)	−1.7271** (0.8281)
Fraction of seats won by a general woman in a close election against a general man		0.0884 (0.1112)	1.9314*** (0.2899)		0.1541 (0.1159)	2.1711*** (0.3065)
Fraction of seats that had close elections between women and men	−0.2125* (0.1279)	−0.1306** (0.0659)	−0.0633 (0.1193)	0.1647 (0.2056)	−0.1777** (0.0732)	0.4075** (0.1671)
SC/ST reserved seats	0.2252** (0.0863)	0.1057*** (0.0370)	0.1209 (0.0937)	0.2973*** (0.1077)	0.0557 (0.0536)	0.2261** (0.1096)
SC/ST population (proportion)	0.2096** (0.0959)	−0.1126*** (0.0373)	0.3228*** (0.0877)	0.1206 (0.1458)	−0.0311 (0.0483)	0.1439 (0.1239)
Rural population (proportion)	0.2831 (0.3408)	0.1162 (0.0703)	0.1816 (0.3666)	0.3095 (0.2567)	0.1144 (0.0950)	0.2631 (0.2430)
Year before elections dummy	−0.0020** (0.0010)	−0.0009** (0.0004)	−0.0011 (0.0009)	−0.0015 (0.0012)	−0.0009** (0.0005)	−0.0006 (0.0011)
Real per capita NSDP	−0.1725** (0.0804)	−0.0463 (0.0328)	−0.1141 (0.0835)	−0.0988 (0.0904)	−0.0499 (0.0325)	0.0002 (0.0976)
Prop seats Hard Left	0.0009 (0.0263)	−0.0056 (0.0103)	0.0009 (0.0240)	0.0353 (0.0290)	−0.0068 (0.0106)	0.0398 (0.0272)
Prop seats Congress	0.0374 (0.0287)	0.0149** (0.0067)	0.0190 (0.0266)	0.0294 (0.0220)	0.0090 (0.0070)	0.0145 (0.0184)
Prop seats Regional	0.0240 (0.0330)	0.0133* (0.0077)	0.0061 (0.0302)	0.0055 (0.0273)	0.0054 (0.0070)	−0.0109 (0.0229)
Prop seats Hindu	−0.0276 (0.0296)	−0.0090 (0.0085)	−0.0198 (0.0267)	−0.0361 (0.0238)	−0.0214* (0.0112)	−0.0237 (0.0200)
Prop seats Janata	0.0309 (0.0257)	0.0039 (0.0069)	0.0243 (0.0237)	0.0250 (0.0208)	−0.0028 (0.0080)	0.0228 (0.0175)
Prop seats Soft Left	−0.0097 (0.0415)	−0.0154 (0.0212)	−0.0021 (0.0364)	−0.0405 (0.0449)	−0.0294 (0.0216)	−0.0302 (0.0396)
Observations	528	528	528	400	400	400
R-squared	0.709	0.717	0.651	0.769	0.781	0.732
F first stage	38.47			33.46		
Multivariate F first stage		40.71	16.76		63.78	63.15

Robust standard errors clustered at the state-elections level are reported in parentheses. *Significant at the 10%, **significant at the 5%, ***significant at the 1%. Close elections are defined as those in which the winner beat the runner up by less than 3.5% of votes. Regressions include state and year fixed effects, together with state-year trends.

discussed in the previous section, OLS results can be contaminated by omitted variable bias.

The 2SLS results, reported in columns 3 and 4, present a different picture. In this case, women representatives do not have any impact on these amendments when considered in the aggregate. In contrast, when dividing the female representation variable according to whether or not they contested a reserved SC/ST seat, only SC/ST female legislators have a positive and significant effect. Surprisingly, general female legislators do not have an effect on this variable. Given that the regressions include as a control variable the fraction of seats in each state and year reserved for SC/STs, the coefficient for SC/ST female politicians measures the effect of changing an SC/ST male politician for an SC/ST female politician. The same applies to the comparison between general male and female politicians.

These results, together with the fact that SC/ST female legislators come from lower economic backgrounds, suggest that if no effect is found for general female legislators, it might be due to their class position. In fact, elite women will be less likely to favor women-friendly policies if class and gender effects go in opposite directions. In other words, the class effect might make female politicians behave like men in policymaking. The fact that the coefficient for general female politicians is not significant means that substituting general male politicians for general female politicians does not affect the likelihood that women-friendly policies are applied. If general female politicians come from richer economic backgrounds than general male politicians, then the comparison would involve differences in both gender and economic background.

SC/STs are more likely to be a more homogeneous group, and thus, gender effects will be captured better by the coefficient for SC/ST

female politicians, as SC/ST individuals in general come from lower economic backgrounds. Low-caste women, as reservations are already made for SC/ST people, may be more likely to perceive themselves as representatives for women as well as representatives for the Scheduled Castes and Scheduled Tribes. Another explanation for these results would be that SC/ST female legislators are more active than the rest in policymaking. However, according to Mishra (2000), both general and SC/ST female legislators seem to be equally active.

The second policy to be analyzed benefits the poor. Land reforms can be considered redistributive policies, which are aimed at improving the poor's access to land in developing countries. Besley and Burgess (2000) classify land reform acts into four main categories, according to the purpose they were designed for. The first category is called Tenancy Reform, which regulates tenancy contracts and attempts to transfer ownership to tenants. The second category of land reforms consists of attempts to abolish intermediaries. Intermediaries worked under feudal lords and collected rents for the British. They were known for extracting high rents from the tenants. The third category of land reforms implements ceilings on land holdings. The fourth category of land reforms was designed to allow consolidation of disparate land-holdings.

In this study I use a cumulative measure of the first three types of land reforms, which were the ones primarily designed to tackle poverty. The variable used is equal to the sum of the cumulative number of land reform acts in each category passed in the state.

The results for land reforms are also reported in Table 7. The columns 5 and 6 contain results for the OLS regressions, while columns 7 and 8 contain results for the 2SLS regressions.

The OLS results can be contaminated by omitted variable bias, but they do not indicate any effect of female political representation,

Table 9
Schools.

Panel A: Dependent variable: number of schools per 1000 individuals												
	1	2	3	4	5	6	7	8	9	10	11	12
	Primary schools				Middle schools				Secondary schools			
	OLS	OLS	2SLS	2SLS	OLS	OLS	2SLS	2SLS	OLS	OLS	2SLS	2SLS
Fraction of seats won by a woman	0.1550 (0.1602)		0.7239* (0.3988)		0.1300* (0.0679)		0.2939** (0.1243)		0.0336 (0.0316)		0.1816*** (0.0673)	
Fraction of seats won by an SC/ST woman		0.5562 (0.4814)		3.0448** (1.5298)		0.1273 (0.1633)		0.1881 (0.3352)		0.1979** (0.0849)		0.4347* (0.2568)
Fraction of seats won by a general woman		0.1051 (0.1654)		0.3684 (0.3793)		0.1304* (0.0755)		0.3101** (0.1216)		0.0139 (0.0327)		0.1387** (0.0646)
Fraction of seats with close elections between women and men			−0.5373 (0.3916)	−0.3746 (0.3229)			−0.2008** (0.0904)	−0.2083** (0.0906)			−0.3097*** (0.1139)	−0.2614** (0.1148)
Observations	464	464	464	464	464	464	464	464	400	400	400	400
R-squared	0.990	0.990	0.989	0.988	0.991	0.991	0.991	0.991	0.978	0.978	0.972	0.972
Panel B: First stages (education)												
	1		2		3		4		5		6	
	All seats		SC/ST seats		General seats		All seats		SC/ST seats		General seats	
Fraction of seats won by a woman in a close election against a man	1.8033*** (0.3416)						2.0762*** (0.3589)					
Fraction of seats won by an SC/ST woman in a close election against an SC/ST man			1.6465*** (0.5225)		−2.0355** (0.8960)				1.6008*** (0.4927)		−1.7271** (0.8281)	
Fraction of seats won by a general woman in a close election against a general man			0.0583 (0.1095)		2.0274*** (0.2939)				0.1541 (0.1159)		2.1711*** (0.3065)	
Fraction of seats with close elections between women and men	−0.0133 (0.1395)		−0.1129 (0.0718)		0.1780 (0.1229)		0.1647 (0.2056)		−0.1777** (0.0732)		0.4075** (0.1671)	
Observations	464		464		464		400		400		400	
F first stage	27.86						33.47					
Multivariate F first stage			23.6		29.4				63.78		63.15	
R-squared	0.740		0.757		0.707		0.769		0.781		0.732	

Robust standard errors clustered at the state-elections level are reported in parentheses. *Significant at the 10%, **significant at the 5%, ***significant at the 1%. Columns 1, 2, 5, 6, 9 and 10 in Panel A are OLS regressions. The other regressions are 2SLS regressions in which the fraction of seats won by a woman in a close election against a man is used to instrument the fraction of seats won by a woman. First stages are reported in Panel B. Close elections are defined as those in which the winner beat the runner up by less than 3.5% of votes. Regressions include state and year fixed effects, together with state-year trends. The same controls in Tables 7 and 8 are included in the regressions.

whether considered in the aggregate or dividing female legislators according to whether or not they contested a reserved SC/ST seat.

The 2SLS results for land reforms offer a more precise indication of the importance of caste and gender differences for determining policy. While female politicians do not have a significant effect on land reforms, once SC/ST and general women legislators are considered separately in the regressions, general female legislators have a negative and significant effect on land reforms, while SC/ST female legislators have a positive and significant effect; see columns 7 and 8. This finding is consistent with the fact that general women legislators may be part of the elite and will then oppose these reforms more than general men.

Given that SC/STs are poorer, results obtained for land reforms clearly reflect the caste effect. The fact that the coefficient for SC/ST female legislators is positive and significant confirms the fact that female legislators may care more about issues related to social injustice than male legislators. The general female representation variable may only indicate class, not gender. This reason will not be the case for SC/ST female legislators, as they come from the poorest section of the society and are more likely to be similar to SC/ST male legislators with respect to economic background.

Taken together, these results point to the fact that the identity of the legislator influences policy decisions, but that both gender and caste should be taken into account, as there may be important class differences by gender that can determine the preferences of the legislators and, as a consequence, the policies applied. The coefficients for SC/ST and general female legislators are also significantly different from one another,²⁵ proving that caste as well as gender matters.

For both policies, the 2SLS coefficients are very different in magnitude from the OLS ones, especially for SC/ST female legislators. This result might indicate that SC/ST female legislators are elected where more laws benefiting women and the poor are needed, suggesting that the omitted variable bias might bias the OLS coefficients downwards.²⁶

First-stage regressions are reported in Table 8 for both samples; the fraction of female legislators that won in a close election against a man is a strong predictor of the fraction of seats in the state won by a woman. This finding is also true when dividing the female representation variable according to whether or not the female legislator contested a reserved SC/ST seat.

4.2. Education

The second set of variables used to identify whether or not male and female legislators make different policy decisions are education variables. In this section, I look at the effect of female representatives on certain educational input measures to analyze their impact on the supply of education. The state governments mainly decide educational policies, and thus, it is interesting to analyze whether or not female representation at the state level increases the amount of educational inputs provided. Given that it has been documented in the literature that women tend to support child-related expenditures more than men, it is interesting to analyze whether or not female politicians invest in education more than men. In addition, given that

²⁶ This might also be explained by the fact that female legislators elected in close elections may be more active in policy than the average female legislator, or they may have policy preferences that are more different from men's than the average female legislator.

²⁵ These results are available from the author on request.

Table 10

Teachers.

Panel A: Dependent variable: teachers per 1000 individuals												
	1	2	3	4	5	6	7	8	9	10	11	12
	Primary teachers				Middle teachers				Secondary teachers			
	OLS	OLS	2SLS	2SLS	OLS	OLS	2SLS	2SLS	OLS	OLS	2SLS	2SLS
Fraction of seats won by a woman	−0.1869* (0.1097)		0.2027 (0.2353)		0.0553 (0.0923)		−0.1795 (0.1513)		0.1316** (0.0573)		−0.0232 (0.1288)	
Fraction of seats won by an SC/ST woman		0.2494 (0.4093)		3.0594** (1.4407)		−0.3933 (0.2924)		−2.1528** (0.9806)		0.1438 (0.2759)		−0.9066 (0.6754)
Fraction of seats won by a general woman		−0.2393* (0.1330)		−0.2818 (0.2988)		0.1092 (0.1090)		0.1552 (0.1826)		0.1301** (0.0578)		0.1267 (0.1531)
Fraction of seats with close elections between women and men			−0.7686* (0.4523)	−0.2237 (0.4941)			0.5009* (0.2855)	0.1245 (0.3306)			0.2677 (0.2274)	0.0992 (0.2478)
Observations	400	400	400	400	400	400	400	400	400	400	400	400
R-squared	0.963	0.963	0.961	0.954	0.982	0.982	0.982	0.979	0.974	0.974	0.973	0.971
Panel B: Dependent variable: fraction of teachers that are female by education group												
	1	2	3	4	5	6	7	8	9	10	11	12
	Primary				Middle				Secondary			
	OLS	OLS	2SLS	2SLS	OLS	OLS	2SLS	2SLS	OLS	OLS	2SLS	2SLS
Fraction of seats won by a woman	0.4010*** (0.1230)		1.2536*** (0.3133)		0.2904*** (0.0955)		0.2500 (0.1582)		0.1246 (0.0785)		0.2062 (0.1265)	
Fraction of seats won by an SC/ST woman		1.3533** (0.5586)		5.1425** (2.4687)		0.2813 (0.2315)		0.1068 (0.4271)		0.6279 (0.4119)		−0.5379 (0.5444)
Fraction of seats won by a general woman		0.2866** (0.1278)		0.5939 (0.4237)		0.2915*** (0.0919)		0.2743 (0.1808)		0.0642 (0.0995)		0.3325** (0.1313)
Fraction of seats with close elections between women and men			−1.3867*** (0.4055)	−0.6449 (0.6070)			0.4401*** (0.1537)	0.4128** (0.1753)			−0.2291 (0.2974)	−0.3710 (0.2967)
Observations	400	400	400	400	400	400	400	400	400	400	400	400
R-squared	0.903	0.904	0.887	0.876	0.987	0.987	0.986	0.986	0.973	0.974	0.972	0.969

Robust standard errors clustered at the state-elections level are reported in parentheses. *Significant at the 10%, **significant at the 5%, ***significant at the 1%. Columns 1, 2, 5, 6, 9 and 10 in both panels are OLS regressions. The other regressions are 2SLS regressions in which the fraction of seats won by a woman in a close election against a man is used to instrument the fraction of seats won by a woman. First stages are reported in Panel B of Table 9. Close elections are defined as those in which the winner beat the runner up by less than 3.5% of votes. Regressions include state and year fixed effects, together with state-year trends. The same controls in Tables 7 and 8 are included in the regressions.

SC/ST individuals have had difficulties accessing education, and women display worse educational outcomes, the interaction between gender and caste should also be taken into account.

I first use the number of primary, middle and secondary schools per thousand individuals. The results are presented in Panel A of Table 9, while first stages for all samples used in these regressions are presented in Panel B.

The OLS results are presented in columns 1 and 2 (primary schools), 5 and 6 (middle schools) and 9 and 10 (secondary schools). These results might be contaminated by omitted variable bias.

The results for the corresponding 2SLS regressions are reported in columns 3 and 4 (primary schools), 7 and 8 (middle schools) and 11 and 12 (secondary schools). The results are quite different, and the differences between the 2SLS and the OLS coefficients are positive in all cases, which might indicate that female politicians are elected where more education is needed, or where there are fewer educational inputs.²⁷ In fact, results indicate that female political representation has a positive effect on the number of primary, middle and secondary schools per 1000 individuals. The largest effect is found in primary schools, even if the coefficient is only significant at the 10% level.

When dividing the female representation variable according to whether or not the female politicians contested an SC/ST seat, SC/ST female politicians have a positive effect on primary and secondary schools, while general female politicians increase the number of

middle and secondary schools. By increasing SC/ST female representation by 1 percentage point, the number of primary schools per 1000 individuals increases by 0.03 units, which is 4% of the average. Their coefficient for secondary schools is smaller, but by increasing female representation by 1 percentage point, the number of schools per 1000 individuals increases by 0.004 units, which is also 4% of the average. By increasing general female representation by 1 percentage point, the number of middle and secondary schools increase by 0.003 and 0.0014 units per 1000 individuals, which are 1.5% and 1.4% of the average, respectively.

These results indicate that general female politicians favor higher education levels in policymaking. In particular, they invest more in middle and secondary schools than men. Given that privileged individuals are those who are more likely to benefit from middle and secondary education, these results might also point to the class effect. However, SC/ST female politicians have a positive effect both on primary and secondary education.

As another educational input, I use the number of teachers per 1000 individuals in each type of school. The results are presented in Panel A of Table 10. First stages for these regressions are the same as those reported in Table 9.

The results for the 2SLS specifications indicate no effect of female politicians on the number of teachers, and this holds for the three education tiers. However, having divided the female representation variable according to whether or not the female politicians contested a reserved SC/ST seat, SC/ST female politicians increase the number of teachers per 1000 individuals in primary education and decrease it in middle education. In contrast, general female politicians do not have any effect on any of the tiers. These results also indicate that SC/ST

²⁷ As before, this finding is especially true for SC/ST female politicians. However, this result is also consistent with the fact that identification is derived from female legislators who won in close elections. These female legislators might be different from the average female legislator.

Table 11
Health.

Panel A: Dependent variables: number of hospitals, dispensaries and beds in hospitals and dispensaries per 1000 individuals												
	1	2	3	4	5	6	7	8	9	10	11	12
	Hospitals				Dispensaries				Beds in hospitals and dispen.			
	OLS	OLS	2SLS	2SLS	OLS	OLS	2SLS	2SLS	OLS	OLS	2SLS	2SLS
Fraction of seats won by a woman	−0.0093 (0.0115)		−0.0210 (0.0577)		0.0127 (0.0933)		0.2192 (0.1444)		0.4307 (0.3945)		3.4473*** (1.0103)	
Fraction of seats won by an SC/ST woman		−0.0174 (0.0356)		0.0469 (0.1092)		0.2526 (0.1970)		0.8152* (0.4225)		0.0639 (0.9733)		8.2100** (3.2456)
Fraction of seats won by a general woman		−0.0082 (0.0117)		−0.0323 (0.0613)		−0.0222 (0.0893)		0.1049 (0.1534)		0.4816 (0.4672)		2.4144** (1.0953)
Fraction of seats with close elections between women and men			−0.0031 (0.0403)	0.0018 (0.0390)			−0.6341*** (0.2231)	−0.5054** (0.2353)			−3.2118** (1.5928)	−2.2329 (1.6846)
Observations	478	478	478	478	364	364	364	364	339	339	339	339
R-squared	0.906	0.906	0.896	0.895	0.869	0.870	0.862	0.857	0.964	0.964	0.957	0.955
Panel B: First stages (health samples)												
	1	2	3	4	5	6	7	8	9			
	All seats	SC/ST	General	All seats	SC/ST	General	All seats	SC/ST	General			
Fraction of seats won by a woman in a close election against a man	1.7744*** (0.3262)			2.1718*** (0.3706)			1.8928*** (0.3423)					
Fraction of seats won by an SC/ST woman in a close election against an SC/ST man		1.6885*** (0.5373)	−1.2048 (0.8032)		2.0649*** (0.3491)	−1.6505** (0.7657)		2.1890*** (0.3330)	−1.9224*** (0.6879)			
Fraction of seats won by a general woman in a close election against a general man		0.0655 (0.1152)	1.8780*** (0.2889)		0.1652 (0.1238)	2.1954*** (0.3234)		0.1472 (0.1220)	1.9126*** (0.3055)			
Fraction of seats with close elections between women and men	−0.1445 (0.1301)	−0.1238* (0.0692)	0.0166 (0.1196)	0.1876 (0.2366)	−0.1998** (0.0831)	0.4374** (0.1841)	0.1657 (0.2078)	−0.1956** (0.0778)	0.4107** (0.1623)			
Observations	478	478	478	364	364	364	339	339	339			
F first stage	29.59			34.34			30.58					
Multivariate F first stage		23.16	24.6		83.66	62.52		45.61	39.65			
R-squared	0.714	0.718	0.664	0.809	0.809	0.788	0.823	0.820	0.792			

Robust standard errors clustered at the state-elections level are reported in parentheses. *Significant at the 10%, **significant at the 5%, ***significant at the 1%. Columns 1, 2, 5, 6, 9 and 10 in Panel A are OLS regressions. The other regressions are 2SLS regressions in which the fraction of seats won by a woman in a close election against a man is used to instrument the fraction of seats won by a woman. First stages are reported in Panel B. Close elections are defined as those in which the winner beat the runner up by less than 3.5% of votes. Regressions include state and year fixed effects, together with state-year trends. The same controls in Tables 7 and 8 are included in the regressions.

female politicians favor primary education in policymaking. Their negative effect on teachers in middle schools may be due to the fact that some teachers are moved from middle to primary education, but it indicates that SC/ST female politicians may care more about lower levels of education. This coefficient should be interpreted as the effect of substituting SC/ST male politicians for SC/ST female politicians, and SC/ST male politicians may perceive middle education as very important.

Finally, I analyze the impact of female politicians on the fraction of teachers that are female in primary, middle and secondary schools. There is some evidence that the presence of female teachers may encourage girls to go to school. Thus, it is interesting to understand whether or not female politicians have had any impact on the number of female teachers per each type of school. The results are provided in Panel B of Table 10.²⁸ The 2SLS results suggest that female politicians increase the proportion of teachers that are female in primary schools. In fact, a 1-percentage point increase in female representation increases the proportion of teachers that are female by 0.013, which is around 5% of the average. However, no results are found for teachers in middle and secondary schools. Having considered SC/ST and general female politicians separately, SC/ST female politicians increase the fraction of teachers that are women in primary education, while general female politicians increase the fraction of teachers that are women in secondary education.

Taken together, these results indicate that female politicians increase the number of schools in all education tiers and increase the proportion of teachers that are female in primary education. However, once they have been divided according to whether or not they were contesting a reserved SC/ST seat, SC/ST female legislators seem to put more emphasis on lower levels of education than general female legislators do. In fact, their effect on primary education is always significantly different from the effect of general female legislators on primary education.²⁹ The fact that only SC/ST female legislators have an effect on primary education can be explained by the fact that SC/ST individuals, especially SC/ST women, have less access to education, so they will be more likely invest in lower tiers of education as they will perceive it as more important. In contrast, general women have more access to higher tiers of education, and thus they invest in middle and secondary schools once they are in politics.

Schools take time to be built. Some of them can be created by buying or renting existing buildings, and this can be done in a relatively short amount of time. Others may be created in buildings that are yet to be built, and this process may take longer. There is no data on exactly where new schools are located, but in the main specification, I analyze the impact of female legislators who were in power at time $t - 1$ on schools at time t . Given that elections are held approximately every five years, in the first year after the election those female politicians will have been in power for at least one year.

²⁸ First stage regressions are presented in Table 9.

²⁹ Available from the author on request. This is true for schools, teachers and the fraction of teachers that are female.

In the second year after the election, female politicians will have been in power for at least two years, and so on, up to a maximum of five years. Thus, the average amount of time that female politicians have been in power is three years, with a minimum of one and a maximum of five years, which may be enough to account for both possibilities, even if the first one is more likely.³⁰ The fact that the results for teachers are consistent with the results for schools is reassuring, as teachers are an educational input that can be easily adjusted. This finding can be further confirmed using data on enrollment rates. Data on enrollment rates in India by state and year have been shown to be upwardly biased; see Klien (2004). This upward bias, however, would only be a problem if it were correlated with the fact that female politicians win in close elections against men, which does not seem likely, but can cast doubts on the reliability of the data in general. The results are omitted from this paper and are available from the author on request but are consistent with those obtained before and confirm the conclusion that SC/ST female politicians invest in lower levels of education.

4.3. Health

The results obtained so far indicate that the identity of the legislator is, indeed, defined by gender and caste, as general and SC/ST female politicians choose different policies. Moreover, the results suggest that they choose policies that may benefit their groups more. However, it is also interesting to see whether or not female politicians also favor investment in other public goods, such as those related to health provisions, that are considered very important by citizens and have been linked to women's political preferences (see Miller, 2008). Health in India is a very important welfare issue, for which the preferences of male and female politicians might differ.

I use information on the number of hospitals, dispensaries and beds in hospitals, and dispensaries per 1000 individuals to observe their effect on health provisions. The results are presented in Panel A of Table 11. First-stage regressions for each of the three samples are presented in Panel B.

Female politicians do not have any differential effect, compared to men, on hospitals and dispensaries; in contrast, by increasing female representation by one percentage point, the number of beds in hospitals and dispensaries increases by 0.034, which is 4.4% of the average.

When dividing the female representation variable in columns 4, 8, and 12, neither SC/ST nor general female politicians have a different effect from men on hospitals. However, SC/ST female politicians do have an impact on the number of dispensaries, even if the coefficient is only significant at the 10% level, and they are the ones who most increase the number of beds in hospitals and dispensaries. General female politicians also increase the number of beds in hospitals and dispensaries, but their effect is 3.4 times smaller, and the two coefficients are significantly different.

The results suggest that female politicians increase health provisions more than male politicians. Even though they do not have an effect on hospitals or dispensaries, beds in hospitals and dispensaries may be a better measure of the health-related public goods provided; as with the other measures one does not take the size of the hospitals and dispensaries into account.

As expected, SC/ST female politicians have a larger effect than general female politicians on dispensaries and beds. This finding is also consistent with the class effect: even if women care more about

health than men, richer individuals consider public health provisions to be less important.

To interpret these results, it should also be taken into account that hospitals may take longer to be built, as they will almost surely need a completely new building and special equipment. This explanation may not be the case with the dispensaries or schools, as they can be created in a pre-existing building. This argument might explain why female politicians do not have a significant effect on the number of hospitals.

4.4. Expenditure

The results indicate that female politicians have an impact on investment in public goods and laws approved in India. Moreover, whether or not they contested a reserved SC/ST seat should also be taken into account. In this section, I analyze the impact of female representation on the composition of total expenditures in the state budgets.

In each of the states, the budget is approved by the legislature after the enactment of what is called the Appropriation Act, which gives authority to the government to withdraw money from the Consolidated Fund.³¹ Usually the Finance Minister of each state gives a budget speech to the legislature, and two days later there is a general discussion in the legislature about the budget proposal presented. This discussion lasts six days. After that, and during a maximum period of 18 days, individual demands made by the individual legislators are voted on in the Legislative Assembly. Then, the introduction, consideration and passing of the Appropriation Bill in the Legislative Assembly with the Governor's consent lasts for about two days. In total, the budget discussion takes a maximum of 26 days.

Table 12 presents results for the main expenditure classifications. Columns 1–6 present results for the female representation variable, while columns 7–12 present the results obtained when the female representation variable is divided according to caste. In column 1, results are presented for the logarithm of total expenditure per capita; in this case, the coefficient for the proportion of seats in the state won by female politicians is positive but not significant. Column 2 presents results for the fraction of total expenditures devoted to capital investments; as before, the coefficient obtained is not significant and smaller. This finding means that female politicians do not have an effect on how expenditures are divided among the revenue and capital budgets. It is now interesting to analyze whether or not they affected the actual composition of expenditures, after aggregating the revenue and capital budgets for each of the categories.

Both capital and revenue expenditures can be divided into two broad categories: Development expenditures and Non-Development expenditures. The results for these categories are presented in columns 3 and 4. Female politicians have a positive effect on non-development expenditures, but the effect on development expenditure is not significant.

Development expenditures can be further divided into Economic and Social expenditures. The results for these two categories are presented in columns 5 and 6. Female political representation does not have any effect on Social expenditures, but it does increase the fraction of the budget devoted to Economic expenditures.

Columns 7–12 present results for the same variables. The difference is that I then report coefficients for the fraction of seats in the state won by SC/ST female politicians and general female politicians. Neither SC/ST nor general female politicians have an effect on the log of per capita total expenditures or the fraction of total expenditures

³⁰ The results are robust to specifications in which female representation is computed for the two or three years before an election, and these coefficients are quite similar. This finding would account for the possibility that schools take longer to be built. Specifications also account for state-specific trends to take into account that some states may follow different trends in building infrastructure.

³¹ Defined by the Constitution as "all revenues received by Government, all loans raised by Government by issue of treasury bills, loans or ways and means advances and all money received by Government in repayment of loans".

Table 12

Expenditure measures: broad classification.

Panel A: Dependent variable: expenditure category as a fraction of total expenditure (457 observations).												
	1	2	3	4	5	6	7	8	9	10	11	12
	2SLS	2SLS	2SLS	2SLS	2SLS	2SLS	2SLS	2SLS	2SLS	2SLS	2SLS	2SLS
	Total expenditure (log pc)	Share of capital expenditure	Share of dev expenditure	Share of non-dev expenditure	Share of social expenditure	Share of economic expenditure	Total expenditure (log pc)	Share of capital expenditure	Share of dev expenditure	Share of non-dev expenditure	Share of social expenditure	Share of economic expenditure
Fraction of seats won by a woman	1.0225 (0.7165)	0.0745 (0.4382)	0.4045 (0.3832)	0.4995* (0.3021)	−0.3869 (0.2473)	0.9688*** (0.3276)						
Fraction of seats won by an SC/ST woman							0.7795 (1.6068)	−0.6608 (0.5872)	1.6582** (0.7704)	1.8178** (0.7913)	0.1188 (0.4887)	1.0515 (0.9874)
Fraction of seats won by a general woman							1.0824 (0.8076)	0.2558 (0.4950)	0.0952 (0.4429)	0.1745 (0.3228)	−0.5116** (0.2546)	0.9484*** (0.3008)
Fraction of seats that had close elections between women and men	−0.0308 (0.4306)	0.2090 (0.1952)	−0.1640 (0.2005)	−0.7318** (0.3217)	0.1226 (0.1181)	−0.4338** (0.2093)	−0.0430 (0.4418)	0.1723 (0.2014)	−0.1013 (0.1958)	−0.6659* (0.3411)	0.1479 (0.1167)	−0.4297** (0.2074)
R-squared	0.944	0.560	0.653	0.646	0.705	0.692	0.944	0.553	0.620	0.652	0.704	0.691
Fraction of seats won by a woman (OLS)	0.2838 (0.2615)	−0.0024 (0.1243)	0.1799 (0.1096)	−0.1390 (0.1193)	−0.0443 (0.0953)	0.2642** (0.1276)						
Fraction of seats won by an SC/ST woman (OLS)							−0.2884 (0.8260)	−0.1110 (0.3709)	−0.4071 (0.4266)	0.5688* (0.2953)	0.2784 (0.2328)	−0.5980* (0.3544)
Fraction of seats won by a general woman (OLS)							0.3813 (0.2988)	0.0161 (0.1334)	0.2799** (0.1284)	−0.2596** (0.1295)	−0.0993 (0.0997)	0.4111*** (0.1446)
Panel B: first stages(expenditure)												
	1			2			3					
	All seats			General seats			SC/ST seats					
Fraction of seats won by a woman in a close election against a man	1.5761*** (0.3124)											
Fraction of seats won by an SC/ST woman in a close election against an SC/ST man				−0.4539 (0.6458)			1.7986*** (0.4620)					
Fraction of seats won by a general woman in a close election against a general man				1.5388*** (0.2952)			0.0743 (0.1221)					
Fraction of seats with close elections between women and men	−0.2575* (0.1464)			−0.1177 (0.1342)			−0.1332** (0.0650)					
F first stage	25.46											
Multivariate F first stage				35.77			14.93					
R-squared	0.732			0.670			0.722					

Robust standard errors clustered at the state-elections level are reported in parentheses. *Significant at the 10%, **significant at the 5%, ***significant at the 1%. All columns in Panel A are 2SLS regressions in which the fraction of seats won by a woman in a close election against a man is used to instrument the fraction of seats won by a woman. Coefficients for the corresponding OLS regressions are reported in the bottom part of Panel A. First stages are reported in Panel B. Close elections are defined as those in which the winner beat the runner up by less than 3.5% of votes. Regressions include state and year fixed effects, together with state-year trends. The same controls in Tables 7 and 8 are included in the regressions.

Table 13

Expenditure measures: detailed classification.

Dependent variable: expenditure category as a fraction of total expenditure								
	1	2	3	4	5	6	7	8
	2SLS	2SLS	2SLS	2SLS	2SLS	2SLS	2SLS	2SLS
	Education	Health	Family welf.	Housing	Soc. secur.	Agriculture	Ind. miner.	Gen.ec.serv.
<i>Panel A: female representation</i>								
Fraction of seats won by a woman	−0.0390 (0.1175)	−0.0301 (0.0957)	0.0309 (0.0263)	−0.0525** (0.0240)	−0.1456 (0.0935)	0.3863 (0.2684)	0.0953* (0.0490)	−0.0544 (0.1216)
Fraction of seats that had close elections between women and men	0.1145 (0.0881)	0.0433 (0.0442)	0.0005 (0.0125)	0.0091 (0.0143)	−0.0022 (0.0506)	−0.2204 (0.1620)	−0.0425 (0.0323)	0.0642 (0.0870)
Observations	457	457	416	456	352	456	456	456
R-squared	0.842	0.636	0.678	0.602	0.546	0.505	0.737	0.374
Fraction of seats won by a woman (OLS)	−0.0361 (0.0389)	0.0309 (0.0255)	0.0026 (0.0065)	−0.0059 (0.0101)	−0.1108*** (0.0288)	0.2692*** (0.0784)	0.0198 (0.0130)	0.0405 (0.0363)
<i>Panel B: SC/ST and general female representation</i>								
Fraction of seats won by an SC/ST woman	0.1933 (0.2427)	0.0242 (0.1325)	0.0366 (0.0534)	−0.0525 (0.0650)	−0.3728** (0.1462)	0.5195 (0.5399)	0.1361 (0.0930)	0.5892** (0.2998)
Fraction of seats won by a general woman	−0.0963 (0.1397)	−0.0435 (0.1085)	0.0291 (0.0266)	−0.0525** (0.0238)	−0.0522 (0.1293)	0.3533 (0.3140)	0.0851 (0.0551)	−0.2142 (0.1343)
Fraction of seats that had close elections between women and men	0.1262 (0.0882)	0.0460 (0.0428)	0.0007 (0.0133)	0.0091 (0.0142)	0.0097 (0.0579)	−0.2139 (0.1697)	−0.0405 (0.0327)	0.0955 (0.0877)
Observations	457	457	416	456	352	456	456	456
R-squared	0.841	0.636	0.678	0.602	0.532	0.501	0.738	0.328
Fraction of seats won by an SC/ST woman (OLS regression)	0.0174 (0.1348)	0.1016 (0.0807)	−0.0031 (0.0202)	−0.0268 (0.0251)	−0.1238 (0.0764)	−0.1913 (0.2041)	0.0600 (0.0453)	0.1719 (0.1704)
Fraction of seats won by a general woman (OLS regression)	−0.0452 (0.0411)	0.0188 (0.0297)	0.0037 (0.0073)	−0.0023 (0.0101)	−0.1082*** (0.0319)	0.3479*** (0.0836)	0.0129 (0.0158)	0.0181 (0.0490)

Robust standard errors clustered at the state-elections level are reported in parentheses. *Significant at the 10%, **significant at the 5%, ***significant at the 1%. All columns are 2SLS regressions in which the fraction of seats won by a woman in a close election against a man is used to instrument the fraction of seats won by a woman. Close elections are defined as those in which the winner beat the runner up by less than 3.5% of votes. Regressions include state and year fixed effects, together with state-year trends. The same controls in Tables 7 and 8 are included in the regressions.

spent on capital expenditures. SC/ST female politicians have a positive effect both on Development expenditures and on Non-Development expenditures; see columns 9 and 10. This result means that they reduce expenditures on loans given or repaid (the omitted category). In contrast, general female politicians do not have any impact on these two expenditure categories.

The results in columns 11 and 12 indicate that SC/ST female politicians do not have an effect on Social and Economic expenditures. However, general female politicians decrease Social expenditures, while increasing Economic expenditures. A one-percentage point increase in general female representation decreases Social expenditures by 0.5 percentage points and increases Economic expenditures by 0.9 percentage points. This finding further confirms the fact that, given that general female politicians may belong to higher classes, they will be inclined to spend less on social issues and more on economic issues.

For completeness, it is also useful to understand whether or not female representation has had an impact on smaller expenditure categories within Social and Economic expenditures. These results are reported in Table 13. Panel A presents the results for the fraction of seats in the state won by a female politician. In Panel B, the female representation variable is divided according to whether or not the female politicians contested a reserved SC/ST seat. The results are reported for five categories within Social expenditures: Education, Health, Family Welfare, Housing and Social Security. The results are also presented for three categories within economic expenditures: Agriculture, Industry and Minerals and General Economic Services.³² The results in Panel A indicate that female politicians only have an effect on two of the categories: Housing expenditures, which they reduce, and industry and minerals, which they increase. The results in Panel B indicate that SC/ST female politicians only have an effect in two expenditure headings: they decrease Social Security and Welfare

and they increase General Economic Services. General female politicians only have an effect on the fraction of total expenditures devoted to Housing, which they reduce as well.

Even if female politicians have an effect on educational and health inputs, they do not have much of an impact on the allocation of budget expenditures, and they do not seem to have an effect on the fraction of total expenditure devoted to Health and Education. In fact, the coefficients are positive but not significant. This is not surprising if we take into account that these expenditure headings may be too broad and what ultimately matters is how each one of the expenditure headings is spent. In addition, female politicians will have an impact on these expenditures if their preferred budget allocation is different from the actual one. Otherwise, they may be more interested in deciding how the money is spent within each one of the headings.³³ The fact that SC/ST female politicians reduce Social Security and Welfare is surprising, but it may be due to the fact that lower castes do not benefit much from it.

5. Robustness checks

In this section, I perform some robustness checks to support the validity of the main results obtained.

In the main specifications, close elections are defined as elections in which the vote difference between the winner and the runner-up is less than 3.5%. Here, I check whether or not results are sensitive to this choice of vote margin. In Panel A of Table 14, I test whether or not results are the same when close elections are defined as those in which the winner beat the runner-up by different margins: 4%, 3% and 2.5%. Then, the 2SLS specification is run as before. Now, however, the instrument will be defined in a different way because some elections that were considered close before will not be considered close now. I

³³ It should also be noted that expenditures on some public goods can be difficult to target to groups of voters or, in particular, to the female electorate. See Lizzeri and Persico (2001).

³² For the other categories, the sample size was too small.

only report the coefficients for the fraction of seats won by female politicians corresponding to specification 4 and the coefficients for the fraction of seats won by SC/ST and general female politicians corresponding to specification 5. Throughout, results remain mainly unchanged, even though some coefficients increase when the margin of close elections is reduced.³⁴

This paper demonstrates that both gender and caste should be taken into account when defining the identity of the legislator. However, the caste results rely on the reservation of some seats in the state governments for the SC/STs. Similar to Pande (2003), and because SC/ST reservation is a nonlinear function of SC/ST population, I include as controls the proportion of the population that was SC/ST according to the previous census as well as its square, cube and quartic in the regressions. The results are presented in Panel B of Table 14. I first add the SC/ST proportion, according to the previous census, and results are very similar to those obtained before. Then, I add the square, the cube and the quartic and, reassuringly, results remain unchanged.

There may be concerns as well regarding the strength of the instruments. Both when female politicians are considered in the aggregate or when they are divided according to whether or not they were contesting an SC/ST seat, 2SLS is just-identified. Just-identified 2SLS is median unbiased. However, even with a just-identified model, if instruments were too weak the estimates would be too imprecise. This concern is addressed in two ways. First, when reporting the first-stage regressions, the F-statistic on the excluded instruments is reported, both in the case with one instrument and one endogenous variable as in the case with two instruments and two endogenous variables (as suggested in Angrist and Pischke, 2009). In all cases, the F statistic is quite large. Second, in Table 15 (Robustness(2)), I have added results for the reduced-form regressions. The reduced form is proportional to the causal effect of interest and is unbiased, as it is OLS. Reassuringly, the significance of the estimates and the sign of the coefficients are very similar to those obtained in the baseline estimates.

Then I conduct a test that supports the fact that the exclusion restriction is satisfied. The proportion of seats in the state won by women in close elections against men might affect the outcome variables through other channels apart from through correlation with the fraction of seats in the state won by women. This might happen because these close elections are special elections that take place in states and years with more women candidates and can affect the outcome variable independently. Thus, for the exclusion restriction to be satisfied, I control in the first and second stages for the fraction of seats in the state that had close elections between women and men. However, if women winning in close elections belong to specific political parties (different than men's), this might affect the outcome variable by changing the party composition. By controlling in both stages for the fraction of seats in the state won by each one of the political parties, this is partly accounted for. However, it might still be that there is a correlation between being a member of a given party elected in a close election and being a woman winning in a close election. If this were the case, results in this paper would simply be proxying for the increase of members of the given party elected in close elections. In Panels B and C of Table 5, I demonstrate that the distribution of seats won by parties in close elections between women and men is very similar to the distribution of seats won in other circumstances, and that women winning in close elections and in elections that are not close also tend to belong to the same parties. This is reassuring, as it indicates that close elections are

not dominated by a particular set of parties. However, if female politicians are more likely to belong to the Congress parties, as it seems to be the case, then the fraction of seats won by female politicians in close elections can affect the outcome variable, by affecting the proportion of seats won by Congress parties in close elections.³⁵ To check whether or not this is the case, in Table 15, I have added as controls in the regressions the fraction of seats won by each one of the political parties in close elections. Even if this exercise implies adding too many controls in the regression, which may be correlated with other pre-existing control variables, the coefficients of interest increase or remain constant in almost all cases. In addition, in most of the cases, the coefficients remain significant. This finding is reassuring, given that it provides additional evidence that the effects obtained before are due to the gender and caste of female politicians and not because the female representation variables account for an increase of the number of legislators of a given party winning in close elections.

Finally, in the baseline specifications, I have clustered the standard errors at the state-electoral cycle. This clustering is due to the existence of only 16 states in the data and the limited number of observations. This means that observations in state 1 and electoral cycle 1 are in one cluster; observations in state 2 and electoral cycle 1 are in another cluster, and so on. The reasoning is that if there is serial correlation within a state, it will mainly take place within each electoral cycle. Electoral cycles can vary across states, as not all states hold elections at the same time. However, observations in different states that had elections at the same time might also be correlated. For this reason, I have implemented multi-way clustering in the state and electoral cycles (Cameron et al., 2008). With this procedure, observations are in the same cluster if they belong to the same state or the same electoral cycle. This exercise should account for serial correlation within states and for correlations across states that share the same electoral cycle. The main disadvantage of this procedure is that in the data there are only 16 states. The results are reported in Table 16 and are quite similar to those obtained before, even if standard errors are a bit larger for some of the specifications. In addition, given that for multi-way clustering the number of clusters should also be larger than 16, I implement the same methodology as the one used by DellaVigna and Pollet (2007), as suggested by Foote (2007). The method consists of clustering the standard errors by year of election and correcting the standard errors to account for an AR(1) autocorrelation in the error structure. This exercise should account for serial correlation and correlations across states that had elections the same year. The results are very similar to those obtained clustering at the state-electoral cycle.

6. Conclusions

This paper demonstrates that female legislators have different effects on expenditures, public goods and policy decisions than their male counterparts. Moreover, whether or not these female legislators belong to scheduled castes/tribes or won the elections for general seats also matters for policy determination.

Scheduled Caste and Scheduled Tribe female legislators favor investments in primary education more than SC/ST men and more than general female legislators. They also favor more investments in beds in hospitals and dispensaries. They favor development expenditures, “women-friendly” laws, such as amendments to the Hindu Succession Act, proposed to give women the same inheritance rights as men. They also favor pro-poor redistributive policies, such as land reforms. In contrast, general female legislators do not have any impact on “women-friendly” laws, they oppose redistributive policies, such as land reforms, invest in higher tiers of education and reduce social expenditures.

³⁴ This points to the fact that the identification strategy used in this paper obtains variation from those states and years in which women and men contested in close elections, and, perhaps, the degree of electoral competition in these elections draws candidates who, in equilibrium, have preferences that differ more by gender than by other types of elections.

³⁵ This can be problematic if, for example, Congress legislators elected in close elections make different policy decisions than the average Congress legislator.

Table 14
Robustness.

Panel A	4% margin close			3% margin close			2.5% margin close		
Coefficient	Women	SC/ST women	Gen. women	Women	SC/ST women	Gen. women	Women	SC/ST women	Gen. women
Hindu succession laws	−0.1157 (1.1185)	7.6053** (3.7835)	−1.8475 (1.4087)	0.6036 (1.1624)	10.5605** (5.1133)	−1.7463 (1.4197)	2.0880 (1.4012)	11.5284* (5.9355)	−0.3400 (2.1549)
Land reforms	−3.9354 (2.8058)	22.6073** (9.8624)	−8.9415*** (3.3351)	−2.3820 (2.6541)	23.1302* (11.8925)	−7.2218** (3.1038)	−2.5459 (2.8945)	28.1627** (13.0954)	−7.7405* (4.5606)
Primary schools	0.6410 (0.4097)	2.6220** (1.1813)	0.2756 (0.4124)	0.9023** (0.4430)	3.3011** (1.6757)	0.4561 (0.4111)	0.7695 (0.4958)	2.2725* (1.1765)	0.1443 (0.5391)
Middle schools	0.1964 (0.1322)	0.1010 (0.2603)	0.2140 (0.1355)	0.3425*** (0.1229)	0.4362 (0.4357)	0.3250*** (0.1167)	0.2892** (0.1355)	0.1494 (0.3264)	0.3028 (0.1903)
Secondary schools	0.1902*** (0.0724)	0.3792* (0.2204)	0.1546** (0.0705)	0.2239*** (0.0809)	0.4735* (0.2868)	0.1766** (0.0722)	0.2534** (0.0994)	0.3648 (0.2575)	0.1848* (0.0987)
Primary teachers	0.3673 (0.2633)	2.7253** (1.1378)	−0.0776 (0.3080)	0.3427 (0.2935)	3.7546** (1.5825)	−0.3045 (0.3432)	0.5548 (0.3744)	3.4721** (1.6625)	−0.4626 (0.5101)
Middle teachers	−0.3193* (0.1770)	−2.1012** (0.8212)	0.0169 (0.2070)	−0.2712 (0.1849)	−2.4124** (1.0265)	0.1349 (0.2037)	−0.5082** (0.2466)	−2.2394** (1.0834)	−0.0622 (0.3249)
Secondary teachers	−0.0480 (0.1405)	−0.6241 (0.5693)	0.0607 (0.1558)	−0.0715 (0.1581)	−1.3421* (0.6855)	0.1696 (0.1817)	−0.0466 (0.1735)	−1.2327* (0.7170)	0.5248** (0.2503)
Primary teachers prop female	1.3863*** (0.3271)	3.8749** (1.7801)	0.9168** (0.4105)	1.5087*** (0.3957)	5.1999** (2.5634)	0.8088* (0.4809)	1.6328*** (0.4481)	4.6610* (2.6038)	0.5943 (0.7095)
Middle teachers prop female	0.2633 (0.1843)	−0.0442 (0.3803)	0.3213 (0.2111)	0.1677 (0.1615)	−0.1232 (0.4474)	0.2230 (0.1808)	0.0423 (0.1642)	0.2684 (0.3650)	−0.1620 (0.1618)
Secondary teachers prop female	0.1774 (0.1277)	−0.6071 (0.4339)	0.3254** (0.1356)	0.2303* (0.1394)	−0.4972 (0.5847)	0.3683*** (0.1371)	0.1091 (0.1397)	−0.8834 (0.6424)	0.3585** (0.1717)
Hospitals	−0.0450 (0.0704)	0.0225 (0.0974)	−0.0592 (0.0750)	0.0152 (0.0423)	0.0880 (0.1004)	−0.0001 (0.0458)	0.0144 (0.0507)	0.0274 (0.0915)	0.0748 (0.0685)
Dispensaries	0.1236 (0.1350)	0.6416* (0.3650)	0.0110 (0.1562)	0.2759 (0.1891)	0.8876* (0.4787)	0.1449 (0.1885)	0.2971 (0.2167)	0.2471 (0.2775)	0.0071 (0.2121)
Beds in hospitals and dispensaries	3.6394*** (1.0450)	6.3462*** (2.4621)	2.9181*** (1.1112)	4.0310*** (1.3049)	8.5306** (3.4672)	2.9080** (1.3421)	4.4239*** (1.6783)	4.9340** (2.2420)	3.6373** (1.6515)
Development expenditure	0.4792 (0.3414)	1.1560* (0.6281)	0.2742 (0.3892)	0.4747 (0.3786)	1.7957** (0.8255)	0.0404 (0.4443)	0.5603 (0.4297)	1.6762** (0.7785)	−0.2337 (0.7048)
Non-development expenditure	0.1325 (0.2789)	1.8106** (0.7268)	−0.3758 (0.3223)	0.2403 (0.3669)	1.7934** (0.9026)	−0.2702 (0.3625)	0.2033 (0.3263)	1.7562** (0.8018)	−0.1326 (0.5510)
Social expenditure	−0.4173* (0.2214)	0.2346 (0.4462)	−0.6148** (0.2449)	−0.3622 (0.2520)	−0.5313* (0.5129)	−0.4501 (0.2718)	0.6759 (0.2764)	−0.9890** (0.5033)	−0.9890** (0.4284)
Economic expenditure	1.0805*** (0.3040)	0.5283 (0.8260)	1.2479*** (0.3108)	1.0609*** (0.3195)	1.2221 (1.0910)	1.0079*** (0.2944)	1.2233*** (0.3326)	0.2791 (0.9511)	1.1480** (0.5299)

Panel B	SC/ST prop. prev. census		With square		With cube		With quartic	
Coefficient	SC/ST women	Gen. women	SC/ST women	Gen. women	SC/ST women	Gen. women	SC/ST women	Gen. women
Hindu succession laws	12.9930** (5.8734)	−1.4532 (1.4014)	12.9667** (5.7543)	−1.4558 (1.3827)	12.8972** (6.1142)	−1.4448 (1.3974)	13.1771** (6.0744)	−1.4275 (1.4005)
Land reforms	22.8943** (11.1330)	−7.5282** (3.0565)	23.1679** (10.8801)	−8.5277*** (3.2863)	21.1834* (11.9452)	−8.0332** (3.4359)	20.9428* (12.2154)	−8.4714** (3.6217)
Primary schools	3.0014** (1.4850)	0.3509 (0.3951)	3.0066** (1.2620)	0.2723 (0.3851)	3.0706** (1.3548)	0.4613 (0.4030)	3.1056** (1.3446)	0.4713 (0.4040)
Middle schools	0.2524 (0.4026)	0.3294*** (0.1103)	0.2553 (0.3078)	0.2889*** (0.0871)	0.2897 (0.3702)	0.3497*** (0.1124)	0.2950 (0.3678)	0.3512*** (0.1140)
Secondary schools	0.4407 (0.2713)	0.1507** (0.0693)	0.4498* (0.2465)	0.1180* (0.0614)	0.4515 (0.3036)	0.1732** (0.0767)	0.4574 (0.3053)	0.1841** (0.0792)
Primary teachers	3.1051** (1.4112)	−0.2681 (0.3121)	3.1021** (1.4244)	−0.2576 (0.3254)	3.5689** (1.5636)	−0.1805 (0.3471)	3.5590** (1.5630)	−0.1985 (0.3501)
Middle teachers	−2.1923** (0.9577)	0.1288 (0.1887)	−2.1877** (0.9798)	0.1121 (0.1964)	−2.4472** (1.0791)	0.1097 (0.2159)	−2.4118** (1.0619)	0.1743 (0.2128)
Secondary teachers	−0.9128 (0.6614)	0.1392 (0.1619)	−0.9144 (0.6628)	0.1455 (0.1702)	−1.1217 (0.6921)	0.0708 (0.1784)	−1.1472 (0.7013)	0.0242 (0.1773)
Primary teachers prop female	5.1506** (2.4487)	0.5654 (0.4550)	5.1687** (2.3892)	0.4999 (0.4719)	5.4304** (2.6478)	0.5983 (0.5089)	5.4668** (2.6633)	0.6645 (0.5107)
Middle teachers prop female	0.0993 (0.4179)	0.2732 (0.1901)	0.1190 (0.4078)	0.2019 (0.1860)	−0.0136 (0.4516)	0.2207 (0.2107)	−0.0034 (0.4605)	0.2393 (0.2144)
Secondary teachers prop female	−0.5396 (0.5371)	0.3379** (0.1383)	−0.5418 (0.5363)	0.3464** (0.1425)	−0.5588 (0.5723)	0.3131** (0.1577)	−0.5668 (0.5679)	0.2986* (0.1603)
Hospitals	0.0472 (0.1076)	−0.0336 (0.0643)	0.0480 (0.1072)	−0.0337 (0.0646)	0.0464 (0.1106)	−0.0341 (0.0660)	0.0549 (0.1075)	−0.0331 (0.0654)
Dispensaries	0.8534** (0.3959)	0.0830 (0.1561)	0.8516** (0.3990)	0.0851 (0.1591)	0.9139** (0.4448)	0.1686 (0.1521)	0.9361** (0.4611)	0.1999 (0.1496)
Beds in hospitals and dispensaries	8.2429** (3.3272)	2.5840** (1.1626)	7.9775** (3.4450)	2.6287** (1.1700)	8.7502** (3.7225)	2.6646** (1.2400)	9.1392** (3.9591)	2.8966** (1.2859)
Development expenditure	1.6680** (0.7614)	0.0668 (0.4482)	1.6789** (0.7755)	0.0705 (0.4548)	1.6730** (0.7571)	0.0685 (0.4503)	1.6869** (0.7612)	0.1319 (0.4518)
Non-development expenditure	1.7978** (0.8175)	0.2324 (0.3212)	1.7395** (0.7830)	0.2129 (0.3186)	1.7772** (0.7385)	0.2164 (0.3331)	1.7595** (0.7168)	0.1361 (0.3138)

(continued on next page)

Table 14 (continued)

Panel B								
SC/ST population controls	SC/ST prop. prev. census		With square		With cube		With quartic	
Coefficient	SC/ST women gen. women		SC/ST women gen. women		SC/ST women gen. women		SC/ST women gen. women	
Social expenditure	0.0854 (0.4433)	−0.4142* (0.2393)	0.0160 (0.4653)	−0.4373* (0.2458)	0.0885 (0.4491)	−0.4152* (0.2439)	0.0961 (0.4495)	−0.3809 (0.2490)
Economic expenditure	1.0820 (0.9422)	0.8595*** (0.3155)	1.2010 (0.9637)	0.8992*** (0.3195)	1.0805 (0.9421)	0.8595*** (0.3171)	1.0913 (0.9450)	0.9087*** (0.3116)

Robust standard errors clustered at the state-elections level are reported in parentheses. *Significant at the 10%, **significant at the 5%, ***significant at the 1%.

Table 15

Robustness (2).

Panel A	Reduced forms			Controls for parties in close elections		
Coefficient	Women	SC/ST women	Gen. women	Women	SC/ST women	Gen. women
Hindu succession laws	1.5004 (2.4805)	23.4384*** (7.7134)	− 1.6446 (2.4074)	4.2672** (2.0753)	14.1021** (7.0961)	2.0078 (2.0135)
Land reforms	− 4.2215 (5.5237)	48.9879*** (17.4047)	− 10.2386* (5.6986)	− 3.5748 (5.4441)	28.0543 (23.8617)	− 5.2436 (6.4048)
Primary schools	1.3054* (0.7477)	4.2631** (1.7457)	0.9245 (0.8262)	1.9745*** (0.7142)	5.4402** (2.1438)	1.0724* (0.6139)
Middle schools	0.5300** (0.2549)	− 0.3217 (0.4774)	0.6396** (0.2914)	0.4618** (0.1995)	0.7011 (0.5105)	0.3996** (0.1724)
Secondary schools	0.3770*** (0.1329)	0.4565 (0.3244)	0.3681** (0.1439)	0.1568 (0.1421)	0.7038 (0.5757)	0.1281 (0.1420)
Primary teachers	0.4208 (0.5037)	5.3841** (2.5073)	− 0.1405 (0.5553)	0.0743 (0.5299)	3.2792 (2.2819)	− 0.0946 (0.5978)
Middle teachers	− 0.3726 (0.3215)	− 3.7140** (1.4554)	0.0052 (0.3644)	− 0.1546 (0.4212)	− 2.4572 (1.8362)	− 0.0333 (0.4362)
Secondary teachers	− 0.0481 (0.2912)	− 1.6701 (1.3628)	0.1353 (0.3098)	0.0803 (0.2697)	− 0.8220 (1.0231)	0.1279 (0.2810)
Primary teachers prop female	2.6027*** (0.6616)	7.2066* (3.9243)	2.0821** (0.8601)	0.7054 (0.7526)	6.2530* (3.7644)	0.4145 (0.8851)
Middle teachers prop female	0.5191 (0.3930)	− 0.3026 (0.9067)	0.6120 (0.4583)	− 0.2347 (0.3247)	− 0.9416 (0.9630)	− 0.1977 (0.3297)
Secondary teachers prop female	0.4282 (0.3310)	− 1.4353* (0.8269)	0.6389* (0.3431)	− 0.0245 (0.2610)	− 1.4648 (1.2316)	0.0511 (0.2757)
Hospitals	− 0.0373 (0.1119)	0.1182 (0.1929)	− 0.0576 (0.1271)	0.0937* (0.0555)	0.1293 (0.1614)	0.0878* (0.0515)
Dispensaries	0.4762 (0.2987)	1.5103* (0.8163)	0.3651 (0.3202)	0.8091** (0.3826)	2.6042** (1.1177)	0.7128 (0.4463)
Beds in hospitals and dispensaries	6.5252*** (1.3222)	13.3302** (5.2735)	5.8265*** (1.3608)	4.7749** (2.0593)	13.8151*** (5.3361)	3.7626* (2.2801)
Development expenditure	0.6375 (0.6980)	2.9392** (1.1425)	0.2698 (0.7602)	0.4438 (0.6154)	1.8664* (1.0745)	0.0173 (0.6249)
Non-development expenditure	0.7874 (0.5360)	3.1901*** (1.0162)	0.4036 (0.5419)	0.1160 (0.4004)	1.1922 (0.8144)	− 0.2066 (0.3143)
Social expenditure	− 0.6098 (0.3846)	0.4460 (0.8845)	− 0.7785* (0.4118)	− 0.3943 (0.3974)	− 0.0341 (0.6660)	− 0.5024 (0.3877)
Economic expenditure	1.5270*** (0.5781)	1.4607 (1.4511)	1.5376** (0.6010)	1.0481** (0.4309)	1.4577 (1.0954)	0.9253** (0.4149)

Robust standard errors clustered at the state-elections level are reported in parentheses. *Significant at the 10%, **significant at the 5%, ***significant at the 1%.

To interpret these results, one must take into consideration the class of these legislators as well as gender. Given the difficulties faced by women trying to enter political life, female legislators may tend to belong to higher social classes than male legislators. This finding is especially the case for general female legislators, given that Schedule Caste/Tribe female legislators will have lower economic backgrounds. If general female legislators belong to a comparatively higher class than general male legislators, results for these legislators may be such that they capture more the class than the gender effect. However, this result will not be the case for SC/ST female legislators, for whom the gender effect can indeed be captured by results in this paper.

SC/ST female legislators favor land reforms and women-friendly laws. They also invest more in health than general female legislators. These results seem to indicate that SC/ST female legislators identify themselves with women, especially the poor and disadvantaged ones when making decisions. Moreover, low-caste female legislators invest in primary education. Given the historical difficulties that low-caste

women have had to access education, they will be more likely to benefit from this type of education than from middle and secondary education.

However, unlike results for SC/ST female legislators, results for general female legislators are somewhat different than findings for the United States, where women politicians seem to care about social, and especially family, issues.³⁶ By taking into account that general women legislators belong to the elite, i.e., they have higher income and better jobs than the average in the state and sometimes belong to a family of politicians (Mishra, 2000), these results seem to be explained by the class of these legislators. Moreover, the fact that general female legislators favor investment in middle and secondary education is consistent with this hypothesis, as only relatively rich women will be likely to receive middle and secondary education.

³⁶ To the best of my knowledge, no paper in the US literature takes into account the socio-economic position of women legislators.

Table 16
Clustering.

Coefficient and standard error under different clustering procedures							
	Women	SC/ST women	General women		Women	SC/ST women	General women
	IV	IV	IV		IV	IV	IV
Hindu succession laws	0.7823	12.9291	−1.4433	Middle teachers prop female	0.2500	0.1068	0.2743
se cluster state-election cycle	(1.2142)	(5.8789)**	(1.3574)	se cluster state-election cycle	(0.1582)+	(0.4271)	(0.1808)+
se multi-way cluster state and year elections	(1.6875)	(10.2098)	(1.7064)	se multi-way cluster state and year elections	(0.1922)	(0.3859)	(0.1841)+
se Della Vigna and Pollet, as in Foote (2007)	(1.2860)	(6.9918)*	(1.2553)	se Della Vigna and Pollet, as in Foote (2007)	(0.1860)	(0.3467)	(0.1783)+
Land reforms	−2.0326	23.6988	−6.3981	Secondary teachers prop female	0.2063	−0.5380	0.3325
se cluster state-election cycle	(2.3924)	(11.3360)**	(2.8492)**	se cluster state-election cycle	(0.1265)+	(0.5444)	(0.1313)**
se multi-way cluster state and year elections	(2.4565)	(11.8830)**	(3.6534)*	se multi-way cluster state and year elections	(0.1924)	(0.6409)	(0.2120)+
se Della Vigna and Pollet, as in Foote (2007)	(1.2806)+	(10.4648)**	(1.2438)***	se Della Vigna and Pollet, as in Foote (2007)	(0.1341)+	(0.5689)	(0.1649)**
Primary schools	0.7239	3.0444	0.3685	Hospitals	−0.0210	0.0469	−0.0323
se cluster state-election cycle	(0.3987)*	(1.5297)**	(0.3793)	se cluster state-election cycle	(0.0577)	(0.1092)	(0.0613)
se multi-way cluster state and year elections	(0.4767)+	(2.5491)	(0.4539)	se multi-way cluster state and year elections	(0.0355)	(0.1250)	(0.0396)
se Della Vigna and Pollet, as in Foote (2007)	(0.3842)*	(1.6628)*	(0.3163)	se Della Vigna and Pollet, as in Foote (2007)	(0.0545)	(0.1033)	(0.0603)
Middle schools	0.2939	0.1879	0.3101	Dispensaries	0.2192	0.8153	0.1049
se cluster state-election cycle	(0.1243)**	(0.3352)	(0.1216)**	se cluster state-election cycle	(0.1444)+	(0.4225)*	(0.1534)
se multi-way cluster state and year elections	(0.2116)	(0.5151)	(0.2002)+	se multi-way cluster state and year elections	(0.1843)	(0.4694)*	(0.1844)
se Della Vigna and Pollet, as in Foote (2007)	(0.1862)+	(0.4307)	(0.1619)*	se Della Vigna and Pollet, as in Foote (2007)	(0.1531)	(0.2815)***	(0.1636)
Secondary schools	0.1816	0.4348	0.1387	Beds in hospitals and dispensaries	3.4473	8.2100	2.4144
se cluster state-election cycle	(0.0673)***	(0.2568)*	(0.0646)**	se cluster state-election cycle	(1.0103)***	(3.2456)**	(1.0953)**
se multi-way cluster state and year elections	(0.0570)***	(0.3656)	(0.0543)**	se multi-way cluster state and year elections	(1.3689)**	(4.1404)***	(1.6767)
se Della Vigna and Pollet, as in Foote (2007)	(0.0559)***	(0.2383)*	(0.0505)***	se Della Vigna and Pollet, as in Foote (2007)	(1.1875)***	(1.8023)***	(1.4481)*
Primary teachers	0.2027	3.0592	−0.2819	Development expenditure	0.4045	1.6582	0.0953
se cluster state-election cycle	(0.2353)	(1.4407)**	(0.2988)	se cluster state-election cycle	(0.3832)	(0.7704)**	(0.4429)
se multi-way cluster state and year elections	(0.3212)	(1.7504)*	(0.3792)	se multi-way cluster state and year elections	(0.6265)	(1.1883)	(0.5586)
se Della Vigna and Pollet, as in Foote (2007)	(0.2686)	(1.1628)***	(0.4051)	se Della Vigna and Pollet, as in Foote (2007)	(0.4781)	(0.6330)***	(0.4645)
Middle teachers	−0.1795	−2.1526	0.1552	Non-Development expenditure	0.4996	1.8177	0.1745
se cluster state-election cycle	(0.1513)	(0.9806)**	(0.1826)	se cluster state-election cycle	(0.3021)*	(0.7913)**	(0.3228)
se multi-way cluster state and year elections	(0.1797)	(1.3289)+	(0.2252)	se multi-way cluster state and year elections	(0.3565)	(0.9253)*	(0.3791)
se Della Vigna and Pollet, as in Foote (2007)	(0.1713)	(0.8463)**	(0.2296)	se Della Vigna and Pollet, as in Foote (2007)	(0.3010)*	(0.6185)***	(0.3059)
Secondary teachers	−0.0232	−0.9066	0.1267	Social expenditure	−0.3869	0.1189	−0.5116
se cluster state-election cycle	(0.1288)	(0.6754)	(0.1531)	se cluster state-election cycle	(0.2473)+	(0.4887)	(0.2546)**
se multi-way cluster state and year elections	(0.1856)	(0.7347)	(0.1989)	se multi-way cluster state and year elections	(0.2582)+	(0.5580)	(0.2465)**
se Della Vigna and Pollet, as in Foote (2007)	(0.1346)	(0.4544)**	(0.1960)	se Della Vigna and Pollet, as in Foote (2007)	(0.2117)*	(0.4682)	(0.2243)**
Primary teachers prop female	1.2536	5.1426	0.5940	Economic expenditure	0.9688	1.0515	0.9484
se cluster state-election cycle	(0.3133)***	(2.4686)**	(0.4237)	se cluster state-election cycle	(0.3276)***	(0.9874)	(0.3008)***
se multi-way cluster state and year elections	(0.3131)***	(2.9360)*	(0.4831)	se multi-way cluster state and year elections	(0.6172)+	(1.3391)	(0.5445)*
se Della Vigna and Pollet, as in Foote (2007)	(0.3142)***	(1.5185)***	(0.4585)	se Della Vigna and Pollet, as in Foote (2007)	(0.4305)**	(0.9548)	(0.3990)**

+Robust at the 15%, *Robust at the 10%, **Robust at the 5%, ***Robust at the 1%.

There is evidence from other countries that the gender of the legislator matters for policy determination. However, data from other countries does not provide the opportunity to control for the social position of the legislator, which may be correlated with gender. India provides the unique opportunity to take this issue into account, by taking advantage of caste reservations.

There is evidence from India that reservations for women in local governments and the lower castes in the states and local governments do influence policy determination. However, there is no evidence on the effects of female representation in the state governments on policy, nor is there evidence on the effects of gender representation by caste. In India, there are growing pressures for female political reservations in the Central Government and the State Assemblies. However, an agreement on the issue has not been reached yet. The evidence provided in this paper might inform this debate, but one should take into account that although reservations would increase female representation, it would change the nature of political competition as well, either by changing voters' preferences, by modifying the set of candidates available for each seat, or by affecting the quality of candidates.³⁷ All these other changes should be taken into account when thinking about reservations.

Appendix A. Data appendix

A.1. Electoral data

Collected from different volumes of the Statistical Reports on the General Elections to the Legislative Assemblies. The election commission of India publishes one report for every election in each state. There are data at the constituency level for the 16 main states in India for elections held during 1967–2001.

- *Proportion of seats in the state won by women*: defined as the total number of seats in which a woman won the election in the state divided by the total number of seats in the state. This variable is lagged one period.
- *Proportion of seats reserved for SC/ST in the state*: defined as the total number of seats reserved for Scheduled Castes and Tribes in the state divided by the total number of seats. This variable is lagged one period.
- *Proportion of seats in the state won by SC/ST and general female politicians*: defined as the total number of seats won by Scheduled Castes and Tribe female politicians divided by the total number of seats in the state or the total number of seats won by general female politicians divided by the total number of seats in the state. This variable is lagged one period.
- *Proportion of seats in the state won by women in a close election against a man*: defined as the number of women in the state who won by less than 3.5% of votes against a man over the total number of seats in the state. This variable is then lagged one period.
- *Proportion of seats in the state in which a man and a woman contested in a close election*: defined as the number of men and women in the state who won by less than 3.5% of votes against a candidate of the other gender over the total number of seats in the state. This variable is then lagged one period.
- *Proportion of seats in the state won by an SC/ST women in a close election against an SC/ST man*: defined as the number of SC/ST women in the state who won by less than 3.5% of votes against an SC/ST man over the total number of seats in the state. This variable is then lagged one period.

- *Proportion of seats in the state won by general women in a close election against a general man*: defined as the number of general women in the state who won by less than 3.5% of votes against a general man over the total number of seats in the state. This variable is then lagged one period.
- *Proportion of seats in the state won by each political party*: number of seats won by the political party divided by total seats in the state. Congress parties include Indian National Congress Urs, Indian National Congress Socialist Parties and Indian National Congress. Hard Left parties include the Communist Party of India and Communist Party of India Marxist. Soft Left parties include Praja Socialist Party and Socialist Party. Janata parties include Janata, Lok Dal, and Janata Dal parties. Hindu parties include the Bharatiya Janata Party. Regional parties include Telegu Desam, Asom Gana Parishad, Jammu & Kashmir National Congress, Shiv Sena, Uktal Congress, Shiromani Alkali Dal and other state specific parties.

A.2. Educational variables

From the publication “Education in India”. I am grateful to Tim Besley and Robin Burgess for sharing their data with me.

- *Data on schools*: defined as the number of primary, middle and secondary schools in the state divided by the total population in thousands. Data are from 1968 to 1996 and from 1968 to 1992 for secondary education and for teachers. Variables have been interpolated where there were missing values.
- *Data on teachers*: defined as the number of teachers in primary, middle and secondary school teachers in the state divided by the total population in thousands. Also defined as the proportion of teachers that are female for each educational tier.

A.3. Health

Obtained from the Tim Besley and Robin Burgess database, I thank them for letting me use their data.

- *Hospitals*: Variable defined as the total number of hospitals in the state divided by the total population in thousands. Data are from 1969 to 1998. Variables have been interpolated where there were missing values.
- *Beds in hospitals and dispensaries*: Variable defined as the total number of beds in hospitals and dispensaries in the state divided by the total population in thousands. Data from 1971 to 1992. Variables have been interpolated where there were missing values.
- *Dispensaries*: Variable defined as the total number of dispensaries in the state divided by the total population in thousands. Data are from 1969 to 1992. Variables have been interpolated where there were missing values.

A.4. Expenditures

Collected from different monthly bulletins of the Reserve Bank of India. Some of the Revenue Expenditure data were updated from the Tim Besley and Robin Burgess database. Data are from 1972 to 2000, even if it varies depending on the categories. Variables have been interpolated where there were missing values.

- *Data on Total expenditures*: refers to Total Revenue Expenditure plus Total Capital Disbursements for every state and year.
- *Data on each one of the expenditure categories*: refers to the total amount spent on the Capital budget plus the total amount spent on

³⁷ See Chattopadhyay and Duflo (2004a,b).

Table A1

Characteristics of SCST and general individuals. Source: NSS 55th round.

		General			SC/ST		
		Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.
Mean per capita expenditure	All	78,392	711.31	548.72	25,967	480.76	323.44
	Top decile	9531	1819.42	813.87	892	1694.46	627.09
	Top two deciles	18,762	1419.94	710.96	2073	1297.79	540.91
	Top three deciles	27,566	1213.56	659.97	3685	1067.78	483.38
	Top four deciles	36,034	1078.12	627.02	5688	915.54	440.86
	Top five deciles	44,193	979.55	602.98	7968	808.84	409.01
	Top decile (comparing distrib. Gen to distrib. SC/ST)	7833	1944.57	847.26	2590	1204.65	518.68
	Top two deciles (comparing distrib. Gen to distrib. SC/ST)	15,660	1521.72	736.77	5186	946.45	449.82
	Top three deciles (comparing distrib. Gen to distrib. SC/ST)	23,500	1297.49	680.52	7761	816.85	411.44
	Top four deciles (comparing distrib. Gen to distrib. SC/ST)	31,321	1148.13	644.05	10,370	731.45	385.32
	Top five deciles (comparing distrib. Gen to distrib. SC/ST)	39,116	1038.04	617.22	12,962	669.44	366.34
	Rural	43,755	551.66	370.6	18,964	413.96	230.86
	Urban	34,637	912.98	659.62	7003	661.65	445.87
	More than secondary edu.	13,405	1188.12	811.16	1512	940.94	639.53
Land owned	Less than secondary edu.	64,987	612.95	413.42	24,455	452.3	268.16
	All	78,392	81.75	246	25,967	48.87	133.76
	Top decile	8463	544.4	551.01	1534	429.17	345.37
	Top two deciles	16,659	341.97	443.99	4119	242.28	256.63
	Top three deciles	24,217	254.55	390.53	7073	166.46	215.55
	Top four deciles	31,713	200.26	354.98	9963	125.3	192.74
	Top five deciles	37,257	171.29	334.75	11,663	107.9	183.06
	Top decile (comparing distrib. Gen to distrib. SC/ST)	7834	6.37	563.83	2596	5.8	295.64
	Top two deciles (comparing distrib. Gen to distrib. SC/ST)	15,643	3.62	453.27	5173	3.31	238.34
	Top three deciles (comparing distrib. Gen to distrib. SC/ST)	23,498	261.09	394.65	7681	156.28	209.74
	Top four deciles (comparing distrib. Gen to distrib. SC/ST)	31,153	203.65	357.24	10,302	121.5	190.66
	Top five deciles (comparing distrib. Gen to distrib. SC/ST)	37,257	171.29	334.75	11,663	107.9	183.06
	Rural	43,755	131.36	293.73	18,964	63.47	149.57
	Urban	34,637	19.09	144.72	7003	9.36	60.17
	More than secondary edu.	13,405	74.67	300.23	1512	48.09	159.12
	Less than secondary edu.	64,987	83.22	33.23	24,455	48.92	132.04

the Revenue budget in that particular category, divided by Total Expenditures.

A.5. Public finance

Obtained from the Tim Besley and Robin Burgess database.

- *Data on real per capita net state domestic product*: net state domestic product deflated with the deflator described below and divided by the total population in the state.
- *Deflator*: Consumer Price Index for Agricultural Labourers (CPIAL) and the Consumer Price Index for Industrial Workers (CPIIW). The reference period used is October 1973–March 1974.

A.6. Laws

- *Land reforms*: Obtained from the Tim Besley and Robin Burgess database. For more details refer to: <http://sticerd.lse.ac.uk/eopp/research/indian.asp>. Data from 1968 to 1992.
- *Hindu Succession Law*: Obtained from: The Kerala Joint Family System (Abolition) Act, 1975, The Hindu Succession (Andhra Pradesh Amendment) Act 1986, The Hindu Succession (Tamil Nadu Amendment) Act 1989, The Hindu Succession (Maharashtra Amendment) Act 1994, The Hindu Succession (Karnataka Amendment) Act 1994. This variable is equal to one if there has been a “pro-women” amendment in the state and zero otherwise. Data are from 1968 to 2000.

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