Female Political Representation and Economic Development in India

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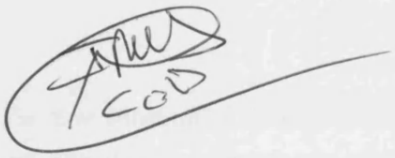

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Abstract

The first substantive chapter of this thesis studies the impact of a politician's gender on the educational achievements of a representative sample of Indian citizens aged 13-39 in 1999/2000. For this purpose I collected a unique and detailed dataset on politicians in India who contested in elections during 1967-2001 and I matched them to individuals by district of residence. These data allows me to identify close elections between women and men, which yield quasi-experimental election outcomes used to estimate the causal effect of a politician's gender. I find that increasing female political representation by 10 percentage points increases the probability that an individual attains primary education in urban areas by 6 percentage points, which is 21% of the difference in primary education attainment between the richest and the poorest Indian states.

This framework is then applied in the second substantive chapter to analyze whether politicians in India favour individuals who share their same identity more than the rest in policy making. I do this by matching the politician's identity to the identity of the beneficiaries of educational policies. I focus on the two groups that have lower educational achievements in India: women and the Scheduled Castes and Tribes. I use reservations for Scheduled Castes and Scheduled Tribes (SC/ST) and variation on female political representation in order to determine the politicians' identity. Results show that caste reservations only have a positive effect on the education received by SC/ST individuals when the proportion of SC/ST population in the district is high. Female politicians increase girls' education in urban areas. In addition when defining identity as gender and caste, results show that SC/ST female politicians increase women's and SC/ST's education while general female politicians increase women's and general individuals' education.

Given that development policies are taken by the state governments, in the third substantive chapter I use panel data from the 16 main states in India during the period

1967-1999 to study the effects of having higher female representation in the State Legislatures on public goods provided, laws enacted and expenditure. I find that both the politicians' gender and caste matter for policy. Scheduled Caste and Scheduled Tribe female legislators favour investments in primary education, and in beds in hospitals and dispensaries. They favour "women-friendly" laws, such as amendments to the Hindu Succession Act, proposed to give women the same inheritance rights as men and propoor redistributive policies such as land reforms. In contrast, general female legislators do not have any impact on "women-friendly" laws, oppose land reforms, invest in higher tiers of education and reduce social expenditure.

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Contents

Abstract 3

Acknowledgements 5

List of Tables 10

List of Figures 12

1 Introduction 13

2 Are Female Leaders Good for Education? 18

2.1 Introduction 18

2.2 Background and Data 21

2.2.1 Political Organization 21

2.2.2 Theoretical Background 22

2.2.3 Data 24

2.3 Identification 28

2.3.1 Identification Strategy 28

2.3.2 Checks on the Identification Strategy 32

2.4 Results 36

2.4.1 Baseline Results 36

2.4.2 Placebo Tests 38

2.4.3 Measures of Political Influence 40

2.4.4 Robustness checks 44

2.5 Discussion and Conclusion 44

2.6 Figures and Tables 47

3 Gender, Caste Reservations and Educational Gaps. 61

3.1 Introduction 61

3.2 Background and Data 64

3.2.1 Institutional Background 64

3.2.2 Data 65

3.3 Identification 68

3.3.1 Effect of SC/ST Politicians on SC/ST Individuals' Education . . 69

3.3.2 Effect of Female Politicians on Women's Education 71

3.3.3 Effects of the Gender and Caste of the Politicians on the Education Received by Individuals of the same Identity 74

3.3.4 Validity of the Identification Strategy 75

3.4 Baseline Results: 78

3.4.1 Effect of SC/ST Politicians on the Education Received by SC/ST Individuals 78

3.4.2 Effect of Female Politicians on Girls' and Boys' Education 80

3.4.3 Effects of the Politician's Gender and Caste on Individuals who Share their Identity. 81

3.5 Robustness Checks 85

3.6 Conclusions 86

3.7 Figures and Tables 88

4 Women in Politics in the Indian States. 102

4.1 Introduction 102

4.2 Institutional background 105

4.3 Data Description 107

4.3.1 Electoral Data 107

4.3.2 Dependent Variables 108

4.3.3 Control variables 110

4.4 Identification 111

4.4.1 Identification question 111

4.4.2 Identification Strategy 113

4.4.3 Validity of the Identification Strategy 115

4.5 Results 117

4.5.1 Educational inputs 117

4.5.2 Public goods 119

4.5.3 Laws 120

4.5.4 Expenditure 122

4.6 Conclusions 124

4.7 Figures and Tables 126

5 Conclusion **142**

Data Appendix **144**

Appendix **151**

Bibliography **151**

List of Tables

Table 2.1	Descriptive Statistics. District Political Dataset	49
Table 2.2	Descriptive Statistics. NSS 55th Round and Control Variables	50
Table 2.3	Data Issues	51
Table 2.4	Probability that a Woman Wins in a Close Election against a Man	52
Table 2.5	District Characteristics: Close Elections between Women and Men by Margin	53
Table 2.6	Constituency and Candidate Characteristics: Close Elections between Women and Men	54
Table 2.7	Comparison: Districts with and without Close Elections	55
Table 2.8	Proportion of Seats Won by Parties	55
Table 2.9	Do Female Politicians Have an Effect on Education?	56
Table 2.10	First Stage Regression	57
Table 2.11	Placebo Tests	58
Table 2.12	Measures of Political Influence	59
Table 2.13	Robustness Checks	60
Table 3.1	Descriptive Statistics. District Politicians.	90
Table 3.2	Descriptive Statistics: Survey and Control Variables	91
Table 3.3	SC/ST and General Seats: Probability that a Woman Wins in a Close Election against a Man	92
Table 3.4	District Characteristics: Men Contesting against Women and Women Contesting against Men by Caste	93
Table 3.5	SC/ST and General Seats: Constituency and Candidate Characteristics in Close Elections	94
Table 3.6	Effect of SC/ST Politicians on SC/ST Individuals	95
Table 3.7	First Stage Regressions	96
Table 3.8	Effect of Female Politicians on Girls and Boys	97
Table 3.9	Effect of SC/ST and General Female Politicians on Girls and Boys	...98.

Table 3.10	Effect of SC/ST and General Female Politicians on SC/ST and General Individuals	99
Table 3.11	Effect of SC/ST and General Female Politicians on Different Groups	100
Table 3.12	Robustness Checks	101
Table 4.1	Descriptive Statistics. State Political Dataset	129
Table 4.2	Descriptive Statistics. Dependent Variables and Socio-Economic Characteristics	130
Table 4.3	Differences in State Characteristics According to Female Political Representation	131
Table 4.4	Probability of Women Winning in Close Elections against Men	132
Table 4.5	State Characteristics: Men Contesting against Women and Women Contesting against Men in Close Elections	133
Table 4.6	State Characteristics: States who Had more or less Close Elections	134
Table 4.7	Schools	135
Table 4.8	Teachers	136
Table 4.9	Male and Female Teachers	137
Table 4.10	Other Public Goods	138
Table 4.11	Laws	139
Table 4.12	Expenditure Measures: Broad Classification	140
Table 4.13	Expenditure Measures: Detailed Classification	141

List of Figures

Figure 2.1	Female Political Representation by State 1967-2001	48
Figure 3.1	Primary Education and Wages	89
Figure 3.2	Primary Education and Household Expenditure	89
Figure 4.1	SC/ST and General Female Representation	127
Figure 4.2	State Budgets	128

Chapter 1

Introduction

In many countries in the world, women are underrepresented in all political positions. While the proportion of women who went to vote increased during the 1990s, women are still not well represented in political life. This PhD thesis analyses whether female representation in the State Assemblies in India matters for policy determination and, in consequence, development.

According to political economy models where candidates can commit to specific policies and only care about winning the elections, political decisions only reflect the electorate's preferences (Downs 1957). In this case, female political representation should not have a differential impact on policy decisions as only the median voter preferences would matter. However, if complete policy commitment is absent the identity of the legislator matters for policy decisions (Besley and Coate 1997; Osborne and Slivinski 1996). These models predict that increasing a group's political representation will increase its influence in policy.

The case of India constitutes a good example as the issue of female political representation has recently gained importance there. Even if reservations for women are already taking place in Panchayats (local governments), in September 1996, the Indian Government introduced a Bill in Parliament, proposing the reservation of one third of the seats for women in the Lok Sabha (Central Government) and the State Assemblies. Since then, this proposal has been widely discussed in several parliamentary sessions, without an agreement being reached. Those who are in favour of this reservation argue that increasing women's political representation will ensure a better representation

of their needs. Even those who oppose reservation acknowledge the fact that female politicians behave differently than male politicians.

In order to conduct this PhD thesis I take advantage of a very detailed dataset that I collected on politicians who contested seats in the 16 biggest states in India during 1967-2001. In the first and second substantive chapters I combine this data with NSS survey data and census data. In the third I combine it with state level data on laws, public goods and expenditures.

Thorough this PhD thesis I have a common identification problem, which is to identify the causal effect of female politicians on outcomes. This is the case because there may be an omitted variable that affects both who is elected and the policy implemented. This omitted variable may be the electorate's preferences. In order to solve this problem, in the three chapters I use a common identification strategy, which consists on using the fraction of seats won by a woman in a close election against a man as an instrument for the fraction of seats won by a woman. I define close elections as those in which the winner won the runner up by very few votes. The instrument is valid because the fact that a male or a female candidate won in a close election can be considered to be largely random, and therefore female candidates who won in a close election against a man will be elected in similar constituencies and under similar circumstances as male candidates who won in a close election against a woman.

The first substantive chapter studies the impact of a politician's gender on the educational achievements of a representative sample of Indian citizens aged 13-39 in 1999/2000. India has very low educational attainments compared to other developing countries. Moreover, educational differences across genders, states and rural/urban areas are very large.

Education is mainly provided by the state governments, which can increase levels of education by changing the quantity and quality of education provided. Therefore, given that political institutions are very important for education and are formed by different types of politicians, it is important to understand whether some characteristics of these politicians determine the type of policies applied.

This chapter estimates the impact on an individual's primary school attainment of the gender of the politicians who were in power in his or her district in India when he or she was young. The districts are a lower level of administration of the state and have

educational offices; moreover the district is the best possible unit of analysis because it allows me to estimate the effect of female politicians in the smallest possible area where their electoral constituency is located.

I find that politicians' gender matters for educational achievements. In particular, primary educational attainment is higher in urban areas when female political representation is higher. In contrast, female representation does not have an effect on individuals living in rural areas. Increasing female political representation by 10 percentage points increases the probability that an individual attains primary education in urban areas by 6 percentage points, which is 21% of the difference in primary education attainment between the richest and the poorest Indian states. In addition, given that being a woman reduces the probability of attaining primary education by 6 percentage points, this is an important amount.

In a similar setting, the second substantive chapter analyses whether politicians in the state governments in India favour those citizens who belong to their groups in policymaking by studying the impact of a politician's identity on the probability that individuals belonging to the politician's identity group attain primary education. In particular, the chapter analyses whether having a politician of a particular group reduces educational inequalities between this group and the rest. It mainly focuses on Scheduled Caste and Scheduled Tribe (SC/ST) reservations and on female political representation, as women and Scheduled castes and Tribes are the groups who display lower educational attainments.

Results show that caste reservations had a negative effect on the education received by SC/ST individuals, but that this result is reversed when the proportion of SC/ST population in the district is high. Female politicians increase girls' education in urban areas. When defining identity as gender and caste, results show that politicians target their own groups: SC/ST female politicians increase women's and SC/ST's education while general[1] female politicians increase women's and general individuals' education.

Finally, and given that educational policies are taken at the state level, in the third substantive chapter I analyze whether state parliaments where women have higher representation adopt different policies than the rest, not only regarding education but also regarding other matters. State governments control most of the social and economic expenditure and have the power to implement most of the development policies in India.

[1]General seats are non-reserved seats. General individuals are individuals that are not SC/ST.

In this chapter the impact of both general and SC/ST female legislators will be identified separately, as 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. Thus, the fact that some seats are reserved for low castes allows me to identify separately the effect of low caste female legislators and to distinguish the gender effects from the class effects, as SC/ST female legislators will be poorer than general female legislators.

I find that both the politician's gender and caste matter for policy. In particular, Scheduled Caste and Scheduled Tribe women legislators invest in primary education, by increasing the number of schools and teachers and favour "women-friendly" laws, such as amendments to the Hindu Succession Act, designed to give women the same inheritance rights as men. They also favour redistributive policies, such as land reforms. In contrast, general female legislators do not have any impact on "women-friendly" laws, oppose land reforms, invest in higher tiers of education and reduce social expenditure.

The existing literature(e.g. Thomas (1991), Thomas and Welch (1991), Case (1998 & 2000), Besley and Case (2000 & 2002) and Rehavi (2003) for the US, Svaleryd (2002) for Sweden and Chattopadhay and Duflo (2004) for India) provides evidence that male and female politicians choose different policies. The first substantive chapter contributes to this literature by providing evidence on the effect of female politicians on educational outcomes achieved by individuals living in the areas where those politicians where elected.

There is very little and conflicting evidence on whether politicians favour those who belong to their groups in policymaking, both for developed and developing countries. Besley et al (2004) and Bardhan et al (2005) have looked at the impact of caste reservations in local governments on public goods and policies received by lower caste households. Understanding the impact of the politician's identity on who wins and who loses from the policies he or she implements may have important distributional implications. The second chapter contributes to this literature by defining the politicians' identity by both gender and caste, which has not yet been done in the literature.

Finally, the third chapter contributes to literature on the legislator's identity by identifying gender and caste effects separately and finding that they both matter for policy, something which had not been done in the past.

The methodology used in this PhD Thesis is closely related to the regression discontinuity methodology, which has been widely used and was first introduced in the context of elections by Lee (2001) for incumbency advantage and Pettersson-Lidbom (2001) for the effect of party control on fiscal policies. Angrist and Lavy (1999) used regression discontinuity as an instrument to estimate the impact of class size on educational achievements. Rehavi (2003) 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 US policies.

Chapter 2

Are Female Leaders Good for Education?

2.1 Introduction

This chapter studies the impact of a politician's gender on the educational achievements of a representative sample of Indian citizens aged 13-39 in 1999/2000. The motivation behind the chapter is twofold. First, education is very important for growth in developing countries; in light of this, the Millennium Development Goals want to ensure universal primary education by 2015. India accounts for more than one third of the world's poor and it has very low educational attainments. The adult literacy rate in 2003 was 61%, roughly the same as that in Sub-Saharan Africa, an area which is 1.5 times poorer. Moreover, the female literacy rate was 47%, lower than the 52% observed in Sub-Saharan Africa (Human Development Report 2005). Educational differences are not only large across genders, but across states and rural/urban areas.

Education is mainly provided by the government, which can increase levels of education by implementing appropriate policies. Therefore, given that political institutions are key for education and are formed by different types of politicians, it is important to understand whether some characteristics of these politicians determine the type of policies applied.

Second, it is important to study whether a politician's gender does make a difference. The issue of female political representation has been increasingly important in India.

In fact, reservation for women both in the national and the states' governments has been debated since 1996, even if it has already started in local governments. According to citizen-candidate models (Besley and Coate 1997 and Osborne and Slivinski 1996), the legislator's identity matters for policy determination. The evidence from developed countries shows that female and male legislators make different policy decisions.[1] In a traditional society like India's, where gender roles are very different, these roles are likely to shape women's preferences and therefore lead to different behaviour once in government.

To assess whether a politician's gender matters for educational outcomes I collected a detailed dataset on 29686 politicians who contested seats in the 16 biggest states in India during 1967-2001. I combine these data with NSS survey data to estimate the impact on an individual's primary school attainment of the gender of the politicians who were in power in his or her district in India when he or she was young. The district is the best unit of analysis because it allows me to estimate the effect of female politicians in the smallest possible area where their electoral constituency is located. Moreover, given that Indian districts are the lower level of administration and have educational offices; legislators in a particular district could also direct funds to these offices, having an impact not only on their constituencies but on the overall district. The big advantage of this dataset is that allows me to identify, not only the effect of female politicians, but the effect of female politicians on educational outcomes achieved by individuals living in the areas where they were elected.

The key challenge is to identify empirically the causal effect of female politicians on an individual's education. This is difficult because omitted variables are likely to affect both electoral outcomes and policy. To identify the effect of female representation I instrument the share of constituencies in the district won by a female politician with the share of constituencies in the district won by a female politician in a close election against a male politician. Close elections are defined as those in which the winner led the runner-up by very few votes. The instrument is valid because the fact that a male or a female candidate won in a close election can be considered to be largely random, and therefore female candidates who won in a close election against a man will be elected in similar constituencies and under similar circumstances as male candidates who won in a close election against a woman.

[1]For example, see Thomas (1991), Thomas and Welch (1991), Case (1998 & 2000), Besley and Case (2000 & 2002) and Rehavi (2003) for the US and Svaleryd (2002) for Sweden.

I find that the politician's gender matters for educational achievements. In particular, primary educational attainment is higher in urban areas when female political representation is higher. In contrast, female representation does not have an effect on individuals living in rural areas. Increasing female political representation by 10 percentage points increases the probability that an individual attains primary education in urban areas by 6 percentage points, which is 21% of the difference in primary education attainment between the richest and the poorest Indian states.

One may expect that female legislators belonging to the party that won most of the seats could have more bargaining power than the rest. When dividing female legislators according to whether they belong to the party in power in the legislature or not I find that those in the party that has the majority of seats are the ones who have the strongest effect.

Results are consistent with the citizen candidate model, since a politician's identity, here defined by gender, has an impact on policy. If female politicians care about women's needs, education will be more important for women in urban areas, since the returns to education, proxied by the wage differentials between educated and non-educated women are higher there. Moreover, in urban areas it will be easier for them to find employment in the non-agricultural sector, where their skills are required. Men can benefit from education both in urban and rural areas, since wage differentials between educated and non-educated men are similar in rural and urban areas and they may have higher mobility to move to urban areas in search of non-farm employment. According to this, female politicians will invest more in education in urban areas, while male politicians will invest both in rural and urban areas. This can explain why female representation matters in urban but not in rural areas.

This chapter brings together two strands of the literature, the literature on the determinants of education and the literature on the identity of the legislator. There is a large amount of literature on education. It focuses on the evaluation of policies related to an increase in the number of teachers and educational inputs (Banerjee et al 2004 and Chin 2005), or on the impact of different household, labour market, village and school characteristics on educational attainment (Dreze and Kingdon (2001)). Other papers focus on the impact of traditional institutions on education: Munshi and Rosenzweig (2005) study how a traditional institution like caste affected schooling choices in the 1990's, Pandey(2005) shows how in villages in North India with a history of elite control teacher's and student's performances are lower, while caste reservation in the village

did not seem to reverse it. This chapter complements the literature on education in developing countries by studying whether the gender of the politicians who decide the educational policies in India has an impact on educational outcomes.

The existing literature on the identity of the legislator in India focuses on the effect of different reservation policies and shows that the identity of the legislator matters for policy determination. Chattopadhay and Duflo (2004) show that the reservation of one third of the seats for women in Panchayats (local rural self-government) of West Bengal and Rajasthan has a positive impact on investment in infrastructure relevant to women's needs. Pande (2003) analyses how the reservation of seats for scheduled castes and scheduled tribes in the State Assemblies increases the volume of transfers that these groups receive. This chapter complements this literature by studying the effect on educational outcomes of variation in female political representation due to electoral outcomes rather than reservation policies and by focusing on politicians who contested seats in the State Assemblies between 1967 and 2001.

The remainder of the chapter is organized as follows: Section 2.2 explains the institutional context, the theoretical background and describes the data used. Section 2.3 explains the identification strategy used. Section 2.4 shows the results obtained and Section 2.5 discusses the results obtained and concludes.

2.2 Background and Data

2.2.1 Political Organization

India is a federal country, and the constitution gives the States and Union Territories significant control over their own government. The State Legislative Assemblies are directly elected bodies set up to carry out the administration of the government in the 25 States of India. In some states there is a bicameral organization of legislatures, with both an upper and lower house. However, the lower house (Legislative Assembly) takes the final decisions.

The State Legislative Assemblies are those that mainly decide on educational policies and the expenditure devoted to education. They have Education Departments, which are administrative bureaucracies to control and implement these activities. Article 246

of the Constitution gives the Legislature of any State powers to make laws dealing with educational issues. Even though education falls into the Concurrent List (matters shared between the central and the state governments), the state government plays the major role in educational policy, particularly at the primary and secondary levels.

India is a parliamentary democracy. The States and Union Territories are divided into single-member constituencies where candidates are elected in first-past-the-post elections. The boundaries of assembly constituencies are drawn to make sure that there are, as near as practicable, the same number of inhabitants in each constituency. The assemblies vary in size, according to population. The districts are the administration unit at the lower level from the state. Each one includes between one and 37 constituencies. The median district contains 9 electoral constituencies. The voting 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 contest elections for the State Assemblies.

In September 1996, the Government introduced a parliamentary bill that proposed the reservation of one third of the seats for women in the Central Government and the State Assemblies. Since then, this proposal has been widely discussed in several parliamentary sessions, without an agreement being reached. Women in India are under-represented in all political positions. Between 1967 and 2001 in the 16 main states at most 14% of the general seats and 24% of the seats reserved for Scheduled Castes and Tribes in the State Assemblies were won by a woman in a given year and state. In Figure 2.1 I plot the fraction of seats in each state won by women between 1967 and 2001. This figure shows significant differences across states on both the levels and trends of female representation, which provides the variation exploited in the empirical analysis.

2.2.2 Theoretical Background

In political economy models where candidates can commit to implement specific policies when elected and only care about winning the elections, political decisions should only reflect the electorate's preferences. (Downs 1957). If this were the case, female political representation would not matter for policy outcomes, since equilibrium policies would follow the preferences of the median voter. Thus, as long as women could vote in the elections, their preferences would be represented by the candidate elected, irrespective of this candidate's gender. Nevertheless, in the absence of complete policy commitment

the identity of the legislator matters for policy determination. (Besley and Coate 1997 and Osborne and Slivinski 1996) show that increasing a group's political representation would increase its influence in policy.

Individual legislators are elected in single-member constituencies. They belong to different political parties, but represent the interest of the constituencies in which they were elected in the State Assembly. India has been characterized by a multiparty electoral system, the party who won more seats in the legislature being the one that forms government, with or without other parties in the coalition.

Several models explain why legislators direct funds to his or her own constituency and why individual legislators may have preferences towards the type of policies applied in their constituencies. Alesina (1988) shows how different parties may have different preferences because they represent different constituencies and care about being elected and about the policies they will implement once elected in their constituencies. Persson et al (2000) compare a parliamentary regime with a presidential-congressional regime and show that in a parliamentary regime, if all agents are self-motivated, citizens delegate their decisions to their representatives and political candidates cannot commit to policy platforms before the elections, there will be more redistribution and public goods provision towards the citizens represented by the coalition in government. In fact, they show that, as legislators value holding office, the threat of being voted out makes them perfect delegates for their constituencies. However, their power to do so will depend on their bargaining power in the legislature.

In a similar spirit, Grossman and Helpman (2005) show that there may be conflicts of interest between political parties and individual legislators. Once their party is in power, individual legislators will want to provide public goods to their constituents, independently of the promises made by their political party. The extent of this will depend on the degree of party discipline. According to this, both female and male politicians may want to direct funds to their own constituencies, independently of what was promised by their party. It is plausible to assume that Indian political parties will face costs of enforcing "party discipline", implying that individual legislators may have the power to implement their policies in their constituencies, especially if they are part of the parties with more power in the legislature. However, if female legislators also have different preferences from male legislators, then the type of expenditures and policies they will conduct will be different.

Thus, politicians in India will have incentives to provide public goods or expenditure to their constituencies. According to this, female politicians may have an impact on the education received in their constituency and possibly as well in the whole district. This is the case because, given that Indian districts usually have education offices, these politicians could keep in close contact with these offices and influence the way expenditures are made there. They could also decide to transfer more funding to one district, in particular if their constituency is located there.

2.2.3 Data

The empirical analysis focuses on the relationship between the education received by an individual and the identity of the politicians who were in power in his or her district when he or she was young. In this section I will describe the data used and how I combined different data sources.[2]

2.2.3.1 Electoral Data

I use a very detailed dataset I collected on the State Legislatures in India during the period 1967-2001 from the reports published by the Election Commission of India. I collected data at the constituency level of the candidate who won, his or her gender and political party. I also collected data on all female candidates who contested for election, their political parties and the votes they obtained. For those women and men who won against a candidate of the other gender, I have data on who was the runner-up in each particular election and the votes obtained by him/her. Overall I have information on 29686 politicians who contested on the 16 main States during the period 1967-2001.[3]

Each one of these candidates was elected in a single-member constituency and then occupied a seat in the State Legislative Assembly. Given that each district has from 1 to 37 electoral constituencies, each district will have from 1 to 37 representatives in the Assembly.

[2]For more detailed information on the variables used and the data sources see the Data Appendix.

[3]These 16 states account for more than 90 per cent of the total population in India, about 935 million people. They are Andhra Pradesh, Assam, Bihar, Gujarat, Haryana, Jammu & Kashmir, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Orissa, Punjab, Rajashtan, Tamil Nadu, Uttar Pradesh and West Bengal.

Table 2.1 provides descriptive statistics on the political variables used in this study. It includes information on the proportion of seats won by women, both in general and in SC/ST seats, the proportion of reserved seats and the proportion of seats won by each political party, as well divided by gender.[4] It also gives information on the fraction of seats won by women belonging to the party that had the majority of seats in the state and those who did not. For those districts in which women were elected, I provide information on the proportion of constituencies in the district won by women in close elections against men and the proportion of constituencies that had close elections between women and men. Information the different parties disaggregated by gender is also provided.

Descriptive statistics show that female representation has been low over the time period under consideration: around 4% of the seats per district and electoral year. In addition, over this time period Congress parties are those who have held most of the seats, followed by Janata, Hindu and Regional Parties. Within districts in which women won the elections, the majority of both women and men who won were from the Congress party, followed by Janata, Hindu and regional parties. Thus, female politicians are not disproportionately representing a particular party and all parties had female candidates winning seats.

2.2.3.2 NSS Data

I combine this dataset with data from the 55th round of National Sample Survey (NSS). This is a nationally representative household survey that provides information at the household and the individual level. The survey was conducted in India between July 1999 and June 2000 on a sample of randomly selected households.

I use the Employment and Unemployment schedules of the 55th round of the NSS. They contain information on 596688 individuals, 371188 in rural areas and 225500 in

[4]There are eight main party groups: Congress, Hard Left, Soft Left, Janata, Hindu, Regional, Independent candidates and other parties. Congress parties include Indian National Congree 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.

urban areas.[5]

The NSS gives information on personal characteristics such as religion, gender and whether the individual belongs to the Scheduled Castes or Tribes. It also gives information on whether the individual migrated from another area, her employment status, and district of residence. It also provides information on the individual's educational attainment. I use this to create a variable that is equal to one if the individual obtained primary or a higher level of education through formal education.[6]

Panel A in Table 2.2 gives descriptive statistics on some characteristics of the individuals in the sample used, classified by urban/rural status. There is data on the number of men, women, SC/ST individuals, the fraction of individuals who obtained at least primary education disaggregated by gender, and the fraction of Hindu and Muslim individuals. While 43.9% of women and 63.9% of men living in rural areas completed primary education, in urban areas they are 75.5% and 79.8% respectively. Thus educational attainment is much lower in rural areas, and gender differences are much larger there.

2.2.3.3 Combining Data Sources

Since the NSS data provides information on individual's residence up to the district level only and politicians are elected in constituencies, to merge the two datasets I have aggregated the electoral data up to the district level.

This is not a trivial task. In order to know which constituencies are included in each district for each electoral year between 1967 and 2001, I looked at different constituency delimitation orders and the publications "State Elections in India", which lists the constituencies that are included in each district for each election. Once I had the list of constituencies in each district for each electoral year I had to take into account that some districts have split, have been newly created or have disappeared during the time period under consideration. I then used the 1991 census district definition and I only included those districts that did not split or disappear. As well, I did not

[5]The NSS uses the Indian Census definition of urban and rural areas.

[6]I then only consider individuals who attended formal education courses in my sample. Those who obtained education as adults are then considered as non-educated since they did not pass the primary standard examination when they were young. Nevertheless, there are only 987 individuals in this category, and results do not change after dropping these individuals from the sample.

consider those districts which were newly created between 1967-2001 and those which include constituencies belonging to another neighbouring district at the same time.[7] In this way, I aggregated all the data into districts. This procedure allowed me to have information on 276 districts, that include around 2761 electoral constituencies.[8]

I merge these two datasets by the district of residence and by the year in which each individual started primary school[9]. Thus, using information on the year each individual was born and his or her district of birth I can know which politicians where in power before he or she started primary school.

Since an individual who migrated from another district after this age will not have benefited from the educational policies applied in the district of destination, I eliminate those who migrated after schooling age from another district, state or country from the sample. I also eliminate those who migrated from rural to urban areas or vice versa within the same district, since educational policies may be different in rural than in urban areas.[10]

Since primary school lasts four or five years depending on the state of residence and individuals usually start schooling at the age of six, I restrict the sample to those individuals who are older than 13 at the time of the survey, to allow for differences in states and for individuals having to repeat entire years and thus finishing late.

The resulting sample size is 105208 individuals. The availability of political data allows me to include in the sample only individuals born after 1964. Thus, I can perform a cohort analysis in which individuals in each cohort will have lived in different districts and thus, since politicians change over district and over time, will have been exposed to different politicians.

To each one of the individuals in the sample I assign the politicians who were in power during the three years before he or she started primary education. Panel A in Table 2.3 gives an example how the data is organized: individual 1, who lives in district A and

[7]Some constituencies straddle a district bound.

[8]There are around 463 districts in the 16 biggest states in India.

[9]I consider it to be 6 years of age. The NSS provides information about an individual's age and the time the individual was interviewed. Since the individual could have been sampled either in 1999 or 2000 and this sample year is given by the NSS, I take this into account when I compute the age at which an individual started primary school.

[10]Even if migration in India is generally low, migration is higher for women, especially because sometimes they move outside their district to get married.

was born in 1964, should have started primary education in 1970, which means that the politicians in his district that could have had an effect on his or her education will be those in power between 1967 and 1969, before he or she started primary education. Thus, I take averages of the political variables between 1967 and 1969.

2.3 Identification

2.3.1 Identification Strategy

The key identification challenge is to estimate the causal effect of a politician's identity on education, by separating this effect from the effect of unobservable variables that drive both education and female representation. To illustrate this, assume that one estimates the equation:

$$Y_{idt} = \alpha + \beta F_{dt} + \varepsilon_{idt}$$

Where Y_{idt} is the educational outcome for individual i, living in district d and born in cohort t. F_{dt} is the fraction of constituencies in the district held by female politicians during the three years before individual i started primary education. Then, the coefficient β would not be consistently estimated by OLS if there is an omitted variable Q_{dt}, not included in the model and correlated with F_{dt}.

Politicians in a given district and year are elected by the population in their constituencies. Thus, the fact that a woman or a man wins the election in a given seat cannot be considered a random event as it is determined by the electorate's preferences. The omitted variable could be electoral preferences in the district, which may be correlated both with female political representation and with educational attainments in the district. Even if district fixed effects are included in the regression, these control only for permanent differences across districts in female representation and the outcome variables. One can not rule out the fact that the omitted variable Q_{dt} may be district-specific and change over time.

In order to identify the causal effect of female politicians I take advantage of the existence of close elections between a woman and a man candidate, elections in which the

winner won the runner up by a very small number of votes[11] The identification strategy used in this chapter follows the same idea as the regression discontinuity approach. This methodology has been widely used and was first introduced in the context of elections by Lee (2001) for incumbency advantage and Pettersson-Lidbom (2001) for the effect of party control on fiscal policies. In the field of development economics, Miguel and Zaidi (2003) use regression discontinuity to test for the "Patronage" hypothesis in Ghana. 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 (2003), 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 constituencies in the district won by a woman in a close election against a man. Close elections are elections in which the vote difference between the winner and the runner up is very small. The reason why the instrument is valid is that female candidates who barely win the elections against a man do it in constituencies where there is no clear "preference for female politicians". These constituencies will be ex ante comparable to constituencies in which male candidates win in a close election against a woman. If we consider that the last few votes received by both candidates are random, both the female and the male candidates could have won the elections and, thus, the fact that the female candidate won the seat instead of the male is random as well. In other words, constituencies in which a woman won in a close election against a man and constituencies in which a man won in a close election against a woman will be similar in all the unobservable variables, they will only differ in the fact that by chance either a man or a woman won the election. The fact that a candidate is elected in first-past-the-post elections held in single-member constituencies is a function of the vote difference between the winner and the runner up. This function has a discontinuity when the vote difference is zero; this is the case because the winner has to receive more votes than the runner up in order to win the election. Thus, the fact that the candidate is elected or not changes discontinuously as this vote difference is zero. In elections in which the winner and the runner up have different genders, as the vote difference becomes smaller and approaches the discontinuity, constituencies in which the vote difference is very small and a woman won will be more and more similar to constituencies in which the vote difference is very small and a man won. Thus, this discontinuity at the zero vote difference will provide a randomized treatment. Since I

[11] I define close elections as those in which the winner won the runner up by less than 3.5% of votes.

consider elections in which the winner and the runner up have different genders, when the difference in votes is very small the winner's gender will be randomized. I define close elections as elections in which the votes difference between the winner and the runner-up is less than 3.5% of the total votes in that particular constituency.[12]

Panel B in Table 2.3 shows how individuals in the sample are classified according to whether there were close elections between men and women in their district during the three years before they started primary education. There are several constituencies in each district, which means that an individual will be affected by a close election if there has been any close election in his or her district of residence. This table shows that 18% of individuals in the sample have been affected by close elections between a man and a woman, in other words, have been living in a district where close elections between men and women took place when they were young. If one then looks at individuals that have been affected by close elections: 6.7% of the whole sample have been in districts where more men than women won in close elections, 4.6% have been in districts where the same number of women and men won in close elections and 6.8% in districts where more women than men won in close elections. Thus, as expected, there is about the same number of individuals affected by men winning in close elections as by women winning in close elections.

The model to be estimated is:

$$Y_{idt} = \theta_d + \psi_t + \beta F_{dt} + \lambda TC_{dt} + X_{idt}\eta + Z_{dt}\delta + \varepsilon_{idt} \tag{2.1}$$

$$F_{dt} = \theta_d + \psi_t + \kappa FC_{dt} + \mu TC_{dt} + X_{dt}\sigma + Z_{dt}\varsigma + u_{dt} \tag{2.2}$$

In specification 2.1, Y_{idt} takes the value of 1 if individual i belonging to cohort t, and born in district d has obtained at least primary education and 0 otherwise. I estimate the model using two stage least squares, where equation 2.1 is the second stage and equation 2.2 is the first stage. Since observations in the same district could be correlated, I compute the standard errors clustered at the district level.

[12] I perform the same exercise with smaller margins and results are unchanged. See the Robustness Checks section.

The main variable of interest, F_{dt}, is the fraction of constituencies in the district that were won by a female politician during the three years before individual i started primary education. The instrument for this variable is FC_{dt}, the fraction of constituencies in the district won by a woman in a close election against a man during the same time period. I control for TC_{dt}, the fraction of constituencies in the district in which there were close elections between women and men, as well during the same time period. The fraction of constituencies that had close elections between men and women controls for the fact that the existence of this type of close elections may not be a random event. However, the outcome of a close election is random, meaning that the winner's gender in close elections between women and men is random as well. In other words, the impact of the existence of close elections between women and men on education is controlled by in specification 2.1 and partialled out of the instrument in specification 2.2.

θ_d are district fixed effects, which account for district-specific characteristics that do not change over time. ψ_t are the cohort fixed effects, which account for the fact that individuals born in different years may have been subject to different shocks or nationwide educational policies.

X_{idt} is a vector of individual-level control variables. I use different dummy variables for rural areas and Scheduled Caste or Scheduled Tribe individuals. Since rural areas are likely to have lower literacy levels and educational inputs than urban areas, a dummy for rural areas captures this effect. Similarly, SC/ST individuals seem to be those who have less access to education in India. I also include dummies that indicate whether the individual is a woman or whether the individual is Hindu or Muslim. As before, gender and religion may be important determinants of an individual's education.

Z_{dt} are the set of district characteristics that vary over time and may have an effect on the dependent variable. In order to be able to disentangle the identity of the legislator effect from the political parties' effect, I include as control variables the average fraction of seats won by the different political parties in each district the three years before the individual started primary education. If female politicians have a differential effect compared to male politicians after controlling for party composition, this will mean that the results will be given by gender and not party differences. These variables vary across districts and across time. As in Besley and Burgess (2002) I use six main party groups: Congress, Hard Left, Soft Left, Janata, Hindu and Regional parties. Thus, independent candidates and other very small parties are the reference category. I also include as a control variable the fraction of SC/ST reserved seats in the district, since

this may also have an impact on the nature of political competition in each district.

I control for other variables that vary across districts and time. For example, I include female and male literacy rates in order to control for the fact that in districts were there are more literates the electorate's preferences may be different. At the same time, it may as well be that in districts where literacy rates are higher parents are more likely to bring their children to school. I have also included the share of SC/ST, and urban and female population in the regression, since they may also have an impact on both educational and electoral outcomes. Descriptive statistics for these variables are shown in Panel B of Table 2.1. For these control variables, I use information on district characteristics three years before the individual started primary education, to account for the situation the legislator had in a particular district.

2.3.2 Checks on the Identification Strategy

In this section I show some facts that support the validity of the identification strategy used. I address three issues. First of all, I provide evidence supporting the fact that the outcome of a close election is indeed random. In addition, districts and constituencies in which female candidates won in close elections against men should be similar in observables to those in which male candidates won in close elections. Finally, I provide evidence that districts that had close elections between men and women are not systematically different than other districts in India.

2.3.2.1 Randomness of Close Election Outcomes

If there are political or demographic characteristics that predict the probability that women win in close elections in the district, the outcome of the close elections and, thus, the gender of the winners cannot be considered random. In order to estimate the probability that women won in close elections in a district, I have calculated the proportion of close elections won by women by district in each electoral year. I then regress this probability on the fraction of seats contested by the different party groupings in close elections, the proportion of urban population, the proportion of female and SC/ST population, male and female literacy rates, the number of times that women have won elections in the past in that district, a dummy equal to one if the district

never had close elections in the past and the proportion of reserved seats. Results are shown in Table 2.4, and confirm that none of the coefficients turn out to be significant, suggesting that the outcome of a close election is indeed random.

2.3.2.2 Comparing on Observables

If the winner's gender in a close election between a man and a woman is random, we expect that districts in which more women won in close elections should be very similar to districts in which more men won in close elections.

Table 2.5 provides information on the differences in district characteristics according to the number of women who won against men and number of men who won against women. Districts are classified in two groups, those in which more men won and those in which more women won. Then I compute the differences in district characteristics between these two groups. I do this considering the elections in which the winner has lead over the runner-up by margins of 3.5%, 3% and 2.5% of votes. I use information at the district level on the proportion of urban population, male and female literacy rates, the fraction of seats reserved for SC/STs, the number of educational institutions and hospitals weighted by the population and the proportion of seats won by female and male candidates in elections that are not close. The columns corresponding to margins of less than 3.5%, 3% and 2.5% show that districts in which more men won in close elections with this or a smaller margin and districts where more women won in close elections with this or a smaller margin are very similar in all these variables.

In summary, districts in which more women won in close elections are very similar to districts in which more men won in close elections. One should also observe that constituency and individual characteristics of women and men winning in close elections are the same. In the remainder of this section I analyze some of these characteristics, which could compromise the comparability between close elections in which men won and close elections in which women won.

First of all, there might be concerns that two different constituencies in which a woman contested in a close election against a man might not be similar if in one of them there were many other women candidates, apart from the winner and the runner up, contesting for the same seat. This would be a case in which political parties perceive the constituency as one in which there is "preference for female politicians" and tend

to field female candidates there. If the number of female candidates contesting for the same seat as the two close candidates is significantly different for constituencies in which a man won in a close election against a woman and constituencies in which a woman won in a close election against a man, these two types of constituencies might have different characteristics. I have data on all the female candidates contesting in a particular constituency, apart from the winner and the runner up. As shown in the top panel of Table 2.6, the number of other female candidates contesting against women who won in close elections against a man is not significantly different than that for men who won in close elections against a woman.

It might also be that one of the candidates in a close election is in this situation because he or she is the incumbent for that seat in that particular constituency. This would make constituencies in which women and men won in close elections against a candidate of the other gender different in observables if men (or women) are those who tend to be the incumbent. Moreover, if there is incumbency advantage (or disadvantage) in these elections, more women (or men) would win in these type of elections and one could question the extent to which the outcome of a close election is random. It should also be taken into account that the policies applied by candidates who were the incumbent and won the elections again might be different than those of candidates who occupy the seat for the first time, since they will have more experience as legislators. In order to address this concern I use the fact that I have information on the candidate's names, thus, I can know whether a particular candidate was already in power in the same constituency where he or she is contesting now during the previous electoral year. I then create a dummy variable that is equal to one if the individual was the incumbent for that seat. However, as it is shown in the second panel of Table 2.6, the percentage of winners in close elections who were the incumbent is statistically the same for female and male legislators who won in close elections.

Another concern that needs to be addressed is that maybe there are some constituencies in which there have been more close elections between men and women in the past than in others. If this happens more often in constituencies where women won the close election than in constituencies in which men won, then these two types of constituencies would not be comparable, since in the one where there have been more close elections there would probably be more "preference for female politicians". In the third panel of Table 2.6 I test whether constituencies in which a man or a woman won in a close election are different in terms of how many times the particular constituencies have

had close elections between men and women. However, results show that the number of previous close elections is the same, whether a woman or a man won. Thus, women won in close elections in situations in which the electoral preferences for female politicians are similar as situations in which men won in close elections.

Finally, if elections in which men and women won in close elections are really similar, they should have the same electoral turnout, otherwise, one type of constituencies would be more active in electoral terms than the other. And, more importantly, the distribution of votes between the first two candidates and the rest should be the same. This is the case because if in one case the total votes were distributed among many candidates, these could not be considered as close elections between the winner and the runner up. The last two panels of Table 2.6 show that women who won in close elections won by the same number of votes as men who won in close elections, and in constituencies where the total number of votes was the same. Since constituencies in India were designed to have the same population, this means that turnout was the same, and the distribution of votes between the first candidate and the rest was the same as well. This further corroborates that constituencies in which a man or a woman won in a close election are perfectly comparable and thus, the gender of the winner is, indeed, random. These two panels also eliminate concerns that, if in a constituency there were three candidates with almost the same number of votes, one could not consider the election between the winner and the runner up as a close election. In fact, the winners in close elections tend to receive around 40% or votes,

this means that the runner up will receive a minimum of 36.5% of votes. This leaves the other candidates with 23.5% of votes, which is a very big difference compared to the winner. Thus, even if there was only one other candidate in the constituency, he or she did not have any chance of winning the election.[13]

2.3.2.3 External Validity

Overall, 141 out of 297 districts never had a close election between a man and a woman, which is slightly less than half the districts in my sample. However, it could be argued that close elections between men and women take place in districts that are different, or more progressive, than the average district in India. Even if there is a significant amount

[13]As it was proven before, there are no concerns regarding the gender of these other candidates.

of individuals affected by close elections, if districts that never had close elections are very different than those that did, results obtained in this chapter would not be representative for all of India. Table 2.7 shows that districts that have never had close elections and those that did are similar in observables. For districts that have never had close elections and districts that did, it shows descriptive statistics for population characteristics, the proportion of reserved seats, the total number of seats, and public goods like hospitals and educational institutions weighted by the population in the years that elections took place.

Finally, there might be concerns that the probability of contesting a close election between a woman and a man is different for each political party. If this were the case close elections would not reflect the overall situation in the parliament because only a few parties would be involved. Table 2.8 shows how the distribution of seats between the different party groupings is the same for close elections between men and women as for the rest. Thus, party composition seems not to be a concern, since the party composition in close elections reflects that of the overall parliaments in the States.

2.4 Results

2.4.1 Baseline Results

Results for the basic econometric specification are shown in Table 2.9. The dependent variable is a dummy variable equal to one if the individual obtained at least primary education and zero otherwise. The coefficient for the proportion of constituencies in the district held by women during the three years before an individual started primary education is reported. In columns 1-3 I report results for the OLS regressions, while in columns 4-6 I show results for the 2SLS regressions.

OLS results in columns 1-3 female representatives have a positive and significant effect on the probability that an individual attains primary education. When I divide the sample among those who live in urban and rural areas, female representatives have a positive and significant effect on individuals living both in urban and in rural areas, see columns 2 and 3. The 2SLS estimates in columns 4-6 show a very different picture, the female representation effect is now only significant for the urban sample and it is very large, see column 5. The magnitude of this coefficient implies that, by increasing female

representation in the district by 10 percentage points, the probability that an individual attains primary education in an urban area increases by 6 percentage points, which is around 8% of the total probability that an individual obtains primary education in urban areas. In addition, given that being a woman reduces the probability of attaining primary education by 6 percentage points and being SC/ST reduces it by 18 percentage points, this is an important amount.[14]

The first stage regression for these specifications is shown in Table 2.10. Results show that the fraction of constituencies in the district won by a woman in a close election against a man is indeed a very good predictor of the fraction of constituencies in the district won by a woman. Keeping the fraction of constituencies held by men who won in close elections against a woman constant, increasing the fraction of constituencies won by women in close elections against men by one percentage point would increase female representation by 0.9 percentage points[15].

Results show that female politicians have a positive impact on the education obtained by individuals living in urban areas of their own district. Since the reference category is male politicians, the fact that female politicians have a positive and significant effect means that they have a significantly larger effect on education in urban areas than male politicians. However, this is not the case in rural areas. The coefficient for the 2SLS estimates in the urban sample is much larger than the one in the OLS regression using the same sample. This indicates that the OLS coefficients are downward biased, suggesting that the omitted variable is positively correlated with female representation and negatively correlated with education (or vice versa). For example, it may be that, if female politicians are known to be effective for educational improvements, in areas where educational levels are low they will tend to elect female politicians. Moreover, it may as well be that in very backward areas where educational levels are very low they elect female representatives because they are the family member of an important male politician, or they belong to the "elite" family in power. For the rural sample the OLS coefficient is bigger than the 2SLS one, but it is very imprecisely estimated. In addition, the OLS coefficients both for urban and rural areas are very similar. This implies that, by running the regressions with OLS one would not be able to distinguish the fact that

[14]These coefficients are not reported in Table 2.9, but are available from the author upon request.

[15]Both the instrument and the female representation variable vary at the district and cohort level, even if the dependent variable is at the individual level. When running the first stage regression at the district and year level the coefficient for the fraction of constituencies in the district won by a woman in a close election against a man is 1.2025, with a standard error of 0.1992.

the effect of female representation in urban and rural areas is very different. In other words, the omitted variable makes the OLS coefficient for the rural sample significant, when in reality female representation has no effect in rural areas[16].

2.4.2 Placebo Tests

In this section I perform two placebo tests using migrants and individuals who were too old to achieve primary education when female politicians were in power in the district. Policies implemented by these politicians could not have affected these individuals. If this were the case, results obtained could indicate that female representation is in fact acting as a proxy for another variable.

2.4.2.1 Placebo 1: Are Late Migrants Affected?

If an individual's primary education attainment is really affected by the identity of the politicians who were in power in his or her district when he or she was young, we should not observe any effect on individuals who were not living there when the politicians were in power. In other words, individuals who migrated to the area when they were too old to achieve primary education can be used to perform a placebo test since they could not have been affected by the policies applied by the female legislators who were in power there when they were young. Thus, one should not observe any effect from female politicians on these individuals, since primary school ends when an individual is 11 years of age and an individual aged 14 should already be in secondary school.

In order to test for this I use data on individuals who migrated from other districts or who migrated within the same district between rural and urban areas[17] after the age of 14. For each individual I use as right hand side variables the political characteristics and control variables of the new district of residence when the individual was aged

[16]When running the pooled regressions at the district and cohort level, the coefficient for the fraction of constituencies in the district won by a woman is 0.0475 with a standard error of 0.1611 for the whole sample. For the urban sample the coefficient is 0.4966, with a standard error of 0.2885. For the rural sample the coefficient is -0.0201, with a standard error of 0.1838. Thus, coefficients are slightly smaller, but as before only the coefficient for the urban sample remains significant.

[17]Since policies are different in urban than in rural areas, an individual who migrated from a rural to an urban area will not have been affected in the same way as the "urban" individuals. Thus, it is a valid placebo.

3-5.[18] I then run specification 2.1 on these individuals, using 2.2 as a first stage, as before.

Results are shown in columns 1 and 2 of Table 2.11, that show results for the rural and urban sample, respectively. I report the coefficient for the fraction of constituencies in the district in which a woman won the election. Column 1 shows results for the urban sample. In this case the sample size is much smaller, but the effect of female politicians on individuals who arrived in the area when they were too old to achieve primary education is very small and not significant. The effect in rural areas is as well not significant, see column 2. Given that those who should not have been affected are, indeed, not affected this corroborates the notion that results on education found before really come from the identity of the politicians in power in the district when the individuals were young.

2.4.2.2 Placebo 2: Are Older Children Affected?

If an individual's primary education attainment is really affected by having a female politician in his or her district before he or she started primary education, we should not observe any effect of female politicians on individuals who were too old to be affected by their policies when they were in power. In fact, an individual's primary education attainment can be determined by the policies applied by the politicians in power before he or she started primary education,[19] but should not be determined by politicians in power when he or she should have finished primary education. If this were the case, this would indicate that results for the estimated effect of female politicians are in fact acting as a proxy for another variable that has a wider time-span. In other words, one should not observe an effect from female representatives on the education of older individuals.

In order to test for this I combine data on the politicians' identity variables used in the previous specification with data on individuals who were aged 14 to 16 when they were in power.[20] I then run specification 2.1 on these individuals, using 2.2 as a first stage.

Results are shown in columns 3 and 4 of Table 2.11. I report coefficients for the fraction

[18]The NSS does not give information on which district were they coming from, I only know whether they were coming from another district or not.

[19]Or maybe even during his or her first years of primary education.

[20]As before, this individuals should be in secondary schooling age.

of constituencies in the district won by women. In column 3 I restrict the sample to individuals living in urban areas. In this case the sample is much smaller, but female representatives do not have any effect on these individuals. Moreover, the coefficient is negative and much smaller than that obtained for younger individuals. As it is shown in column 4, female representatives do not have any effect on individuals living in rural areas.

2.4.3 Measures of Political Influence

In line with the interpretation that female politicians affect education because they act on policies, In this section check whether the effect of female representation is stronger when they are more influential, either within the district or in the legislature.

2.4.3.1 Does Being A Member of the Majority Party Matter?

In line with existing theoretical models, a single legislator will have more power to implement policies or to direct funds to his or her own constituency if he or she has more bargaining power within the legislature. This is likely to be the case if he or she belongs to the party that has the majority of seats in the legislature. Thus, if the effects observed are due to the politician's actions, one should observe that female legislators who belong to the party that won the majority in the state have a stronger effect than the rest. In order to test for this I have divided female politicians according to whether they belong to the party that had the majority of seats in the state or not. I then run the specification:

$$Y_{idt} = \theta_d + \psi_t + \beta_1 Fmain_{dt} + \beta_2 Fnomain_{dt} + \lambda TC_{dt} + X_{idt}\eta + Z_{dt}\delta + \varepsilon_{idt} \quad (2.3)$$

Where $Fmain_{dt}$, the fraction of constituencies won by women of the main party is instrumented with the fraction of constituencies won by women of the main party in a close election against a man. Similarly, $Fnomain_{dt}$, the fraction of constituencies won by women belonging to other parties is instrumented with the fraction of constituencies won by women belonging to other parties against men.

Results are shown in columns 1 and 2 of Table 2.12, for the urban and rural samples respectively. I report coefficients for the fraction of constituencies won by women of

the main party and the fraction of constituencies in the district won by women of the other parties. In urban areas, women of the party who got the majority of seats in the state are those who have an effect, while the coefficient for women belonging to other parties is not significant. For the rural sample none of the coefficients is significant.[21]

2.4.3.2 Does District Size Matter?

If the effects on education are coming from the politician's actions, one should observe that the effect of female politicians is bigger in districts that contain fewer constituencies. This is the case because, if legislators are more sensitive to their constituencies' demands, they will be expected to have a bigger impact on people living in their constituency, more than on the district as a whole. In smaller districts estimates of the impact of the legislator will be more accurate, and they will be a better approximation of the identity of the legislator's effect on people living in his or her constituency. In contrast, in larger districts, the estimates of the differential effect of female legislators will presumably be lower, since the effect will be more diluted given that the effect is shared among more constituencies. Thus, the estimates obtained in the previous section will be a lower bound of the actual effect.

In order to test whether the effect is indeed bigger in smaller districts I have divided the districts according to the number of constituencies they include. In particular, I have computed the mean number of constituencies in all districts for the three years averages[22] and I have created a dummy variable equal to one if an individual lives in a large district, i.e. if his or her district has more constituencies than the mean and zero otherwise. I have then created another dummy that is equal to one if the individual lives in a smaller district. I then interact the female representation variable these dummy variables. The specification tested is:

[21]Female politicians who belong to other parties that did not get the majority of seats in the state but that are part of the coalition in power could have the same bargaining power as female politicians from the main party. I do not have data on the different coalitions that have had power over time in the different states in India Women in the party who got the majority of seats will almost surely be in the coalition, so they will have more power than the rest. Presumably, if I could divide female representatives among those who belong to the coalitions in power and those who do not, the difference between those coefficients would be even larger than the difference obtained in Table 2.12.

[22]The mean is 9.29 constituencies per district.

$$Y_{idt} = \theta_d + \psi_t + \beta_1 F_{dt} * l_{idt} + \beta_2 F_{dt} * s_{idt} + \beta_3 l_{idt} + \lambda TC_{dt} + X_{idt}\eta + Z_{dt}\delta + \varepsilon_{idt} \tag{2.4}$$

Where l_{idt} and s_{idt} are the dummy variables for whether the individual lives in a large or a small district, respectively. I then report the coefficients for the 2SLS estimates of the total effect on individuals living in large districts, β_1, and on individuals living in small districts, β_2. Results are shown in columns 3 and 4 of Table 2.12, for the urban and rural sample respectively. Column 3 shows results for the urban sample. The effect of female representatives in small districts is positive and significant, plus, it is larger than the coefficient for female representatives obtained before. In large districts the coefficient for female representatives is smaller. Column 4 shows results for individuals living in rural areas, here female representatives do not have any effect, neither in big nor in small districts. Since results for small districts are now slightly stronger than results in Table 2.9 for the urban sample, one can conclude that results obtained before are indeed a lower bound of the real effect.

2.4.3.3 Does Political Disruption Matter?

One should expect that the effect of female politicians will be stronger in situations in which politicians have had more time to implement their policies. To test for this I exploit the variation created by the fact that some states have been under President's rule in different years and for different periods of time.

President's rule is the term used in India to describe a situation in which a state government is dissolved by its governor and it is placed under direct federal rule. Article 356 of the Indian Constitution enables President's rule and gives the central government the authority to invalidate any state government if the constitutional machinery in the state fails.

Politicians who were in power when the state was under President's rule should have had less power than the rest, since they had less time to implement their policies. In those cases the effect of female representation will be likely to be smaller, since female politicians will have been in power for less time.

I have information on how many months of each year were subject to President's rule for each State. Then I compute the total number of months with President's rule

during the three year averages used to create the other political variables. I can then classify individuals in the sample according to length of the time period during which the legislature was under President's rule within the three years before they started primary education.

I create a dummy variable that is equal to one if the individual has been exposed to more months of President's rule than the mean[23] and another dummy that is equal to one if the individual has been exposed to less months of President's rule than the mean. I then interact these variables with the female representation variable. The specification to be tested will then be:

$$\begin{aligned} Y_{idt} &= \theta_d + \psi_t + \beta_1 F_{dt} * Mpr_{idt} + \beta_2 F_{dt} * Lpr_{idt} + \beta_3 Mpr_{idt} + \lambda TC_{dt} + X_{idt}\eta + \\ &\quad + Z_{dt}\delta + \varepsilon_{idt} \end{aligned} \tag{2.5}$$

Where Mpr_{idt} is the dummy variable indicating whether the individual has been exposed to more months of presidential rule and Lpr_{idt} is the dummy variable indicating whether the individual has been exposed to less months of presidential rule. I then report the coefficients for 2SLS estimates of the total effect on individuals that were affected by more President's rule than the mean, β_1, and on individuals that were affected by less than the mean, β_2.

Results are shown in columns 5 and 6 of Table 2.12, for the urban and rural sample respectively. Coefficients in column 5 show that, in urban areas, only in cases where politicians had sufficient power do female representatives have an effect. The effect on individuals affected by a longer period of President's rule is smaller and not significant. Results for the rural sample are presented in column 6, where none of the coefficients is significant.

Thus, results suggest that female representatives will have an effect in cases in which they can exercise their power for longer, confirming the initial hypothesis that the effects found on education are due to their policy actions.

[23]For States and years in which there has been President's rule, the mean is 7.59 months over the three years averages. The distribution is quite skewed to the left, with a minimum of 0.25 months in the three years period and a maximum of 36 months.

2.4.4 Robustness checks

In this section I provide some more evidence supporting the identification strategy used in this study and I include time trends in the regressions.

In this chapter I have defined close elections as elections in which the votes difference between the winner and the runner up is less than 3.5%. Here I check whether the results are sensitive to this choice of vote margin. In columns 1-4 of Table 2.13 I test whether results are the same when I define close elections as those in which the winner won the runner-up by smaller margins. In particular, in columns 1 and 2 I use a 3% margin as a cut-off point, while in columns 3 and 4 I use a 2.5% margin. I then run the 2SLS specifications 2.1 and 2.2 as before. Now, however, the instrument will be defined in a different way, since some elections that before were considered close now will not be. As before, I report results for both the urban and rural samples and the coefficient for the fraction of constituencies in the district won by women. Results in columns 1-4 are very similar to those obtained before. The coefficient for the effect of female politicians seems to increase slightly as the margin is reduced, but it is still in the same confidence interval as the coefficient for the 3.5% margin.

The probability that an individual attains primary education in a state or district may change across generations, in fact, it may increase over time. If, in addition the right hand side variables in the regression also trend upwards, results obtained may proxy for this trend. Since elections are held at the state level, different states may have different trends. In addition, different districts may have different trends in both educational attainments and the right hand variables. In columns 5 and 6 of Table 2.13 I control for the existence of state-specific trends. Results remain unchanged. In addition, in columns 7 and 8 of Table 2.13 I include district-specific trends in the regression. Results are also very similar to the ones obtained before.

2.5 Discussion and Conclusion

Results in this chapter show that the identity of the legislator affects educational outcomes. Female politicians have a bigger effect than male politicians on the education received by individuals living in urban areas but not by those living in rural areas. By increasing female representation in the district by 10 percentage points, the probability

that an individual attains primary education in an urban area increases by 6 percentage points, which is around 8% of the total probability that an individual obtains primary education in urban areas. In addition, given that being a woman reduces the probability of attaining primary education by 6 percentage points and being SC/ST reduces it by 18 percentage points, this is an important amount.

In line with the interpretation that female politicians affect education because they act on policies, I find that the effect of female representation is stronger when they are more influential, either within the district or in the legislature. For example, female politicians belonging to the party who has the majority of seats are those who have the strongest effect. The effect is also stronger on individuals living in small districts, that contain less constituencies. This confirms that results obtained before are in fact a lower bound of the actual effect. Moreover, the effect of female politicians is smaller when there has been political disruption, namely President's Rule, for a longer period in the state. Reassuringly, two placebo tests, using migrants and individuals who were too old to achieve primary education when the female legislators were in power show that female representation did not have any effect on these individuals.

If both female and male politicians implement their own preferences when they are in power,[24] it is then reasonable to assume that these politicians will care about the needs of those who share their identity. One possible explanation for the results obtained is that, if female politicians care about empowering those who share their identity, then they would choose to invest in education in urban areas as returns for women are higher there than in rural areas and hence demand for women's education is higher.[25]

I have computed the wage differentials for women older than 15 who are working with and without primary education. Data for these variables is shown in Panel A of Table 2.2. In urban areas, the difference between the wage of an educated and an uneducated woman is 2.7 times the wage of an uneducated woman. In rural areas, the wage differential due to education is 1.9 times the wage received by an uneducated woman.[26] Thus,

[24] In fact, if there are two types of citizen-candidate, women and men, and they have different preferences, once they decide to contest for election and win they will implement their own preferences. This will be true if they can not commit to implement a specific policy ex ante, which is likely to be the case in India. If politicians are self-interested, they will try to improve their economic opportunities, which will coincide with the economic opportunities of their groups.

[25] In rural areas they may invest in different public goods (for example, access to roads or drinking and water facilities), which are more valuable to women there.

[26] Berhman, Foster, Rosenzweig and Vashishtha (1999) do not find labour market returns to schooling for women in rural areas, which is consistent with the explanation provided here.

the difference in wages between educated and non-educated women is much larger in urban areas. In addition, educated women living in rural areas will have to take opportunities to work in non-farm employment in rural areas, since their mobility is reduced by social constraints. In urban areas, women can take advantage of more opportunities to work in activities that require their education skills (see Chadha 1997). Table 2.2 shows how in urban areas 92% of working women that have primary education work in the non-agricultural sector, while this is only 29% in rural areas. These facts may explain why education is more important for women in urban than in rural areas. In contrast, men can benefit from education both in rural and urban areas. In fact, in urban areas, the wage of an educated man is 1.94 times the wage of an uneducated man, while in rural areas, it is 1.71 times the wage of an educated man, so the difference between rural and urban areas is smaller than for women. Taking into account that men have higher mobility than women and can always move to work in urban areas, they will have more opportunities than women in rural areas, and, if they get educated they will be more able to take advantage of their skills.[27]

This chapter complements the literature on education in developing countries by studying whether the gender of a politician who is in charge of implementing educational policies has an impact on educational outcomes. This chapter is also related to the existing literature on the effects of the identity of the legislator in India, and complements it by exploring the effect of an exogenous increase in female representation that took place without reservation, and allows me to clearly identify the effect of female legislators on the education received by individuals who were young in the district when these legislators were in power. It also complements the growing literature on the identity of the legislator in other countries by providing additional evidence that identity does indeed matter for policy decisions, since women and male politicians have different effects on education.

Finally, results obtained also provide evidence in favour of citizen-candidate models (Besley and Coate 1997 and Osborne and Slivinski 1996). The fact that the identity of the legislator has an impact on policy suggests that Downsian models could not be used to explain the results obtained and that indeed, candidates cannot commit in advance

[27]Kochar (2004) finds that urban returns to education have a positive impact on boys education living in rural areas. This is especially the case for landless households. In the limit, and, if there was perfect mobility, returns to education could be equal for men in rural and urban areas, but she shows how this does not seem to be the case.

to implement specific policies once elected.

The fact that the identity of the legislator matters along gender lines may have policy implications. The issue of female political representation has been increasingly important in India and there have been growing pressures for female political reservation. In September 1996, the Government introduced a Bill in Parliament, proposing the reservation of one third of the seats for women in the Central Government and the State Assemblies. Since then, this proposal has been widely discussed in several parliamentary sessions, without an agreement being reached. Those in favour argue that increasing female political representation will ensure a better representation of their needs. Even those who oppose the reservation acknowledge the fact that female politicians behave differently than male politicians. This chapter corroborates these views with empirical evidence and may shed some light on these issues, by looking at the effect of the politicians' gender on education. Clearly, reservation would increase female representation, but it would as well change the nature of political competition, either by changing the set of candidates available for each seat, by altering voters' preferences or by changing the candidates' quality. Therefore, reservation may change other variables, but it is an increase in female representation. The fact that female representatives of the party that has the majority have more bargaining power to implement their policies should also be taken into account when considering reservation for women.

2.6 Figures and Tables

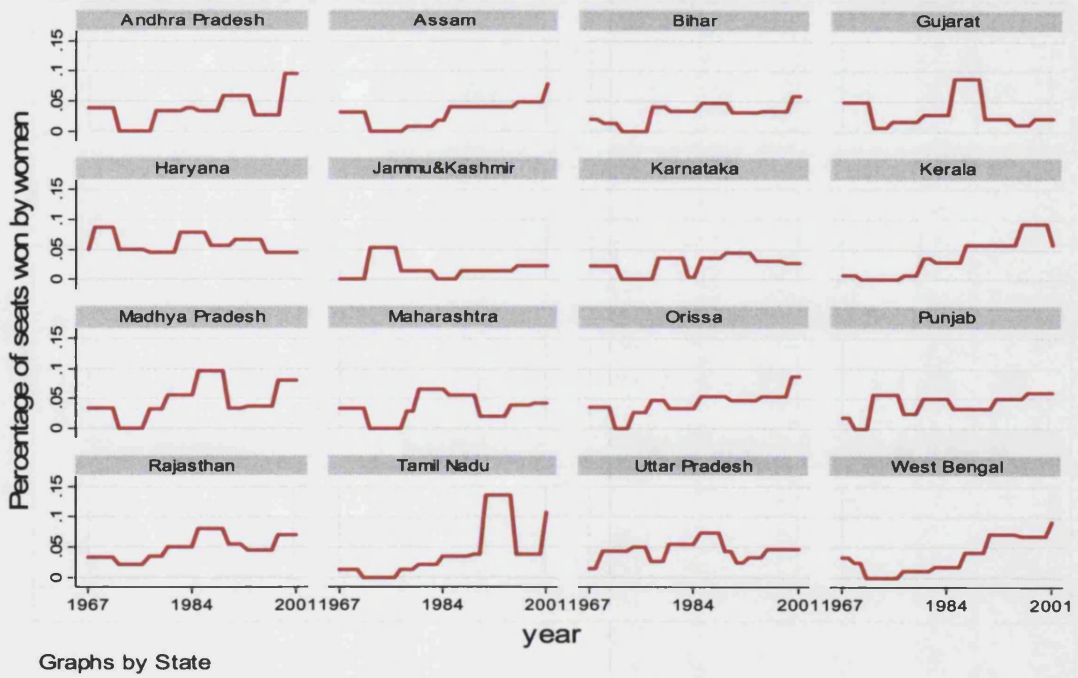

Figure 2.1: Female Political Representation by State 1967-2001

Table 2.1: Descriptive statistics: District Political Dataset
Unit of observation: district in an electoral year

Variable (as a fraction of the total seats in the district)	Obs.	Mean	Sd
Proportion of seats won by women	2546	0.0387	0.0750
Proportion of seats won by women belonging to the main party in the state	2546	0.0268	0.0643
Proportion of seats won by women belonging to others but the main party in the state	2546	0.0119	0.0409
Proportion of seats won by Congress	2546	0.4359	0.3289
Proportion of seats won by Hard Left	2546	0.0599	0.1475
Proportion of seats won by Soft Left	2546	0.0245	0.0916
Proportion of seats won by Hindu	2546	0.1336	0.2344
Proportion of seats won by Janata	2546	0.1489	0.2631
Proportion of seats won by Regional	2546	0.0800	0.2047
Proportion of seats won by Others	2546	0.0594	0.1600
Proportion of seats won by Independent	2546	0.0578	0.1114
Proportion of seats reserved for SC/ST	2546	0.2363	0.1948
Variable (as a fraction of the total seats in the district in districts where women were elected)	**Obs.**	**Mean**	**Sd**
Proportion of seats won by women in a close election against men	708	0.0163	0.0416
Proportion of seats who had close elections between men and women	708	0.0225	0.0488
Proportion of seats won by women in a close election against a man (main party)	708	0.0116	0.0363
Proportion of seats won by women in a close election against a man (other parties)	708	0.0058	0.0274
Proportion of seats won by Congress women	708	0.0782	0.0915
Proportion of seats won by Congress men	708	0.3575	0.2738
Proportion of seats won by Hard Left women	708	0.0088	0.0350
Proportion of seats won by Hard Left men	708	0.0674	0.1554
Proportion of seats won by Soft Left women	708	0.0014	0.0140
Proportion of seats won by Soft Left men	708	0.0184	0.0788
Proportion of seats won by Hindu women	708	0.0121	0.0434
Proportion of seats won by Hindu men	708	0.0902	0.1578
Proportion of seats won by Janata women	708	0.0123	0.0386
Proportion of seats won by Janata men	708	0.1180	0.2071
Proportion of seats won by Regional women	708	0.0113	0.0409
Proportion of seats won by Regional men	708	0.0917	0.2027
Proportion of seats won by Others women	708	0.0107	0.0400
Proportion of seats won by Others men	708	0.0685	0.1651
Proportion of seats won by Independent women	708	0.0044	0.0254
Proportion of seats won by Independent women	708	0.0490	0.0930

Table 2.2: Descriptive statistics. NSS 55th Round and control variables.

Panel A: NSS individual variables and labour market characteristics

	RURAL			URBAN		
Variable	Obs	Mean	Sd	Obs	Mean	Sd
Women	96545	0.4599	0.4984	45657	0.4177	0.4932
Men	96545	0.5401	0.4984	45657	0.5823	0.4932
SC/ST	96545	0.2986	0.4577	45657	0.1750	0.3800
Hindu	96545	0.8349	0.3713	45657	0.7259	0.4460
Muslim	96545	0.1001	0.3001	45657	0.1993	0.3995
Primary education or more	96545	0.5473	0.4978	45657	0.7805	0.4139
Women with primary education or more	44399	0.4392	0.4963	19072	0.7550	0.4301
Men with primary education or more	52146	0.6394	0.4802	26585	0.7988	0.4009
Women with primary education or more who work	16183	0.1641	0.3704	17532	0.0863	0.2808
Men with primary education or more who work	24642	0.6922	0.4616	18912	0.6269	0.4837
Women with primary education or more working in non-agriculture	2656	0.2854	0.4517	1513	0.9227	0.2672
Men with primary education or more working in non-agriculture	17057	0.3657	0.4816	11855	0.9371	0.2428
Women without primary education who work	23556	0.4069	0.4913	7477	0.2200	0.4143
Men without primary education or more who work	14502	0.9410	0.2357	4733	0.8927	0.3096
Women without primary education who work in non-agriculture	9584	0.1133	0.3170	1645	0.6778	0.4675
Men without primary education who in non-agriculture	13646	0.2138	0.4100	4225	0.8618	0.3452
Women without primary education: wages received	5635	125.32	106.44	1025	190.46	192.58
Men without primary education: wages received	7942	221.71	165.85	2651	346.16	261.05
Women with primary education: wages received	1255	249.18	389.31	993	702.08	809.97
Men with primary education: wages received	6792	380.07	429.18	6452	674.00	668.56

Panel B: Other variables

Variable	Obs	Mean	Sd
Urban population in the district	7808	0.2045	0.1442
SC/ST population in the district	7808	0.2525	0.1367
Women in the district	7808	0.4819	0.0161
Male literacy rate in the district	7642	0.5272	0.1572
Female literacy rate in the district	7642	0.2782	0.1706
Proportion of seats reserved for SC/ST	2546	0.2363	0.1948
Number of months with President's Rule in the state	560	0.8576	2.5090

Data on workers refers to their usual activity. Workers are classified as people older than 15 years of age in the labour force not currently looking for employment. Wages are computed from individuals older than 15 years of age who are working and are not self-employed.

Table 2.3: Data Issues

PANEL A: Data organization

Individual	District	Cohort	Started Primary	Politicians (average)
1	A	1964	1970	in power during 1967-1969 in district A
2	A	1965	1971	in power during 1968-1970 in district A
3	A	1987	1993	in power during 1990-1992 in district A
4	B	1964	1970	in power during 1967-1969 in district B
5	B	1965	1971	in power during 1968-1970 in district B
6	B	1987	1993	in power during 1990-1992 in district B

PANEL B: Individuals affected by close elections

Classification of individuals according to close elections between men and women in their district of residence

	Individuals	Fraction
No close elections	178323	0.8195
Close elections	39281	0.1805

Classification of individuals according to the number of men and women winning in close elections in their district of residence

	Individuals	Fraction
More women won against a man	14452	0.0664
More men won against a woman	14713	0.0676
The same number of men and women won	10116	0.0465

Table 2.4: Probability that a Woman Wins in a Close Election against a Man

Dependent variable: proportion of women who won in a close election against a man per district and electoral year	
	1
Proportion of seats contesting close elections Congress	-1.412
	[2.607]
Proportion of seats contesting close elections Regional Parties	-3.332
	[4.882]
Proportion of seats contesting close elections Hindu	-1.247
	[2.706]
Proportion of seats contesting close elections Janata	-1.81
	[2.075]
Proportion of seats contesting close elections Others	-0.433
	[2.389]
Proportion of seats contesting close elections Independent	-1.546
	[2.303]
Dummy=1 if the district never had close elections before	0.241
	[0.635]
Proportion of urban population	12.587
	[12.85]
Number of times that a woman has won an election in the district in the past	-0.006
	[0.051]
Proportion of SC/ST population	18.497
	[19.496]
Proportion of population that is female	-15.535
	[27.662]
Male literacy rate	-1.923
	[10.817]
Female literacy rate	-0.494
	[7.249]
Proportion of seats reserved for SC/ST's	-2.931
	[5.313]
Observations	164
Adjusted R-squared	-0.059

Robust standard errors clustered at the district level. District and year fixed effects are included in the regression.

Table 2.5: District Characteristics: Close Elections between Women and Men by Margin

	3.50% margin	3% margin	2.50% margin
Differences in the proportion of urban population	-0.00980	-0.01850	-0.01750
(Districts in which more men than women won compared to districts in which more women than men won)	[0.0175]	[0.01840]	[0.0209]
Differences in male literacy rate	-0.02472	-0.02840	-0.03980
(Districts in which more men than women won compared to districts in which more women than men won)	[0.02484]	[0.02638]	[0.02884]
Differences in female literacy rate	-0.02244	-0.02496	-0.04801
(Districts in which more men than women won compared to districts in which more women than men won)	[0.02871]	[0.03015]	[0.03301]
Differences in the number of villages with educational institutions	0.10282	0.02630	0.02207
(Districts in which more men than women won compared to districts in which more women than men won)	[0.07399]	[0.08306]	[0.09040]
Differences in the number of villages with hospitals	0.00023	0.00009	-0.00004
(Districts in which more men than women won compared to districts in which more women than men won)	[0.00021]	[0.00023]	[0.00027]
Differences in the proportion of SC/ST reserved seats	0.00125	-0.01837	-0.03110
(Districts in which more men than women won compared to districts in which more women than men won)	[0.02609]	[0.02792]	[0.02965]
Differences in the proportion of women who won in elections that are not close	-0.00096	-0.00338	-0.00340
(Districts in which more men than women won compared to districts in which more women than men won)	[0.00804]	[0.00875]	[0.00959]
Differences in the proportion of men who won in elections that are not close	-0.01390	-0.01284	-0.00664
(Districts in which more men than women won compared to districts in which more women than men won)	[0.010004]	[0.01087]	[0.01174]
Number of election-years	204	186	157

Table 2.6

Constituency and candidate characteristics: Close Elections between Women and Men

Group	Obs	Mean	Std. Err.	[95% Conf.	Interval]
Other female candidates in the constituency					
Man won in close election	120	0.1083	0.0370	0.0350	0.1817
Woman won in close election	110	0.2000	0.0480	0.1049	0.2951
Difference		-0.0917	0.0601	-0.2100	0.0267
Winner was the incumbent					
Man won in close election	120	0.2167	0.0378	0.1419	0.2914
Woman won in close election	110	0.2182	0.0396	0.1398	0.2966
Difference		-0.0015	0.0547	-0.1093	0.1062
Number of close elections in the past					
Man won in close election	120	1.0750	0.0241	1.0272	1.1228
Woman won in close election	110	1.0727	0.0249	1.0234	1.1220
Difference		0.0023	0.0347	-0.0661	0.0706
Votes received by the winner					
Man won in close election	120	31894.1700	1328.4220	29263.7600	34524.5800
Woman won in close election	110	33596.4500	1330.2330	30959.9800	36232.9300
Difference		-1702.2880	1883.4150	-5413.4120	2008.8360
Total votes in the constituency					
Man won in close election	120	80188.3300	2769.9040	74703.6500	85673.0200
Woman won in close election	110	80947.2700	2655.8640	75683.4400	86211.1100
Difference		-758.9394	3851.7720	-8348.5610	6830.6820

Table 2.7

Comparison: Districts with and without Close Elections

(District in an electoral year)		Close elections	No close elections
Urban population (prop)	mean	0.1975	0.1961
	sd	0.0035	0.0039
	observations	927	1087
Male literacy rate	mean	0.5250	0.5481
	sd	0.0054	0.0049
	observations	927	1087
Female literacy rate	mean	0.2854	0.2890
	sd	0.0058	0.0054
	observations	927	1087
SC/ST population (prop)	mean	0.2668	0.2430
	sd	0.0047	0.0037
	observations	945	1116
SC/ST seats proportion	mean	0.2610	0.2191
	sd	0.0055	0.0054
	observations	1196	1315
Seats total	mean	10.5895	7.9529
	sd	0.1276	0.1269
	observations	1196	1315
Any educational institution	mean	0.5245	0.6834
	sd	0.0200	0.0200
	observations	294	332
Hospitals	mean	24.1167	19.3573
	sd	1.0326	0.7396
	observations	726	808

Table 2.8

Proportion of Seats Won by Parties

	Close Elections	No close elections
Party	Percent	Percent
Congress	40.25	41.05
Hard Left	8.47	8.04
Hindu	11.44	11.58
Independents	6.78	5.8
Janata	10.17	14.26
Regional	12.29	10.17
Soft Left	3.81	2.31
Others	6.78	6.78
Total	100	100

Table 2.9: Do Female Politicians Have an Effect on Education?

Dependent variable: primary education attainment (1=primary education or higher, 0=otherwise)

	1 OLS All individuals	2 OLS Urban individuals	3 OLS Rural individuals	4 2SLS All individuals	5 2SLS Urban individuals	6 2SLS Rural individuals
Fraction of constituencies in the district won by a woman	0.0969*	0.1333**	0.1105*	0.1120	0.6377**	0.0123
	[0.0527]	[0.0661]	[0.0609]	[0.1581]	[0.2907]	[0.1914]
Individual Controls	yes	yes	yes	yes	yes	yes
Demographic District Controls	yes	yes	yes	yes	yes	yes
Political Controls	yes	yes	yes	yes	yes	yes
District fixed effects	yes	yes	yes	yes	yes	yes
Cohort fixed effects	yes	yes	yes	yes	yes	yes
Observations	105208	34604	70604	105208	34604	70604
R-squared	0.2541	0.1743	0.247	0.2541	0.1714	0.247

Robust standard errors clustered at the district level are reported between parentheses. * Significant at the 10%, ** significant at the 5%, *** significant at the 1%. Columns 1-3 are OLS regressions. Columns 4-6 are 2SLS regressions in which the fraction of constituencies in the district won by a woman in a close election against a man is used to instrument the fraction of constituencies in the district won by a woman. For these regressions I also include as a control the fraction of constituencies in the district that had close elections between women and men. Close elections are defined as those in which the winner won the runner up by less than 3.5% of votes. Regressions include district and cohort fixed effects, as well as the following controls: the fraction of seats won by each political party grouping, the fraction of reserved seats, the fraction of urban, SC/ST and female population, male and female literacy rates and dummy variables for whether the individual is a woman, Muslim, Hindu, SC/ST or lives in a rural area where applies.

Table 2.10: First Stage Regression

Dependent variable: Fraction of constituencies in the district won by a woman	
	1
Fraction of constituencies in the district won by a woman in a close election against a man	1.2196***
	[0.0278]
Fraction of constituencies in the district that had close elections between women and men	-0.3185***
	[0.0144]
Controls	yes
F first stage	293.87
Observations	105208
R-squared	0.5087

Robust standard errors clustered at the district level are reported between parentheses. * Significant at the 10%, ** significant at the 5%, *** significant at the 1%. This is the first stage regression in which the fraction of constituencies in the district won by a woman in a close election against a man is used to instrument the fraction of constituencies in the district won by a woman. For this regression I also include as a control the fraction of constituencies in the district that had close elections between women and men. Close elections are defined as those in which the winner won the runner up by less than 3.5% of votes. It includes district and cohort fixed effects, as well as the other controls described in Table 2.9.

Table 2.11: Placebo Tests

Dependent variable: primary education attainment (1=primary education or higher, 0=otherwise)

	1	2	3	4
	2SLS	2SLS	2SLS	2SLS
	Urban individuals	Rural individuals	Urban individuals	Rural individuals
Fraction of constituencies in the district won by a woman	-0.0549	0.3322		
(effect on individuals who migrated to the area after the age of 14)	[0.4851]	[0.4783]		
Fraction of constituencies in the district won by a woman			-0.0546	-0.3161
(effect on individuals aged 14-16 when they were in power)			[0.2733]	[0.1941]
Controls	yes	yes	yes	yes
Observations	12338	7381	22124	37714
R-squared	0.2280	0.2517	0.2083	0.216

Robust standard errors clustered at the district level are reported between parentheses. * Significant at the 10%, ** significant at the 5%, *** significant at the 1%. Columns 1-4 are 2SLS regressions in which the fraction of constituencies in the district won by a woman in a close election against a man is used to instrument the fraction of constituencies in the district won by a woman. For these regressions I also include as a control the fraction of constituencies in the district that had close elections between women and men. Close elections are defined as those in which the winner won the runner up by less than 3.5% of votes. Regressions include district and cohort fixed effects, as well as the following controls: the fraction of seats won by each political party grouping, the fraction of reserved seats, the fraction of urban, SC/ST and female population, male and female literacy rates and dummy variables for whether the individual is a woman, Muslim, Hindu, SC/ST or lives in a rural area where applies.

Table 2.12: Measures of Political Influence

Dependent variable: primary education attainment (1=primary education or higher, 0=otherwise)

	1 2SLS Urban individuals	2 2SLS Rural individuals	3 2SLS Urban individuals	4 2SLS Rural individuals	5 2SLS Urban individuals	6 2SLS Rural individuals
Fraction of constituencies in the district won by a woman who belongs to the party who won the majority in the state	0.6945* [0.3609]	0.1015 [0.2207]				
Fraction of constituencies in the district won by a woman who does not belong to the party who won the majority in the state	0.5059 [0.5346]	-0.2431 [0.2998]				
Fraction of constituencies in the district won by a woman (effect on individuals living in small districts)			0.7853* [0.4047]	-0.1019 [0.2186]		
Fraction of constituencies in the district won by a woman (effect on individuals living in large districts)			0.5098 [0.3263]	0.2296 [0.2922]		
Fraction of constituencies in the district won by a woman (effect on individuals who were exposed to less months of President's rule)					0.6877** [0.2915]	0.0226 [0.1938]
Fraction of constituencies in the district won by a woman (effect on individuals who were exposed to more months of President's rule)					-0.1339 [1.3357]	0.1076 [0.4037]
Controls	yes	yes	yes	yes	yes	yes
Observations	34604	70604	34604	70604	34604	70604
R-squared	0.1710	0.2470	0.1707	0.2470	0.1707	0.2470

Robust standard errors clustered at the district level are reported between parentheses. * Significant at the 10%, ** significant at the 5%, *** significant at the 1%. Columns 1-6 are 2SLS regressions in which the fraction of constituencies in the district won by a woman in a close election against a man is used to instrument the fraction of constituencies in the district won by a woman. In columns 1 and 2 the fraction of constituencies in the district won by a woman from the party that had the majority in a close election against a man is used to instrument the fraction of constituencies in the district won by a woman from the party that had the majority. The same is true for women legislators who belong to the party that did not have the majority. I also include as a control the fraction of constituencies in the district that had close elections between women and men. Close elections are defined as those in which the winner won the runner up by less than 2.5% of votes. Regressions include district and cohort fixed effects, as well as the following controls: the fraction of seats won by each political party grouping, the fraction of reserved seats, the fraction of urban, SC/ST and female population, male and female literacy rates and dummy variables for whether the individual is a women, Muslim, Hindu, SC/ST or lives in a rural area where applies.

Table 2.13: Robustness Checks

Dependent variable: primary education attainment (1=primary education or higher, 0=otherwise)

	1	2	3	4	5	6	7	8
	2SLS	2SLS	2SLS	2SLS	2SLS	2SLS	2SLS	2SLS
	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural
	individuals	individuals	individuals	individuals	individuals	individuals	individuals	individuals
	3% margin	3% margin	2.5% margin	2.5% margin				
Fraction of constituencies in the district won by a woman	0.6777*	0.0075	0.7036**	0.0846	0.7087**	-0.0521	0.6668**	-0.1519
	[0.3458]	[0.2227]	[0.3261]	[0.2246]	[0.3420]	[0.1731]	[0.3319]	[0.2171]
Controls	yes	yes	yes	yes	yes	yes	yes	yes
Close elections defined with a smaller margin	yes	yes	yes	yes	no	no	no	no
State specific trends	no	no	no	no	yes	yes	no	no
District specific trends	no	no	no	no	no	no	yes	yes
Observations	34604	70604	34604	70604	34604	70604	34604	70604
R-squared	0.1708	0.247	0.1704	0.247	0.1722	0.2494	0.1878	0.2547

Robust standard errors clustered at the district level are reported between parentheses. * Significant at the 10%, ** significant at the 5%, *** significant at the 1%. Columns 1-8 are 2SLS regressions in which the fraction of constituencies in the district won by a woman in a close election against a man is used to instrument the fraction of constituencies in the district won by a woman. For these regressions I also include as a control the fraction of constituencies in the district that had close elections between women and men. Close elections are defined as those in which the winner won the runner up by less than 3.5% of votes unless indicated otherwise. Regressions include district and cohort fixed effects, as well as the following controls: the fraction of seats won by each political party grouping, the fraction of reserved seats, the fraction of urban, SC/ST and female population, male and female literacy rates and dummy variables for whether the individual is a woman, Muslim, Hindu, SC/ST or lives in a rural area where applies.

Chapter 3

Gender, Caste Reservations and Educational Gaps.

3.1 Introduction

This chapter analyses whether politicians in India favour those who belong to their groups in policymaking by studying the impact of a politician's identity on the probability that individuals belonging to his or her group attain primary education. In particular, it focuses on whether having a politician of a particular group reduces educational inequalities between this group and the rest.

According to citizen-candidate models, (Besley and Coate 1997 and Osborne and Slivinski 1996), a politician's identity may determine the type of policies enacted. In particular, if this politician belongs to a particular group, it is important to assess whether this group's needs are better catered for if it is more represented in Parliament.

There is very little evidence on whether politicians favour those who belong to their groups in policymaking, both for developed and developing countries. Understanding the impact of the politician's identity on who wins and who loses from the policies he or she implements may have important policy implications for poverty and development if the politician's identity determines who are the beneficiaries of different development programmes.

India constitutes a very interesting case study, as social and economic inequalities across

genders and castes are very large. This chapter focuses on women and Scheduled Castes and Tribes (SC/ST), as they are the groups who display lower educational outcomes.[1] Even if some seats in the State and National Governments are reserved for the Scheduled Castes and Tribes, reservation for women in State and National Governments has been debated since 1996 without an agreement being reached, even if it has already taken place in local governments. If the politician's identity matters, higher female and Scheduled Castes and Tribes political representation should improve the amount of public goods that these groups receive.

As shown in Figures 3.1 and 3.2, for all groups primary education is positively correlated with wages and expenditure. These figures show that individuals with primary education receive higher wages than those without it and, more importantly, households in which the household head has primary education have higher welfare, as they consume more than the rest. This is true whether the household belongs to the Scheduled Castes or Tribes or not. Education may then be important for welfare and for reducing economic, social and political inequalities but, in addition, it is a convenient policy to study for timing issues, as only those politicians who were in power before an individual started primary education could have had an effect on his or her education.

In Chapter 2 I found that higher female representation increases primary education attainment in urban areas. In this chapter I match the politicians' identity with the identity of individuals who live in the districts where they where elected. I first analyze the impact of reservations for SC/STs on the probability that these individuals attain primary education, and on whether reservations reduced educational inequalities between SC/ST citizens and the rest. Then I analyze whether female representation increased girls' education more than boys' and finally I define identity as gender and caste and I study whether SC/ST and general female politicians increased their groups' education more than the rest.

In order to conduct this study I combine a unique dataset on Indian elections with NSS survey data. These data allows me to identify the effect of politicians on individual educational outcomes, by matching the identity of the politicians and the identity of the beneficiaries.

The challenge is to identify empirically the causal effect of female politicians on an individual's education. This is difficult because omitted variables are likely to affect

[1] See Table 3.2.

both electoral outcomes and policy. As in Chapter 2, to identify the effect of female representation I instrument the share of constituencies in the district won by a female politician with the share of constituencies in the district won by a female politician in a close election against a male politician.

To identify the effects of the politician's caste, I take advantage of an institutional feature of the Indian democracy that reserves seats in the State Assemblies for Scheduled Castes (SC) and Scheduled Tribes (ST). I can then divide female representatives according to whether they won the elections in reserved seats (SC/ST seats) or in non-reserved seats (general seats).

Results show that caste reservations had a negative effect on the education received by SC/ST individuals, but that this result is reversed when the proportion of SC/ST population in the district is high. Female politicians increase girls' education in urban areas. In addition when defining identity as gender and caste, results show that politicians target their own groups: SC/ST female politicians increase women's and SC/ST's education while general female politicians increase women's and general individuals' education.

There is evidence that suggests that female politicians in India favour their group in policymaking. Chattopadhay and Duflo (2004) show that reservation of one third of the seats for women in Panchayats of West Bengal and Rajasthan has a positive impact on investment in infrastructure relevant to women's needs. There is also empirical evidence that suggests that a politician's caste matters for policy decisions. In particular, this literature analyzes the impact of reservations for the lower castes in India, the Scheduled Castes and Scheduled Tribes. Pande (2003) analyses how the reservation of seats for the Scheduled Castes and Tribes in the State Assemblies increases the amount of transfers that these groups receive. Besley et al (2004) look at the impact of reservations for Scheduled Castes and Tribes in village councils and find that they increase the amount of low-spillover public goods that lower castes receive. Bardhan et al (2005) examine the impact of reservations of Panchayat Pradhans on targeting to poor and SC/ST households. After looking at the effects of different programmes, they conclude that reservations have worsened targeting to SC/ST and landless households.

This chapter contributes to this literature by looking at the effects of the politician's identity, defined along the lines of caste and gender, on individual educational outcomes of citizens of their group living in the area where the politician was elected, and by

analyzing whether the effect on their own group is higher than on the others.

3.2 Background and Data

3.2.1 Institutional Background

The 1950 Indian constitution provides for political reservation 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 ST population in that particular constituency. Scheduled Caste (SC) seats are reserved according to two standards: the concentration of SC population and the dispersal of reservations in a given state.[2]

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

Scheduled Castes and Tribes are not formally defined as such in the Constitution. According to Articles 341 of the Constitution, the Scheduled Castes are the castes, races or tribes or parts of 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 part of or groups within these tribes and tribal communities which have been declared as such by the President through a public notification. The lists of Scheduled Castes and Tribes have not changed much over time.

Scheduled Tribes have primitive ways of life, live in geographical isolation, have a distinct culture, are reserved with respect to communicating with the rest of the community and are economically backward. Scheduled Castes can not be served by clean Brahmans, or by those who serve the caste Hindus. They pollute a high-caste Hindu by contact or proximity and an Hindu can not be served water from their hands. Scheduled

[2]There has almost never been a case in which a SC/ST legislator won a non-reserved seat. Thus, knowing whether a seat is reserved or not one can know the caste of the legislator who wins that seat.

Castes are prevented from using public services, such as roads and schools, and will not be treated as equal by high caste men with the same education. In addition, they are depressed on account of their illiteracy and occupation and, but for that, occupation would be subject to no social disability[3]

Reservations for women in the state and national parliaments have not yet been approved. In September 1996, the Government introduced a parliamentary bill that proposed the reservation of one third of the seats for women in the Central Government and the State Assemblies. Since then, this proposal has been discussed in several parliamentary sessions, but an agreement has not being reached.

I match politicians who were part of the State Legislative Assemblies with individuals of the same identity who lived in the district that contains the constituency where they were elected. The State Legislative Assemblies conduct the administration of the government in the 25 states of India. When elections take place, the states are divided into single-member constituencies where candidates are elected in first-past-the-post elections. The boundaries of constituencies are drawn to ensure that there is approximately the same number of inhabitants in each constituency. Different assemblies have different number of constituencies, according to population that lives in each state.

The districts are the administration unit at the lower level from the state. Each one includes between one and 37 constituencies, with a median of 9. The State Legislative Assemblies are those that mainly decide on educational policies and expenditure. Article 246 of the Constitution gives the Legislature of any State powers to legislate on educational issues. Education falls into the Concurrent List (matters shared between the central and the state governments), but nevertheless the state government plays the major role in primary and secondary education.

3.2.2 Data

The data used in this chapter comes from two sources: the Election Commission of India, and the National Sample Survey. In order to analyse whether politicians benefit those who share their same identity I take advantage of some of the variables that I have already used in the previous chapter, I have however added information on SC

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

and ST seats reservations and district population. I also exploit the information on the identity of the individuals that I match with politicians, the beneficiaries of educational policies. In the remainder of this section I will describe the dataset used with more detail.

I use data on 29686 candidates who won seats in the State Legislatures in India during the period 1967-2001 in the 16 largest states.[4] I collected this data from reports published by the Election Commission of India. This data gives information on the name, gender and political party of the candidate, together with the constituency where he or she contested. In order to conduct this study I also take advantage of the fact that some seats in the State Assemblies were reserved for the Scheduled Castes and Tribes. The Election Commission of India also provides information on this. Thus, for each politician in the dataset I know whether her or she was contesting for a Scheduled Caste reserved seat, for a Scheduled Tribe reserved seat or in an unreserved seat. Since those contesting in reserved seats must belong to the Scheduled Castes or Tribes, this allows me to identify whether those contestants where Scheduled Castes or Tribes. For female candidates I also collected data on the votes they obtained and on who were they contesting against. To be precise, for those women and men who won against a candidate of the other gender, I have data on who was the runner-up in each election and the vote's difference between the two.

Each one of these candidates was elected in a single-member constituency and then occupied a seat in the State Legislative Assembly. Given that each district has from 1 to 37 electoral constituencies, each district will have from 1 to 37 representatives in the Assembly.

Table 3.1 provides descriptive statistics on the the political variables used in this chapter. It gives information on the proportion of seats reserved for Scheduled Castes and Scheduled Tribes, the proportion of seats won by women, both in reserved and unreserved seats and the proportion of seats won by the different political parties.

Descriptive statistics show that an average of 15% of electoral constituencies in each of the sample districts are reserved for Scheduled Castes and 8% for Scheduled Tribes. In addition, 4.3% of SC reserved seats and 4.5% of ST reserved seats are won by

[4]These account for more than 90 per cent of the total population in India, about 935 million people. They are Andhra Pradesh, Assam, Bihar, Gujarat, Haryana, Jammu & Kashmir, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Orissa, Punjab, Rajashtan, Tamil Nadu, Uttar Pradesh and West Bengal.

women. Out of the non-reserved seats, 3.73% are won by women. Thus, female political representation has been low for the three types of seats, but a bit lower for non-reserved seats.

In order to match politicians and beneficiaries of their policies, I combine this dataset with data from the 55th round of National Sample Survey (NSS). This is a nationally representative household survey that provides information at the household and the individual level. The survey was conducted in India between July 1999 and June 2000 on a sample of randomly selected households. I use the Employment and Unemployment schedules of the 55th round of the NSS. They contain information on 596688 individuals, 371188 in rural areas and 225500 in urban areas.[5]

The NSS gives information on a wide range of individual characteristics. As a dependent variable, I use primary education attainment. I use information on the educational level attained by each individual to create a variable that is equal to one if the individual obtained primary or a higher level of education through formal education.[6] Since I define identity as gender and caste, I use a variable that gives information on each individual's gender and social group. To be precise, I use a question that provides information on whether the individual belongs to the Scheduled Castes, the Scheduled Tribes, Other Backward Castes or none of the former. Since Other Backward Classes do not enjoy mandatory reservations in parliament, I will consider them as general individuals in this chapter. As control variables I will also use information on religion and urban/rural residence of the individuals.

Panel A in Table 3.2 provides evidence on the large educational differentials that still exist in India between castes and genders. It shows statistics on primary education attainment by caste, gender and rural/urban status. Descriptive statistics show that SC and ST individuals receive lower levels than education than the rest, both in urban and in rural areas. In addition, differentials between men and women educational attainments are still big, especially in rural areas and for SC/ST individuals. In particular, SC/ST women living in rural areas are those with lower educational attainments.

I have merged the individual data with the politician's data by district of residence and

[5]The NSS uses the Indian Census definition of urban and rural areas.

[6]I then only consider individuals who attended formal education courses in my sample. Those who obtained education as adults are then considered as non-educated since they did not pass the primary standard examination when they were young. Nevertheless, there are only 987 individuals and results do not change after dropping them from the sample.

by the year in which each individual started primary school[7]. Thus, using information on the year each individual was born and his or her district of birth I can know the identity of the politicians wo were in power before he or she started primary school.

The sample size used contains 105208 individuals. The availability of political data allows me to include in the sample only individuals born after 1964. In addition, since primary school lasts four or five years depending on the state and individuals usually start schooling at the age of six, I restrict the sample to those who are older than 13 at the time of the survey, to allow for differences in states and for individuals finishing primary education at different years. I also eliminate individuals who migrated after schooling age from another district, state or country from the sample, as they will not have been benefited from the educational policies in the district of destination. I also eliminate those who migrated from rural to urban areas or vice versa within the same district, since educational policies may be different in rural than in urban areas.[8]

To each one of the individuals in the sample I assign the politicians who were in power during the three years before he or she started primary education. Thus, I take averages of the political variables between 1967 and 1969. Variation comes from the fact that different cohorts of individuals of different identities born in different districts will have been exposed to different politicians of different identities.

3.3 Identification

The aim of this chapter is to analyse whether politicians of a given identity target policies to individuals who share the same identity as themselves. I use education as a measure of the benefits received and I mainly focus on caste reservations and gender.

[7]As in Chapter 2, I consider it to be 6 years of age. The NSS provides information about an individual's age and the time the individual was interviewed. Since the individual could have been sampled either in 1999 or 2000 and this sample year is given by the NSS, I take this into account when I compute the age at which an individual started primary school.

[8]Since migration in India is generally very low I do not take sample selection issues into account.

3.3.1 Effect of SC/ST Politicians on SC/ST Individuals' Education

In order to determine the effect that Scheduled Caste, Scheduled Tribe and general politicians have on the education received by individuals who share their same identity, I take advantage of the fact that some seats in State Assemblies in India are reserved for Scheduled Castes and Scheduled Tribes. The idea is to match politicians with individuals of the same identity, to analyse whether these politicians had a larger effect on individuals of their same identity than on the rest.

Section 3 of Article 332 of the Indian Constitution states that the proportion of jurisdictions reserved for SC/ST should equal, as nearly as possible, the population share of SC/ST in the state. This can only change when census estimates change.

The single standard for reservation of ST seats is the concentration of ST population in a particular constituency. ST population is usually quite concentrated, thus, those constituencies have a high fraction of Scheduled Tribes. These constituencies tend to be more isolated and much less urban than general constituencies. The majority of STs live in reserved constituencies. For SC seats, the Commission is instructed to apply two standards: the concentration of SC population and the dispersal of reservations. In practice, they first reserve the constituencies with a higher proportion of Scheduled Castes (about 20%) and then select the others by the dispersal criterion. SC population is quite dispersed, thus, constituencies chosen by the dispersion criterion do not have such a high fraction of SC people. There is a big proportion of SCs who live in general constituencies. SC reserved constituencies tend to be less politically developed, slightly less urban, with less newspaper circulation and a slightly higher percentage of agricultural labourers. Objections to reservations in a particular constituency rarely bring about a change in the reservation status, so their location has remained relatively stable and has only changed due to changes in census estimates or other changes unrelated to the political process.[9]

Reservation for Scheduled Castes and Tribes is a function of their fraction in the population according to the previous census. Following the same strategy as Pande (2003) but at the district level, I use this to identify the effect of a politician's caste on individuals of their same group. In other words, I estimate equation 3.1:

[9] In 1976 reservations changed due to the Area Restiction Removal Act. Source Pande (2003) and Galanter (1979).

$$Y_{idt} = \theta_d + \psi_t + \beta scst_{idt} * PSCST_{dt} + \lambda gen_{idt} * PSCST_{dt} + \omega scstpopcurr_{dt} + \\ + \varphi scstpropcens_{dt} + X_{idt}\eta + Z_{dt}\delta + \varepsilon_{idt} \quad (3.1)$$

In this equation $PSCST_{dt}$ is the fraction of seats in the district reserved for Scheduled Castes and Scheduled Tribes during the three years before cohort t started primary education. I interact this variable with two dummy variables: $scst_{idt}$, which is a dummy variable equal to one if the individual i living in district d and belonging to cohort t is SC/ST and zero otherwise and gen_{idt}, which is equal to one if the individual is not SC/ST. In the tables I then report the difference between the two interaction terms, to understand whether politicians of a given group have a larger effect on individuals belonging to their group than on the rest. I control for $scstpropcens_{dt}$, the fraction of SC/ST population according to the previous census, as the number of reserved seats in the district will be a function of this variable. In addition, I control for the current share of SC/ST population in the district, $scstpopcurr_{dt}$, to rule out the possibility that the coefficient of the reserved seats variable simply proxies for higher SC/ST population.

θ_d are district fixed effects, which account for district-specific characteristics that do not change over time. ψ_t are the cohort fixed effects, which account for the fact that individuals born in different years may have been subject to different shocks or nationwide educational policies.

X_{idt} is a vector of individual-level control variables. I use different dummy variables for rural areas and Scheduled Caste and Scheduled Tribe individuals. I also include a dummy that indicates whether the individual is a woman.

Z_{dt} are the set of other district characteristics that vary over time and may have an effect on the dependent variable. In order to be able to disentangle the identity of the legislator effect from the political parties' effect, I include as control variables the average fraction of seats won by the different political parties in each district the three years before the individual started primary education. These variables vary across districts and across time. As in Besley and Burgess (2002) I use six main party groups: Congress, Hard Left, Soft Left, Janata, Hindu and Regional parties. Thus, independent candidates and other very small parties are the reference category. I also include literacy rates in order to control for the fact that in districts with more SC/ST population literacy will tend to be lower from the start. At the same time, it may as well be that in districts

where literacy rates are higher parents are more likely to bring their children to school. I have also included the share of urban population in the regression, since there is a big proportion of SC/ST population living in rural areas but parents may be more likely to educate their children in urban areas. As in Pande (2003), I include a dummy for individuals who started primary education in an electoral year, to ensure that the reservation variable does not act as a proxy for the electoral year. Descriptive statistics for these variables are shown in Panel B of Table 3.2. For the literacy rates and urban population variables, I use information on district and state characteristics when the legislators included in these three years were elected, or, if there were elections in the middle of these three years, characteristics when the first set of legislators were elected, to account for the situation the legislator found in a particular district when he or she was elected. Since observations in the same district could be correlated, I compute the robust standard errors clustered at the district level.

3.3.2 Effect of Female Politicians on Women's Education

The goal in this subsection will be to estimate whether the effect of female politicians on the education received by girls is larger than their effect on the education received by boys, by matching female politicians with women and men who were living in the districts where these politicians were elected when they were young.

If an equation such as 3.2 is estimated:

$$Y_{idt} = \theta_d + \psi_t + \beta women_{idt} * F_{dt} + \gamma men_{idt} * F_{dt} + X_{idt}\eta + Z_{dt}\delta + \varepsilon_{idt} \qquad (3.2)$$

Where F_{dt}, is the fraction of constituencies in the district that were won by a female politician during the three years before individual i started primary education. I interact this variable with a dummy variable that is equal to one if the individual is a woman: $women_{idt}$ and another variable that is equal to one if the individual is a man men_{idt},to estimate the differential effect of female politicians on girls and boys. However, there may be an omitted variable that affects both who is the politician elected and the education achievements of the beneficiaries of educational policies. This omitted variable will be problematic if it also affects women and men differently. The identification strategy used in this chapter is very similar to the one used in the previous chapter,

with the difference that now the interaction terms are used to calculate the differential effects on different types of beneficiaries.

I take advantage of the existence of close elections between a woman and a man candidate, elections in which the winner won the runner up by a very small number of votes.[10] The identification strategy used in this chapter follows the same idea as the regression discontinuity approach. This methodology has been widely used and was first introduced in the context of elections by Lee (2001) for incumbency advantage and Pettersson-Lidbom (2001) for the effect of party control on fiscal policies. In the field of development economics, Miguel and Zaidi (2003) use regression discontinuity to test for the "Patronage" hypothesis in Ghana. Angrist and Lavy (1999) used regression discontinuity as an instrument to estimate the impact of class size on educational achievements. Rehavi (2003) 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 US policies.

In the same spirit, to identify the causal effect of female politicians I use as an instrument for female representation the fraction of constituencies in the district won by a woman in a close election against a man.

The first stage regression would then be:

$$F_{dt} = \theta_d + \psi_t + \kappa FC_{dt} + \mu TC_{dt} + X_{dt}\sigma + Z_{dt}\varsigma + u_{dt} \tag{3.3}$$

F_{dt}, is the fraction of constituencies in the district that were won by a female politician during the three years before individual i started primary education. The instrument for this variable is FC_{dt}, the fraction of constituencies in the district won by a woman in a close election against a man during the same time period. I control for TC_{dt}, the fraction of constituencies in the district in which there were close elections between women and men, as well during the same time period.

The instrument satisfies the exclusion restrictions because female candidates who barely win the elections against a man must do so in constituencies where it is not clear that

[10] As in Chapter 2 I define close elections as those in which the winner won the runner up by less than 3.5% of votes.

the electorate has a strong preference for female politicians. These constituencies will be ex ante comparable to constituencies in which male candidates win in a close election against a woman. Thus, constituencies in which a woman won in a close election against a man and constituencies in which a man won in a close election against a woman will be similar in all the unobservable variables, they will only differ in the fact that by chance either a man or a woman won the election. The fact that a candidate is elected in first-past-the-post elections held in single-member constituencies is a function of the vote difference between the winner and the runner up. This function has a discontinuity when the vote difference is zero; this is the case because the winner has to receive more votes than the runner up in order to win the election. The fact that the candidate is elected or not changes discontinuously as this vote difference is zero. In elections in which the winner and the runner up have different genders, as the vote difference becomes smaller and approaches the discontinuity, constituencies in which the vote difference is very small and a woman won will be more and more similar to constituencies in which the vote difference is very small and a man won. Thus, this discontinuity at the zero vote difference will provide a randomized treatment. Since I consider elections in which the winner and the runner up have different genders, when the difference in votes is very small the winner's gender will be randomized. I define close elections as elections in which the votes difference between the winner and the runner-up is less than 3.5% of the total votes in that particular constituency.

The second stage regression is specification 3.4 , Y_{idt} takes the value of 1 if individual i belonging to cohort t, and born in district d has obtained at least primary education and 0 otherwise. Since observations in the same district could be correlated, I compute the robust standard errors clustered at the district level.

$$Y_{idt} = \theta_d + \psi_t + \beta women_{idt} * F_{dt} + \gamma men_{idt} * F_{dt} + \lambda TC_{dt} + X_{idt}\eta + Z_{dt}\delta + \varepsilon_{idt} \tag{3.4}$$

In this equation I also control for TC_{dt}, the fraction of constituencies in the district in which there were close elections between women and men, as well during the same time period. The fraction of constituencies that had close elections between men and women controls for the fact that the existence of this type of close elections may not be a random event. However, the outcome of a close election is random, meaning that the winner's gender in close elections between women and men is random as well. In other words, the impact of the existence of close elections between women and men on education is controlled by in specification 3.4 and partialled out of the instrument in

specification 3.3.

I interact F_{dt} with a dummy variable that is equal to one if the individual is a woman: $women_{idt}$ and another variable that is equal to one if the individual is a man men_{idt}. I can then estimate the effects of female politicians on the education received by girls and boys. [11]

Controls differ from those included in the previous section, as I include female and male literacy rates, to control for initial gender differences in education. I also control for the fraction of reserved seats, SC/ST and female population, to control for the electorate composition and reservation policies. Finally, I also include individual dummies indicating whether the individual is Hindu or Muslim, as this may have big implications for girl's education..

3.3.3 Effects of the Gender and Caste of the Politicians on the Education Received by Individuals of the same Identity

This subsection aims to determine whether politicians tend to favour those who share their same identity, as defined by gender and caste, in policymaking. India provides the unique opportunity to analyse both the gender and the caste effect of politicians, which has not been previously analyzed in the literature. I take advantage of the fact that some seats in the State Assemblies are reserved for the Scheduled Castes and Scheduled Tribes. Since some constituencies in each district will be reserved for this population group. I can compare female politicians who contested for SC/ST reserved seats to female politicians who contested for unreserved (or general) seats.

I instrument the fraction of constituencies in the district won by a woman with the fraction of constituencies in the district won by a woman in a close election against a man. I do this both for women who won in reserved seats (SC/ST) and for women who won in non-reserved seats (general seats). The specification that is going to be tested will then be:

[11] In the first stage I also interact the instrument with the dummy variables.

$$Y_{idt} = \theta_d + \psi_t + \sum_j \beta_{1j}(ident^j_{idt} * Fscst_{dt}) + \sum_j \beta_{2j}(ident^j_{idt} * Fgen_{dt}) + \\ +\lambda TC_{dt} + X_{idt}\eta + Z_{dt}\delta + \varepsilon_{idt} \quad (3.5)$$

Where $Fscst_{dt}$, the fraction of constituencies in the district won by SC/ST women is instrumented with the fraction of constituencies won by SC/ST women in a close election against a SC/ST man. Similarly, $Fgen_{dt}$, the fraction of constituencies in the district won by general women is instrumented with the fraction of constituencies won by general women against general men.

In order to estimate the effect of both SC/ST and general female politicians on individuals of different identities, I interact the female representation variables with dummy variables that will be equal to one if the individual belongs to a particular identity group. Thus, $ident^j_{idt}$being equal to one indicates that individual i, born in district d and in cohort t has identity j. I will use as identity variable dummies for gender, caste or gender and caste of the individuals, which are mutually exclusive. In this specification the controls used are the same as those in the previous subsection, and include $ident^j_{idt}$. In order to estimate the model, the representation variables are interacted in the second and the first stages with the identity dummies.

3.3.4 Validity of the Identification Strategy

In this subsection I perform some checks to confirm that the close elections identification strategy can be applied once dividing the female representation variable according to whether they were contesting for a SC/ST reserved seat or not. In Chapter 2 I showed that this was the case for close elections between women and men, but this may not be the case once taking caste reservations into account. To identify the effect of both general and SC/ST female politicians on the education received by individuals of their own identities I take advantage of SC/ST reservations and the fact that some of these female politicians won in close elections against men politicians.

In Chapter 2 I show that the proportion of constituencies in the district won by a female politician against a man is a good instrument for the proportion of constituencies in the district won by a female politician. This is the case because the outcome of a close

election between a woman and a man can not be predicted with any variable, districts where more female politicians won in close elections are very similar to those in which more men won in close elections, candidates and constituency characteristics are as well very similar and districts that never had close elections are very similar to those who had. However, it remains to be shown that the outcome of a close election in general and SC/ST seats is random and that districts and constituencies where general (SC/ST) female politicians won in close elections against men are very similar to those in which general (SC/ST) male politicians won in close elections against women.

First, the outcome of a close election between a female and a male politician should be truly random, in other words, should not depend on district characteristics. One way to test for this is to try to predict it with district level variables. Results in Table 3.3 show that the fraction of close elections between general women and men won by women and the fraction of close elections between SC/ST women and men won by women can not be explained by the proportion of close-elections seats contested by the different parties, by whether the district had close elections in the past, by the number of times that women had won elections in the past in the district, district population characteristics and the fraction of reserved seats. Regressions in Table 3.3 include district and year fixed effects, and are run in the sample of districts where there was at least a close election between a woman and a man.

Second, districts where more SC/ST (general) female politicians won in close elections should be similar in observables to districts where more SC/ST (general) male politicians won in close elections. Table 3.4 provides information on the differences in district characteristics, according to whether more general (and SC/ST) women or more general (and SC/ST) men won in close elections against a candidate of the same caste and the other gender. I use information at the district level on the proportion of urban and SC/ST population, male and female literacy rates, the fraction of seats reserved for SC/STs, the number of educational institutions and hospitals weighted by the population and the proportion of seats won by female and male candidates in elections that were not close. Results show that districts in which more general (SC/ST) men won in close elections and districts where more general (SC/ST) women won in close elections are very similar in all these variables.

One should also observe that constituency and individual characteristics of women and men winning in close elections are the same. In the remainder of this section I analyze some of these characteristics both for general and for SC/ST reserved constituencies,

that could compromise the comparability between close elections in which men won and close elections in which women won in both types of seats.

First of all, there might be concerns that two different constituencies in which a woman contested in a close election against a man might not be similar if in one of them there were many other women candidates, apart from the winner and the runner up, contesting for the same seat. This would be a case in which political parties perceive the constituency as one in which there is "preference for female politicians" and tend to field female candidates there. I use information on all the female candidates contesting in a particular constituency, apart from the winner and the runner up, both for general and for SC/ST constituencies. As shown in the top panel of Table 3.5 , the number of other female candidates contesting against women who won in close elections against a man is not significantly different than that for men who won in close elections against a woman, for both reserved and unreserved constituencies.

It might also be that one of the candidates in a close election is in this situation because he or she is the incumbent for that seat in that particular constituency. This would make constituencies in which women and men won in close elections against a candidate of the other gender different in observables if men (or women) are those who tend to be the incumbent, as they will have more experience as legislators and may implement different policies. In order to address this concern I use the fact that I have information on the candidate's names, thus, I can know whether a particular candidate was already in power in the same constituency where he or she is contesting now during the previous electoral year. I then create a dummy variable that is equal to one if the individual was the incumbent for that seat. However, as it is shown in the second panel of Table 3.5, the percentage of winners in close elections who were the incumbent is statistically the same for female and male legislators who won in close elections, both for general and for SC/ST constituencies.

Another concern that needs to be addressed is that there may be some constituencies in which there have been more close elections between men and women in the past than in others. If this happens more often in constituencies where women won the close election than in constituencies in which men won, then these two types of constituencies would not be comparable, since the one where there have been more close elections would probably be more "women friendly". In the third panel of Table 3.5 I test whether constituencies in which a man or a woman won in a close election are different in terms of how many times the particular constituencies have had close elections between men

and women. Results show that they are the same for both types of constituencies.

Finally, if elections in which men and women won in close elections are really similar, they should have the same electoral turnout and the same distribution of votes between the first two candidates and the others. The last two panels of Table 3.5 show that those general (SC/ST) women who won in close elections won by the same number of votes as general (SC/ST) men who won in close elections and in constituencies where the total number of votes was the same. Since constituencies in India were designed to have the same population, this means that turnout was the same and the distribution of votes between the first candidate and the rest was the same as well. This further corroborates that constituencies in which a man or a woman won in a close election are perfectly comparable and thus, the gender of the winner is, indeed, random. These two panels also show that in both types of constituencies the first two candidates receive a minimum of 76.5% of votes in their constituencies, which means that other candidates only receive 23.5% of votes. Thus, even if there was only one other candidate in the constituency, he or she did not have any chance of winning the election.

3.4 Baseline Results:

3.4.1 Effect of SC/ST Politicians on the Education Received by SC/ST Individuals

In this subsection I will analyze whether SC/ST politicians did favour SC/ST individuals who were living in the district where the constituency where they were elected is located. Results are reported in Table 3.6. I report the coefficient for the fraction of seats in the district reserved for SC/ST interacted with a dummy variable equal to one if the individual affected is SC/ST and interacted with another dummy that is equal to one if the individual is general. I also report the p-value of difference between these two coefficients, that indicates whether SC/ST favour more those who belong to their group than the rest or not. In column 1 I report results for the whole sample; results show that SC/ST politicians had a negative impact on the education received by SC/ST individuals. Even if their effect on general individuals is very close to zero and not significant, the difference between these two coefficients is statistically significant. Given that the reference category is politicians in general seats, this indicates that general politicians have a larger effect on SC/STs education than SC/ST politicians.

Since a considerable amount of SC/ST individuals live in rural areas, I split the sample, according to whether the individuals affected live in an urban or a rural area. Results are reported in columns 2 and 3. Coefficients in these two columns are very similar to those obtained before, indicating that there are no sizeable differences between urban and rural areas.

These results are striking, however, SC/ST politicians are contesting for seats in which only SC/ST politicians can contest and are as well elected by the general individuals living in their electoral constituencies. Thus, in order to get re-elected they will have more incentives to target SC/ST individuals living in their constituencies when designing electoral policies the larger the proportion of SC/ST individuals living in the constituencies. Data on each electoral constituency in India does not exist, so I have computed the fraction of the population of each district that is SC/ST. I then interact this variable (in differences from the mean)[12] with the proportion of reserved seats interacted with the identity dummies.[13]

Results are shown in column 4. Results for the fraction of reserved seats interacted with the identity dummies are essentially the same as before, and the gap between SC/ST and general individuals has the same size but it is not statistically significant. These coefficients indicate the effect of reservations on both types of individuals when the proportion of the population that is SC/ST is at the mean. Results for the interactions with the SC/ST population variable in deviations from the mean are different. The larger the fraction of SC/ST population in the district, the larger the effect that SC/ST reservations have on the education received by SC/ST individuals. In addition the coefficient for SC/ST individuals is now larger than the one for general individuals, even if the difference is not statistically significant. If the SC/ST district population in deviations from the mean is higher than 0.29, the effect of SC/ST reservations on SC/ST individuals will be positive, this means that the SC/ST population in the district has to be higher than 53%. This SC/ST district population variable proxies for SC/ST population in the constituency, thus SC/ST politicians will favour SC/ST individuals if they constitute a large group.

Finally, in column 5 I consider reservations for Scheduled Castes and Scheduled Tribes separately, as they are different groups and may have different preferences. Results show

[12]The mean of this variable is then 0.002872 , with standard deviation of 0.1274371.

[13]All terms in the triple interactions are included in the regression, even if coefficients are not reported in the table.

that SC reservations have a negative impact on SC's education, while ST reservations do not have an effect on any of the groups. The reference category is general seats. Thus, the negative coefficient for the effect of SC politicians on SC individuals may be explained by the fact that general politicians do indeed do something for education, especially for the SCs, who are assumed to have more political power than the rest. [14]

3.4.2 Effect of Female Politicians on Girls' and Boys' Education

In this subsection I analyse whether female politicians have a bigger effect on girls' than on boys' education. If female politicians promote policies that favour women's needs, they should increase girl's education. However, there may be spillovers and then boy's education will increase as well.

Results for the OLS regressions are reported in columns 1-3 of Table 3.8. In column 1 I show results for the whole sample of individuals. I report the coefficients for the fraction of constituencies in the district won by a woman interacted with two dummy variables: one that is equal to one if the individual affected is a woman and another one that is equal to one if the individual affected is a man. I also report the computed difference between these two coefficients. Results show that female politicians increase the probability that a girl attains primary education, while this is not the case for boys. However, the difference between the two coefficients is not significant. In column 2 I only include in the sample those individuals who live in urban areas. Here results are the same but the effect of female politicians on girl's education is larger and statistically different than the effect of female politicians on boy's education. In column 3 I report results for individuals living in rural areas, here neither girls nor boys are affected by female politicians. These results could be affected by omitted variable bias, so I will use as an instrument for female representation the fraction of constituencies in the district won by a woman in a close election against a man.

Results for the first stage regressions are shown in Table 3.7. In column 1 I report results for the first stage, when the fraction of constituencies in the district won by a woman in a close election against a man is used the instrument the fraction of constituencies in the district won by a woman. In columns 4-6 of Table 3.8 I report results for the second stage. Coefficients for the effect of female representation on women and on

[14] See Banerjee & Somanathan (2006).

men, together with the difference between the two are shown. In column 4 I report results for the whole sample, while in columns 5 and 6 I restrict the sample to urban and rural areas, respectively. Female representation does not have a significant effect, neither on women nor on men in the overall sample. In contrast, female representation has a positive and significant effect in urban areas, both for women and for men; see column 5. The coefficient for the effect on women is 50% larger in magnitude than the one for the effect on men, although the difference between these two coefficients is not statistically significant. The difference in magnitudes may be due to the fact that women have lower primary education attainments than men to start with, or may be due to the fact that female politicians promote educational policies that increase girls' education but that also have spillover effects on boys. Column 6 shows that in rural areas, female representation does not have an effect, neither on girls nor on boys.

The fact that the 2SLS coefficients are larger than the OLS ones both for the effect on girls and boys for the overall sample and the urban sample may indicate that female politicians are elected where both girls' and boys' educational levels are lower. The fact that this is not the case for the coefficients in rural areas means that the bias would reduce the urban-rural difference observed.[15]

3.4.3 Effects of the Politician's Gender and Caste on Individuals who Share their Identity.

In this subsection I take advantage of the fact that in India, some seats are reserved for Scheduled Castes and Scheduled Tribes (SC/ST). By looking separately at SC/ST and general female legislators I can then disentangle gender from caste effects and I can analyze whether SC/ST and general female legislators favour individuals belonging to their groups more than the rest in policymaking.[16]

I first analyse whether both general and SC/ST and general female politicians favour women more than men, by increasing the probability that a girl attains primary edu-

[15]Both the instrument and the female representation variable vary at the district and cohort level, even if the dependent variable is at the individual level. When running the first stage regression at the district and year level without individual variables the coefficient for the fraction of constituencies in the district won by a woman in a close election against a man is 1.2025, with a standard error or 0.1992. Results for the second stage regression are as well very similar.

[16]I do not consider SC and ST female politicians separately due to the lack of data points to construct the instrument.

cation more than the probability that a boy attains primary education. SC/ST women are part of a socially and economically disadvantaged group, with different needs than general women. SC/ST politicians may have different preferences and may behave differently from general legislators due to their lower social and economic position (see Pande 2003), so it is interesting to see whether, once controlling for caste, gender also matters.

In addition, if the cost of running for elections is higher for female than for male candidates, female legislators will tend to belong to richer economic backgrounds. If this is the case, the female representation variable may then proxy for class rather than gender preferences. It is then convenient to divide the female representation variable according to the representatives' caste, in order to disentangle gender from class effects.

The first stage regressions for this specification are reported in columns 2 and 3 of Table 3.7. Results show that the fraction of constituencies in the district won in a close election by a SC/ST female politician against a SC/ST male politician is a very good predictor of the fraction of constituencies in the district won by a SC/ST female politician. The analogous is true for general female politicians. The cross-coefficients are also significant, but smaller.

Results in Table 3.9 show the coefficients of the effect of SC/ST and general female politicians on girls and boys. Columns 1 and 2 show OLS regressions, while 3 and 4 show 2SLS regressions. The computed difference among the coefficients on girls and boys are also reported, both for SC/ST and for general female legislators. In column 1 I report results for the urban sample, while in column 2 I report results for the rural sample. Given that results obtained before show that female politicians favour urban areas as opposed to rural areas, and, as discussed in Chapter 2, women may benefit more from education in urban areas, I will now report results for the urban and rural samples separately. Results in column 1 shows how SC/ST female politicians do not affect neither girls' nor boys' primary education attainment in urban areas, as compared to male politicians. In contrast, general female politicians have a larger effect on girls' education than on boys' education. In rural areas, see column 2, neither general nor SC/ST female politicians have any impact on girls' and boys' education, or on the difference between the two.

As discussed before, OLS results may be contaminated by omitted variable bias. In columns 3 and 4 I show 2SLS results in which the fraction of constituencies in the

district won by a SC/ST (general) female politician is instrumented by the fraction of constituencies in the district won by a SC/ST (general) female politician in a close election against a SC/ST (general) man.

Column 3 shows how both SC/ST and general female politicians have a positive effect on the probability that girls attain primary education in urban areas, while the effect on boys is not significant. However, the effect of SC/ST female politicians is almost three times as big as the effect of general female politicians. The coefficients on the effect on girls and boys are not significantly different, neither for general nor for SC/ST female politicians. In rural areas, the effect is not significant, neither for girls nor for boys. By increasing SC/ST female representation by 10 percentage points, the probability that a girl living in an urban area attains primary education increases by 15 percentage points, while by increasing general female representation by 10 percentage points, the probability that a girl attains primary education in an urban area increases by 5 percentage points.

So far results show that SC/ST female politicians increase girls' education in urban areas. Even if the educational gender gap is not reduced, their effect on boys' is not significant. Given that the reference category are male politicians, results indicate that both general and SC/ST female politicians increase women's education more than male politicians.

SC/ST individuals attain primary education with lower probability than general individuals; it is also interesting to see whether female politicians increase education for individuals of their own caste group. Results for the 2SLS regressions are shown in Table 3.10. I report coefficients of the effect that both SC/ST and general female politicians have on SC/ST and general individuals, together with the computed difference between the two.

Column 1 shows results for the whole sample. Results show that neither SC/ST nor general female politicians have had an impact on the probability that SC/ST and general individuals attained primary education. In addition, SC/ST female politicians seem to have a larger effect on general individuals than on SC/ST individuals. SC/ST female politicians are contesting in seats that are already reserved for SC/ST, but are competing against SC/ST male politicians to win the seat, this means that, in order to get re-elected, they may be more likely to favour policies targeted to women than policies targeted to SC/ST individuals. It will then be interesting to see whether the

effects are the same on individuals living in urban and rural areas, as women benefit more from education in urban areas than in rural areas.

In urban areas, SC/ST female politicians have a positive effect on SC/ST individuals, while general female politicians have a positive effect on general individuals; see column 2. In fact, by increasing SC/ST female representation by 10 percentage points, the probability that a SC/ST individual attains primary education increases by 28 percentage points, which is 43% of the probability that a SC/ST individual attains primary education in an urban area. In addition, this coefficient is significantly different than the effect on general individuals. By increasing general female representation by 10 percentage points, the probability that a general individual attains primary education increases by 5.6 percentage points, 7% of the probability that a general individual attains primary education in an urban area. This coefficient is not significantly different than the one on SC/ST individuals, even if the latter is much smaller. This is the case because the latter is not precisely estimated.

In rural areas, see column 3, SC/ST female politicians have a negative effect on the probability that SC/ST individuals attain primary education. Since the reference group is men, this may mean that male politicians increase SC/ST education in rural areas, even after controlling for the fraction of seats in the districts that are reserved for SC/STs. In contrast, SC/ST female politicians do not affect general individuals. Column 3 also shows that general female politicians do not have an effect on individuals living in rural areas, irrespective of their caste.

In summary, female politicians seem to induce educational policies that favour individuals of their own gender and caste in urban areas. The fact that female politicians benefit individuals of their same caste in urban areas but not in rural areas may indicate that they target individuals of their same gender and caste, as women benefit more from education in urban than in rural areas.

In order to confirm this later statement, in Table 3.11 I show results in which I interact the female representation variables with four different dummy variables: for SC/ST women, SC/ST men, general women and general men. This allows me to identify the effect of SC/ST and general female politicians on the different groups. In column 1 I report results for the urban sample, while in column 2 I report results for the rural sample. In urban areas SC/ST female politicians have a positive effect on the probability that both SC/ST women and men achieve primary education. Moreover, they

also affect positively the probability that general women achieve primary education. The coefficients for SC/ST women and men are not significantly different, but they are both different than the coefficients for general women and men. These results indicate that SC/ST female politicians target educational policies to individuals of their own group: women and the SC/STs. In fact, by increasing the proportion of seats won by SC/ST female politicians by 10 percentage points, this increases the probability that SC/ST women achieve primary education by 30 percentage points, which is a very large amount compared to the average probability.

General female politicians also target their own group in policymaking. General female politicians have a positive effect on the probability that general women achieve primary education. However, this coefficient is not significantly different than the coefficient for SC/ST women and men and general men, as these are not precisely estimated.[17]

3.5 Robustness Checks

In this section I perform some robustness checks in order to confirm the validity of the main results obtained. Results are shown in Table 3.12.

In this chapter I have defined close elections as elections in which the votes difference between the winner and the runner up is less than 3.5%. Here I check whether the results are sensitive to this choice of vote margin. In columns 1-4 of Table 3.12 I test whether results are the same when I define close elections as those in which the winner won the runner-up by smaller margins. In particular, in columns 1 and 2, I use a 3% margin as a cut-off point, while in columns 3 and 4 I use a 2.5% margin. I then run the 2SLS specifications in which I analyse whether SC/ST and general female politicians have an effect on the education received by individuals of their own gender and caste. Now, however, the instrument will be defined in a different way, since some elections that before were considered close now will not be. I report results for the urban sample

[17]Since variation both in the instruments and the endogenous variables is at the district and year level, even if I use NSS weights in the individual regressions I should check whether results remain running the regressions at the district and year level, without controlling for individual characteristics. The first stage results are as well very similar. In the regression for SC/ST female politicians, the coefficient for SC/ST female politicians who won in close elections is 1.0285, with a standard error of 0.05361. In the regression for general female politicians, the coefficient for general female politicians who won in close elections is 1.1020, with a standard error of 0.1881. Moreover, coefficients for the second stage are as well very similar, whether I run the regression at the district level or at the individual level.

and the coefficient for the fraction of constituencies in the district won by SC/ST and general women interacted with the identity dummy variables. Columns 1 and 3 show that, when reducing the margin, the coefficient of the effect of SC/ST female politicians on women remains significant and it is very similar than the one found with the 3.5% margin. In contrast, the coefficient for general female politicians is not significant. This may be due to the fact that the coefficient for general female politicians had a lower significance level in the original regressions and it is both the standard error and the coefficients that increase. Columns 2 and 4 show that, when reducing the margin, the coefficient of the effect of both general and SC/ST female politicians on individuals of their own caste group remains significant and it is very similar than the one found with the 3.5% margin.

Finally, similar to Pande (2003) and since SC/ST reservation is a nonlinear function of SC/ST population, I include as controls the square and the cube of the fraction of the population that was SC/ST according to the previous census. Results for the specifications in which politician's identity is defined as gender and caste are shown in columns 5 and 6, while results for the specification in which identity is defined as caste is reported in column 7. Results for these three specifications are mainly unchanged when adding these controls, even if the coefficient for general female politicians is not significant. As before, this may be due to the fact that the coefficient for general female politicians had a lower significance level in the original regressions and it is both the standard error and the coefficient that increase.

3.6 Conclusions

By matching politicians' with beneficiaries' identity, this chapter provides evidence that politicians benefit those who share their same identity. The analysis focuses on caste reservations and on variations on female political representation and analyses their effects on the probability that individuals who share their same identity attain primary education. It finds that female politicians tend to increase girls' education in urban areas; in fact SC/ST female politicians favour girls and the SC/STs, while general female politicians favour girls and general individuals. In contrast, it finds that reservation for SC/STs has a negative impact on the education received by SC/ST individuals.

However, this result is reversed when there are a large number of SC/ST individuals living in the district. A possible explanation for this is that, given that SC/ST reserved seats can only be contested by SC/ST candidates, the only competition that these candidates face comes from other SC/ST candidates belonging to different political parties. Citizen-candidate models would predict that SC/ST politicians choose different policies than the rest, and would choose these policies according to their own preferences as SC/STs. However, if they want to be re-elected, they will try to favour their constituents. Given that there are both general and SC/ST inhabitants in reserved constituencies, they will be more likely to target policies to SC/ST individuals if they constitute a large fraction of the population. In other words, irrespective of whether they promote SC/ST targeted policies at the state level, in their own constituencies they will try to win votes from the maximum number of citizens.

Even if this is the case for SC/ST politicians, the situation for SC/ST female politicians is different, as, even if they do not compete on the SC/ST issue, they compete on the gender issue. This means that they will try to favour women in policy making, which is what results in this chapter suggest. SC/ST female politicians also favour SC/ST individuals; this can be explained by the fact that they face higher political competition that drives them to target both women and the SC/STs, or because educational policies had spillover effects to SC/ST men. Given that their effect is restricted to urban areas and women benefit more from education in urban areas, the second explanation seems more plausible.

There is very little evidence on how politicians choose beneficiaries for their policies and on whether the politician's identity has an impact on who the beneficiaries are. If the politician's identity determines who the beneficiaries of the policies he or she implements are, increasing some groups' political representation may reduce inequality between these groups and the rest of the population. This is especially important if those groups are relatively disadvantaged with respect to the society as a whole. Results obtained in this chapter give an insight on how political institutions function and show that political representation is crucial for the education received by individuals belonging to the politician's identity group.

3.7 Figures and Tables

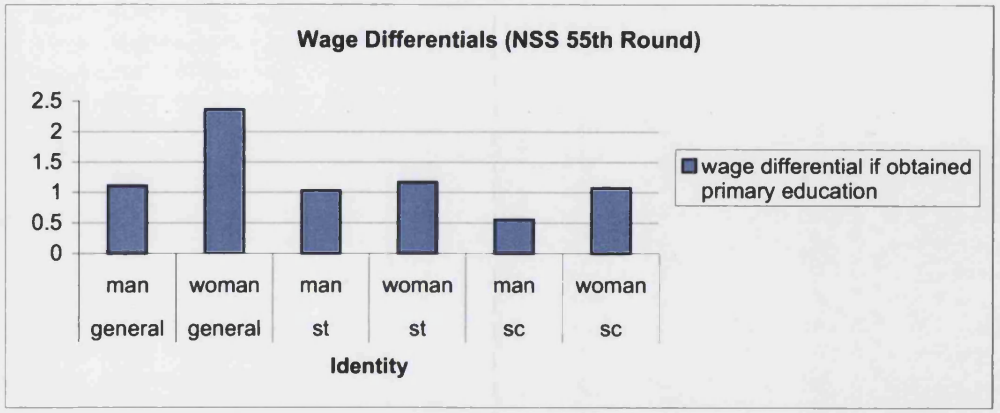

Figure 3.1 Primary Education and Wages

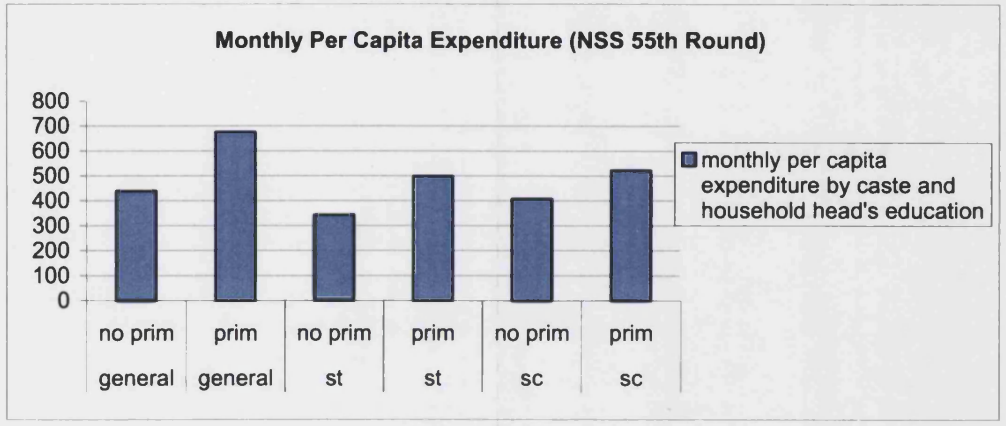

Figure 3.2 Primary Education and Household Expenditure

Table 3.1: Descriptive Statistics: District Politicians
Unit of observation: district in an electoral year

Variable (total seats in the district)	Obs.	Mean	Sd
Proportion of seats won by women	2546	0.0387	0.0750
Proportion of seats reserved for SC/ST	2546	0.2363	0.1948
Proportion of seats reserved for SC	2546	0.1535	0.1098
Proportion of seats reserved for ST	2546	0.0829	0.2022
Proportion of seats won by SC/ST women	2546	0.0103	0.0404
Proportion of seats won by SC women	2546	0.0066	0.0302
Proportion of seats won by ST women	2546	0.0037	0.0275
Proportion of seats won by general women	2546	0.0285	0.0632
Proportion of seats won by Congress	2546	0.4359	0.3289
Proportion of seats won by Hard Left	2546	0.0599	0.1475
Proportion of seats won by Soft Left	2546	0.0245	0.0916
Proportion of seats won by Hindu	2546	0.1336	0.2344
Proportion of seats won by Janata	2546	0.1489	0.2631
Proportion of seats won by Regional	2546	0.0800	0.2047
Proportion of seats won by Others	2546	0.0594	0.1600
Proportion of seats won by Independent	2546	0.0578	0.1114
Variable (total seats in the district in districts where women were elected)	**Obs.**	**Mean**	**Sd**
Proportion of seats won by women in a close election against men	708	0.0163	0.0416
Proportion of seats who had close elections between men and women	708	0.0225	0.0488
Proportion of seats won by women in a close election against a man (SC/ST)	708	0.0032	0.0207
Proportion of seats won by women in a close election against a man (general)	708	0.0130	0.0372

Table 3.2: Descriptive Statistics: Survey and Control Variables.

Panel A: NSS individual variables

	RURAL			URBAN		
Variable	Obs	Mean	Sd	Obs	Mean	Sd
Women	70604	0.4560	0.4981	34604	0.4081	0.4915
Men	70604	0.5440	0.4981	34604	0.5919	0.4915
SC/ST	70604	0.3008	0.4586	34604	0.1777	0.3823
SC	70604	0.1913	0.3934	34604	0.1425	0.3495
ST	70604	0.1095	0.3123	34604	0.0353	0.1844
Hindu	70604	0.8363	0.3700	34604	0.7162	0.4509
Muslim	70604	0.0932	0.2907	34604	0.2039	0.4029
Primary education or more	70604	0.5528	0.4972	34604	0.7942	0.4043
Women with primary education or more	32198	0.4311	0.4952	14121	0.7684	0.4219
Men with primary education or more	38406	0.6548	0.4754	20483	0.8120	0.3907
SC/ST with primary education or more	21241	0.3981	0.4895	6150	0.6623	0.4730
SC with primary education or more	13509	0.4476	0.4973	4930	0.6694	0.4705
ST with primary education or more	7732	0.3117	0.4632	1220	0.6336	0.4820
General with primary education or more	49363	0.6194	0.4856	28454	0.8227	0.3819
SC/ST women with primary education or more	9754	0.2637	0.4407	2360	0.6233	0.4847
General women with primary education or more	22444	0.5039	0.5000	11761	0.7975	0.4019
SC/ST men with primary education or more	11487	0.5123	0.4999	3790	0.6865	0.4640
General men with primary education or more	26919	0.7156	0.4511	16693	0.8405	0.3661

Panel B: Other control variables

Variable	Obs	Mean	Sd
Urban population in the district	8500	0.208964	0.14433
SC/ST population in the district	8500	0.254323	0.135941
SC population in the district	8500	0.162426	0.072429
ST population in the district	8500	0.092282	0.147672
Women in the district	8500	0.481989	0.015899
Male literacy rate in the district	8320	0.551711	0.164656
Female literacy rate in the district	8320	0.304319	0.182224
Literacy rate in the district	8500	0.366515	0.146597

Table 3.3 : SC/ST and General Seats:Probability that a Woman Wins in a Close Election against a Man

Dependent variable: proportion of women who won in a close election against a man per district

	General	SC/ST
	1	2
Proportion of seats contesting close elections Congress	-1.59	0.201
	(2.14)	(0.923)
Proportion of seats contesting close elections Regional Parties	-3.235	0.026
	(5.297)	(1.427)
Proportion of seats contesting close elections Independents	-1.636	0.227
	(1.908)	(1.026)
Proportion of seats contesting close elections Hindu	-0.914	-0.212
	(2.37)	(1.403)
Proportion of seats contesting close elections Janata	-1.833	0.082
	(1.585)	(0.973)
Proportion of seats contesting close elections Others	-0.593	0.203
	(2.372)	(1.13)
Dummy=1 if the district never had close elections before	0.439	-0.175
	(0.619)	(0.268)
Proportion of urban population	9.872	0.905
	(12.87)	(4.877)
Proportion of population that is female	-0.018	0.019
	(0.051)	(0.032)
Male literacy rate	14.479	1.748
	(20.603)	(6.104)
Female literacy rate	-16.185	-0.87
	(27.874)	(8.031)
Number of times that a woman has won an election in the district in the past	-5.524	2.915
	(11.364)	(4.376)
Proportion of seats reserved for SC/ST's	2.343	-2.358
	(8.239)	(3.87)
Proportion of SC/ST population	-1.849	-0.766
	(5.769)	(1.741)
Observations	164	164
Adjusted R-squared	-0.1474	0.5242

Robust standard errors clustered at the district level. District and year fixed effects are included in the regression.

Table 3.4: District Characteristics: Men Contesting against Women and Women Contesting against Men by Caste

	General Seats	SC/ST Seats
Differences in the proportion of urban population	0.0019	-0.0372
(Districts in which more men than women won compared to districts in which more women than men won)	[0.0201]	[-0.0371]
Differences in male literacy rate	-0.0409	-0.0374
(Districts in which more men than women won compared to districts in which more women than men won)	[0.0292]	[0.0474]
Differences in female literacy rate	-0.0415	-0.0249
(Districts in which more men than women won compared to districts in which more women than men won)	[0.0345]	[0.0521]
Differences in the number of villages with educational institutions	0.0584	0.1974
(Districts in which more men than women won compared to districts in which more women than men won)	[0.0748]	[0.1757]
Differences in the number of villages with hospitals	0.0008	0.0010
(Districts in which more men than women won compared to districts in which more women than men won)	[0.0023]	[0.0051]
Differences in the proportion of SC/ST reserved seats	-0.0111	0.0467
(Districts in which more men than women won compared to districts in which more women than men won)	[0.0203]	[0.0857]
Differences in the proportion of women who won in elections that are not close	-0.0044	0.0005
(Districts in which more men than women won compared to districts in which more women than men won)	[0.0091]	[0.0184]
Differences in the proportion of men who won in elections that are not close	-0.0090	-0.0331
(Districts in which more men than women won compared to districts in which more women than men won)	[0.0112]	[0.0238]
Number of election-years	157	47

Table 3.5

SC/ST and General Seats: Constituency and Candidate Characteristics in Close Elections

		General					SC/ST			
Group	Obs	Mean	Std. Err.	[95% Conf.	Interval]	Obs	Mean	Std. Err.	[95% Conf.	Interval]
Other female candidates in the constituency										
Man won in close election	91	0.1209	0.0464	0.0286	0.2132	29	0.0690	0.0479	-0.0291	0.1671
Woman won in close election	92	0.1957	0.0541	0.0882	0.3031	18	0.2222	0.1008	0.0095	0.4350
Difference		-0.0748	0.0713	-0.2155	0.0660		-0.1533	0.0998	-0.3542	0.0477
Winner was the incumbent										
Man won in close election	91	0.1868	0.0411	0.1052	0.2684	29	0.3103	0.0874	0.4708	0.4894
Woman won in close election	92	0.2065	0.0424	0.1222	0.2908	18	0.2778	0.1086	0.0486	0.5070
Difference		-0.0197	0.0591	-0.1363	0.0969		0.0326	0.1402	-0.2497	0.3149
Number of close elections in the past										
Man won in close election	91	1.0769	0.0281	1.0211	1.1327	29	1.0690	0.0479	0.9709	1.1671
Woman won in close election	92	1.0870	0.0295	1.0283	1.1456	18	1.0000	0.0000	1.0000	1.0000
Difference		-0.0100	0.0408	-0.0905	0.0704		0.0690	0.0610	-0.0540	0.1919
Votes received by the winner										
Man won in close election	91	32270.3300	1546.5520	29197.8300	35342.8300	29	30713.7900	2616.1900	25354.7700	36072.8200
Woman won in close election	92	34100.9800	1467.4050	31186.1600	37015.8000	18	31017.7800	3155.1360	24361.0200	37674.5300
Difference		-1830.6490	2131.3730	-6036.1830	2374.8860		-303.9847	4149.1090	-8660.7180	8052.7490
Total votes in the constituency										
Man won in close election	91	81835.1600	3064.8000	75746.4000	87923.9300	29	75020.6900	6239.4270	62239.8000	87801.5800
Woman won in close election	92	82061.9600	2878.3610	76344.4500	87779.4700	18	75250.0000	6886.6940	60720.3500	89779.6500
Difference		-226.7917	4203.1950	-8520.3550	8066.7720		-229.3103	9606.6320	-19578.0600	19119.4400

Table 3.6: Effect of SC/ST politicians on SC/ST individuals

Dependent variable: primary education attainment (1=primary education or higher, 0=otherwise)					
	1	2	3	4	5
	OLS All individuals	OLS Urban individuals	OLS Rural individuals	OLS All individuals	OLS All individuals
Fraction of constituencies in the district reserved for SC/ST (interacted with dummy=1 if individual is SC/ST)	-0.2088** [0.0821]	-0.2152* [0.1130]	-0.1909* [0.0958]	-0.1918* [0.1116]	
Fraction of constituencies in the district reserved for SC/ST (interacted with dummy=1 if individual is not SC/ST)	0.0116 [0.0802]	-0.0345 [0.0868]	0.0173 [0.0927]	-0.0577 [0.0992]	
Fraction of constituencies in the district reserved for SC (interacted with dummy=1 if individual is SC)					-0.3292** [0.1351]
Fraction of constituencies in the district reserved for SC (interacted with dummy=1 if individual is ST)					0.0935 [0.1647]
Fraction of constituencies in the district reserved for SC (interacted with dummy=1 if individual is general)					-0.1139 [0.1031]
Fraction of constituencies in the district reserved for ST (interacted with dummy=1 if individual is SC)					0.1652 [0.1132]
Fraction of constituencies in the district reserved for ST (interacted with dummy=1 if individual is ST)					-0.0191 [0.1068]
Fraction of constituencies in the district reserved for ST (interacted with dummy=1 if individual is general)					0.1486 [0.0975]
Fraction of constituencies in the district reserved for SC/ST *SC/ST pop (interacted with dummy=1 if individual is SC/ST)				0.6535* [0.3913]	
Fraction of constituencies in the district reserved for SC/ST* SC/ST pop (interacted with dummy=1 if individual is not SC/ST)				0.3602 [0.4105]	
SC/ST pop				0.5003** [0.2147]	
Controls	yes	yes	yes	yes	yes
P value of difference between effect on SC/ST and non-SC/ST	0.0000	0.0490	0.0000	0.283	
P value of difference between interaction terms				0.271	
Observations	105208	34604	70604	105208	105208
R-squared	0.2452	0.1473	0.2412	0.2455	0.2476

Robust standard errors clustered at the district level are reported between parentheses. * Significant at the 10%, ** significant at the 5%, *** significant at the 1%. All interaction terms are included in the regressions. Regressions include district and cohort fixed effects, as well as other controls like the fraction of seats won by each political party grouping, SC/ST census and current population, urban population, literacy rates and dummy variables for whether the individual is a woman, started primary education in an electoral year or lives in a rural area where applies.

Table 3.7: First Stage Regressions

Dependent variable: Fraction of constituencies in the district won by a woman	1	2	3
	All seats	General seats	SC/ST seats
Fraction of constituencies in the district won by a woman in a close election against a man	1.2196*** [0.0278]		
Fraction of constituencies in the district won by a SC/ST woman in a close election against a man		0.1935*** [0.0149]	0.8250*** [0.0536]
Fraction of constituencies in the district won by a general woman in a close election against a man		1.1698*** [0.0168]	0.1410*** [0.0126]
Controls	yes	yes	yes
Observations	105208	105208	105208
First stage F-statistic	293.87	337.03	70.95
Joint Significance of Instruments		57.31	13.25
R-squared	0.5087	0.512	0.4785

Robust standard errors clustered at the district level are reported between parentheses. * Significant at the 10%, ** significant at the 5%, *** significant at the 1%. For SC/ST and general female representation the variable is defined as the proportion of constituencies in the district won by a SC/ST or a general woman, respectively. All controls included in the second stage regressions are included here.

Table 3.8: Effect of Female Politicians on Girls and Boys

Dependent variable: primary education attainment (1=primary education or higher, 0=otherwise)

	1 OLS All individuals	2 OLS Urban individuals	3 OLS Rural individuals	4 2SLS All individuals	5 2SLS Urban individuals	6 2SLS Rural individuals
Fraction of constituencies in the district won by a woman	0.1574**	0.2769***	0.1092	0.1704	0.7826***	0.0435
interacted with dummy=1 if individual is a woman	[0.0756]	[0.0716]	[0.0848]	[0.2053]	[0.3086]	[0.2332]
Fraction of constituencies in the district won by a woman	0.0458	0.0288	0.1116	0.0617	0.5140*	-0.0149
interacted with dummy=1 if individual is a man	[0.0617]	[0.0856]	[0.0711]	[0.2237]	[0.3089]	[0.2642]
Controls	yes	yes	yes	yes	yes	yes
Computed difference between the effect on women and men	*0.1115*	*0.2481****	*-0.0024*	*0.1087*	*0.2685*	*0.0584*
	[0.0876]	*[0.0917]*	*[0.0971]*	*[0.2927]*	*[0.2231]*	*[0.3220]*
Observations	105208	34604	70604	105208	34604	70604
R-squared	0.2541	0.1746	0.247	0.2541	0.1719	0.247

Robust standard errors clustered at the district level are reported between parentheses. * Significant at the 10%, ** significant at the 5%, *** significant at the 1%. Columns 1-3 are OLS regressions. Columns 4-6 are 2SLS regressions in which the fraction of constituencies in the district won by a woman in a close election against a man is used to instrument the fraction of constituencies in the district won by a woman. For these regressions I also include as a control the fraction of constituencies in the district that had close elections between women and men. Close elections are defined as those in which the winner won the runner up by less than 3.5% of votes. . Regressions include district and cohort fixed effects, as well as other controls like the fraction of seats won by each political party grouping, the fraction of reserved seats, the fraction of urban, SC/ST and female population, male and female literacy rates and dummy variables for whether the individual is a woman, Muslim, Hindu, SC/ST or lives in a rural area where applies.

Table 3.9 : Effect of SC/ST and General Female Politicians on Girls and Boys

Dependent variable: primary education attainment (1=primary education or higher, 0=otherwise)

	1 OLS Urban individuals	2 OLS Rural individuals	3 2SLS Urban individuals	4 2SLS Rural individuals
Fraction of constituencies in the district won by a SC/ST woman interacted with dummy=1 if individual is a woman	0.2034 [0.1927]	0.3450 [0.2384]	1.4971*** [0.6605]	0.0862 [0.3868]
Fraction of constituencies in the district won by a SC/ST woman interacted with dummy=1 if individual is a man	-0.0041 [0.1897]	0.1539 [0.1790]	1.0746 [0.7747]	-0.3474 [0.9558]
Fraction of constituencies in the district won by a general woman interacted with dummy=1 if individual is a woman	0.2998*** [0.0872]	0.0297 [0.0792]	0.5349* [0.3220]	-0.0075 [0.2499]
Fraction of constituencies in the district won by a general woman interacted with dummy=1 if individual is a man	0.0389 [0.1113]	0.0964 [0.0790]	0.3392 [0.3151]	0.1207 [0.2300]
Controls	yes	yes	yes	yes
Computed difference between the effect on the different groups of SC/ST female politicians	*0.2075* *[0.1899]*	*0.1910* *[0.2506]*	*0.4225* *[0.2638]*	*0.4335* *[0.9785]*
Computed difference between the effect on the different groups of general female politicians	*0.2608*** *[0.1058]*	*-0.0667* *[0.1048]*	*0.1957* *[0.3090]*	*-0.1282* *[0.2314]*
Observations	34604	70604	34604	70604
R-squared	0.1747	0.2471	0.1702	0.2468

Robust standard errors clustered at the district level are reported between parentheses. * Significant at the 10%, ** significant at the 5%, * significant at the 1%. Columns 1-2 are OLS regressions. Columns 3-4 are 2SLS regressions in which the fraction of constituencies in the district won by a woman in a close election against a man is used to instrument the fraction of constituencies in the district won by a woman, both for general and SC/ST female politicians. For these regressions I also include as a control the fraction of constituencies in the district that had close elections between women and men. Close elections are defined as those in which the winner won the runner up by less than 3.5% of votes. . Regressions include district and cohort fixed effects, as well as other controls like the fraction of seats won by each political party grouping, the fraction of reserved seats, the fraction of urban, SC/ST and female population, male and female literacy rates and dummy variables for whether the individual is a woman, Muslim, Hindu, SC/ST or lives in a rural area where applies.**

Table 3.10 : Effect of SC/ST and General Female Politicians on SC/ST and General Individuals

Dependent variable: primary education attainment (1=primary education or higher, 0=otherwise)

	1 2SLS All individuals	2 2SLS Urban individuals	3 2SLS Rural individuals
Fraction of constituencies in the district won by a SC/ST woman interacted with dummy=1 if individual is SC/ST	-0.2617 [0.3768]	2.8388*** [0.6526]	-0.6228* [0.3723]
Fraction of constituencies in the district won by a SC/ST woman interacted with dummy=1 if individual is general	0.4214 [0.4560]	0.9281 [0.6307]	0.4294 [0.4986]
Fraction of constituencies in the district won by a general woman interacted with dummy=1 if individual is SC/ST	0.0671 [0.2832]	0.0039 [0.6085]	0.0165 [0.3338]
Fraction of constituencies in the district won by a general woman interacted with dummy=1 if individual is general	0.1062 [0.1844]	0.5645* [0.2948]	0.0492 [0.2028]
Controls	yes	yes	yes
Computed difference between the effect on the different groups of SC/ST female politicians	*-0.6832* [0.3902]*	*1.9107*** [0.2134]*	*-1.0521*** [0.3612]*
Computed difference between the effect on the different groups of general female politicians	*-0.0390 [0.3081]*	*-0.5606 [0.6308]*	*-0.0326 [0.3349]*
Observations	105208	34604	70604
R-squared	0.2536	0.1662	0.2462

Robust standard errors clustered at the district level are reported between parentheses. * Significant at the 10%, ** significant at the 5%, *** significant at the 1%. All columns are 2SLS regressions in which the fraction of constituencies in the district won by a woman in a close election against a man is used to instrument the fraction of constituencies in the district won by a woman, both for general and SC/ST female politicians. For these regressions I also include as a control the fraction of constituencies in the district that had close elections between women and men. Close elections are defined as those in which the winner won the runner up by less than 3.5% of votes. . Regressions include district and cohort fixed effects, as well as other controls like the fraction of seats won by each political party grouping, the fraction of reserved seats, the fraction of urban, SC/ST and female population, male and female literacy rates and dummy variables for whether the individual is a woman, Muslim, Hindu, SC/ST or lives in a rural area where applies.

Table 3.11 : Effect of SC/ST and General Female Politicians on Different Groups

Dependent variable: primary education attainment (1=primary education or higher, 0=otherwise)

	1 2SLS Urban individuals	2 2SLS Rural individuals
Fraction of constituencies in the district won by a SC/ST woman interacted with dummy=1 if individual is SC/ST woman	3.0915***	-0.2361
	[0.9093]	[0.3122]
Fraction of constituencies in the district won by a SC/ST woman interacted with dummy=1 if individual is SC/ST man	2.5989***	-1.6939
	[0.4637]	[1.2435]
Fraction of constituencies in the district won by a SC/ST woman interacted with dummy=1 if individual is general woman	1.1880**	0.0181
	[0.5147]	[0.6121]
Fraction of constituencies in the district won by a SC/ST woman interacted with dummy=1 if individual is general man	0.6116	0.6223
	[0.6661]	[0.6779]
Fraction of constituencies in the district won by a general woman interacted with dummy=1 if individual is SC/ST woman	-0.2682	-0.2865
	[0.7813]	[0.3976]
Fraction of constituencies in the district won by a general woman interacted with dummy=1 if individual is SC/ST man	0.1722	0.3738
	[0.6757]	[0.4047]
Fraction of constituencies in the district won by a general woman interacted with dummy=1 if individual is general woman	0.7052*	0.1828
	[0.3599]	[0.3218]
Fraction of constituencies in the district won by a general woman interacted with dummy=1 if individual is general man	0.46327	-0.0034
	[0.3277]	[0.2177]
Controls	yes	yes
Observations	34604	70604
R-squared	0.1669	0.2448

Robust standard errors clustered at the district level are reported between parentheses. * Significant at the 10%, ** significant at the 5%, *** significant at the 1%. All columns are 2SLS regressions in which the fraction of constituencies in the district won by a woman in a close election against a man is used to instrument the fraction of constituencies in the district won by a woman, both for general and SC/ST female politicians. For these regressions I also include as a control the fraction of constituencies in the district that had close elections between women and men. Close elections are defined as those in which the winner won the runner up by less than 3.5% of votes. . Regressions include district and cohort fixed effects, as well as other controls like the fraction of seats won by each political party grouping, the fraction of reserved seats, the fraction of urban, SC/ST and female population, male and female literacy rates and dummy variables for whether the individual is a woman, Muslim, Hindu, SC/ST or lives in a rural area where applies.

Table 3.12: Robustness Checks

Dependent variable: primary education attainment (1=primary education or higher, 0=otherwise)

	1	2	3	4	5	6	7
	2SLS	2SLS	2SLS	2SLS	2SLS	2SLS	2SLS
	Urban individuals	Urban individuals	Urban individuals	Urban individuals	Urban individuals	Urban individuals	All individuals
	3% margin close elections	3% margin close elections	2.5% margin close elections	2.5% margin close elections	SC/ST pop sq/cube	SC/ST pop sq/cube	SC/ST pop sq/cube
Fraction of constituencies in the district won by a SC/ST female politician interacted with dummy=1 if individual is a woman	1.6819*		1.6845*		1.5499**		
	[0.8905]		[0.8980]		[0.7079]		
Fraction of constituencies in the district won by a SC/ST female politician interacted with dummy=1 if individual is a man	1.2535		1.2717		1.1199		
	[1.0534]		[1.0544]		[0.8202]		
Fraction of constituencies in the district won by a general female politician interacted with dummy=1 if individual is a woman	0.5725		0.5492		0.5264		
	[0.3828]		[0.3677]		[0.3268]		
Fraction of constituencies in the district won by a general female politician interacted with dummy=1 if individual is a man	0.4831		0.5332		0.3297		
	[0.3528]		[0.3318]		[0.3178]		
Fraction of constituencies in the district won by a SC/ST female politician interacted with dummy=1 if individual is SC/ST		3.033***		3.1013***		2.9359***	
		[0.8359]		[0.8314]		[0.7131]	
Fraction of constituencies in the district won by a SC/ST female politician interacted with dummy=1 if individual is general		1.1135		1.1374		0.9823	
		[0.8522]		[0.8614]		[0.6863]	
Fraction of constituencies in the district won by a general female politician interacted with dummy=1 if individual is SC/ST		0.0103		0.1836		-0.0134	
		[0.6618]		[0.7299]		[0.6163]	
Fraction of constituencies in the district won by a general female politician interacted with dummy=1 if individual is general		0.7018**		0.6951**		0.5569*	
		[0.3471]		[0.3315]		[0.2979]	
Fraction of constituencies in the district reserved for SC/ST (interacted with dummy=1 if individual is SC/ST)							-0.2058**
							[0.0820]
Fraction of constituencies in the district reserved for SC/ST (interacted with dummy=1 if individual is not SC/ST)							0.0140
							[0.0799]
Observations	34604	34604	34604	34604	34604	34604	105208
R-squared	0.1681	0.1632	0.1677	0.1635	0.1700	0.1657	0.2453

Chapter 4

Women in Politics in the Indian States.

4.1 Introduction

This chapter analyses how female political representation influences expenditure, public goods and policy decisions using panel data from the 16 main states in India during the period 1967-1999.

In Chapter 2 I have shown how female politicians increase education in the districts where they were elected, while in Chapter 3 I have shown that whether the female politician is Scheduled Caste or Scheduled Tribe also makes a difference, as they target individuals who share their identity in policy making. These politicians are state legislators, and educational policies are taken at the state level. Therefore, it is interesting to see whether state parliaments where women have higher representation adopt different policies than the rest, not only regarding education but also regarding other matters. State governments control most of the social and economic expenditure and have the power to implement most of the 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, it also solves the unobserved heterogeneity problems present in cross-country studies.[1]

[1]These 16 states account for more than 95 per cent of the total population in India, about 804 million

In political economy models where candidates can commit to specific policies and only care about winning, political decisions only reflect the electorate's preferences (Downs 1957). In this sense, female political representation should not have a differential impact on policy decisions as the median voter equilibrium prevails. In fact, as long as women vote, their preferences would be represented by the candidate elected, irrespective of this candidate's gender. However, if complete policy commitment is absent the identity of the legislator matters for policy decisions (Besley and Coate 1997; Osborne and Slivinski 1996). In particular, increasing a group's political representation will increase its influence in policy.

The issue of female political representation has been increasingly important in India. Reservation for women in Panchayats is already in place, but not in State and National governments. In September 1996, the Indian Government introduced a Bill in Parliament, proposing the reservation of one third of the seats for women in the Lok Sabha (Central Government) and the State Assemblies. Since then, this proposal has been widely discussed in several parliamentary sessions, without an agreement being reached. Those who are in favour of this reservation argue that increasing female political representation will ensure a better representation of their needs. Even those who oppose the reservation bill acknowledge the fact that female politicians behave differently than male politicians. Clearly, reservation would change the nature of political competition, by changing the set of candidates available for each seat, by altering voters' preferences or by changing the candidates' quality. This chapter explores the effect of an exogenous increase in female representation that took place without any institutional change, and allows me to clearly identify the effect of female legislators on the variables of interest.

In the state and national parliaments some seats can only be contested by Scheduled Caste or Scheduled Tribe candidates. These two population groups constitute the most disadvantaged sector of the Indian society, both socially and economically. Since in Chapter 3 I have shown that Scheduled Caste and Scheduled Tribe (henceforth, SC/ST) female legislators have a positive effect on the education received by SC/ST individuals and than female legislators who won the elections for general seats have a positive effect on the education received by general individuals, the impact of both general and SC/ST female legislators will be identified separately, as they may have

people. They are Andhra Pradesh, Assam, Bihar, Gujarat, Haryana, Jammu & Kashmir, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Orissa, Punjab, Rajashtan, Tamil Nadu, Uttar Pradesh and West Bengal.

different policy preferences[2]. Moreover, if the cost of running for election is higher for women than for men, female legislators will probably belong to the elite. Thus, the fact that some seats are reserved for low castes allows me to identify separately the effect of low caste female legislators and to distinguish the gender effects from the class effects.

The identification strategy used in this chapter takes advantage of the detailed data I have 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 will be elected in similar constituencies than male candidates who won in a close election against a woman. The fact that a male or a female candidate wins in a close election can be considered to a high extent random, and thus, the gender of the legislator effect can be correctly identified by comparing "treated" constituencies where a woman was elected to its "counterfactuals", where a man was elected. I then use as an instrument for the fraction of seats in the state won by a female politician the fraction of seats in the state won by a female politician in a close election against a man.

In order to have 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 towards the poor and another one which is targeted towards women. I have also collected detailed data on state budgets, to identify the expenditure priorities of these legislators.

I find that female legislators have a differential impact on public goods, policy and expenditure decisions if we compare them to their male counterparts. Moreover, whether these female legislators belong to a Scheduled Caste or Scheduled Tribe reserved seat also has an impact. In particular, Scheduled Caste and Scheduled Tribe female legislators invest in primary education, by increasing the number of schools and teachers and favour "women-friendly" laws, such as amendments to the Hindu Succession Act, designed to give women the same inheritance rights as men. They also favour redistributive policies, such as land reforms. In contrast, general female legislators do not have any impact on "women-friendly" laws, oppose land reforms, invest in higher tiers of education and reduce social expenditure.

This chapter contributes to a larger literature that analyses similar issues using US data. Thomas (1991) shows how states with higher female representation in parliament

[2]Empirical evidence shows that almost no women SC/ST contested for a general seat and won the election, thus, I can safely say that all female legislators contesting the elections for a general seat belong to higher castes than female legislators contesting the election for a SC/ST seat.

introduce and pass more priority bills dealing with issues of women, children and families than their male counterparts or women in states with lower female representation. Thomas and Welch (1991) find that women in state houses in 12 states in the US place more priority than men on legislation concerning women, family issues and children. Case (1998), finds how the state's child support enforcement policies tightened as the number of women legislators in the state grew. Besley and Case (2000) show that the fraction of women in state upper and lower houses are highly significant predictors of state workers compensation policy. Besley and Case (2002) find that women in the legislature apply pressure to increase family assistance, and to strengthen child support laws. Rehavi (2003) finds that an increase in female representation during the 1990's leads to an increase in Public Welfare Expenditure. Svaleryd (2002) finds that a larger share of women in the majority in Swedish municipalities increases expenditure on childcare, relative to elderly care. This chapter contributes to this literature by identifying separately the gender and the class of the legislators and finding that both matter for policy decisions, which, to the best of my knowledge, has not been done in the past.

The existing literature on India focuses on the effect of different reservation policies. Chattopadhay and Duflo (2004) show that the reservation of one third of the seats for women in Panchayats (local rural self-government) of West Bengal and Rajasthan has a positive impact on investment in infrastructures relevant to women's needs. Pande (2003), analyses how the reservation of seats for Scheduled Castes and Scheduled Tribes in the State Assemblies increases the volume of transfers that these groups receive. This chapter studies the different effects of variation in both scheduled caste/tribe and general female representation due to electoral outcomes rather than reservation policies.

4.2 Institutional background

India is a bicameral parliamentary democracy. The lower house is called Lok Sabha, and has 545 members. The upper house is called Rajya Sabha, and has 250 members. India is a federal country, and the Constitution gives the states and union territories significant control over their own government.

The Vidhan Sabhas (Legislative Assemblies) are directly elected bodies that carry out the administration of the government in the 25 states of India. In some states there is

a bicameral organization of legislatures, with both an Upper and Lower House. However, it is the Lower House (Legislative Assembly) the one that takes the final budget decisions. The Vidhan Sabhas, or State Legislative Assemblies, have the freedom to decide the budget they will allocate to development policies.

In the event of elections, the states and union territories are divided into single-member constituencies. The boundaries of assembly constituencies are drawn to make sure that there are, as near as practicable, the same number of people in each constituency. The Assemblies vary in size, according to population.

Electors can cast one vote each for a candidate, the winner being the candidate who gets the highest number of 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 contest elections to the Lok Sabha or State Legislative Assemblies. Candidates for the Vidhan Sabha should be a resident of the same state as the constituency from which they wish to contest.

The 1950 Indian Constitution provides for political reservation for Scheduled Castes and Scheduled Tribes. According to articles 330 and 332 of the constitution, before every national and state election, a number of jurisdictions will be reserved for these 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. There are two criteria for the reservation of jurisdictions: the population concentration of SC/ST groups in that constituency and the dispersion of reserved jurisdictions within a particular state.

Women belonging to the Scheduled Castes and Scheduled Tribes are those who suffer a major degree of discrimination in India. Being a particularly disadvantaged group within the Indian social structure, they will have different preferences than the other legislators in the State Assemblies. Due to these reason, and due to the fact that many general women candidates may belong to the elite, I estimate separately the effects of these legislators on the different expenditure, public goods and policy measures under study.

In each one of the states, the budget is approved by the legislature after the enactment of the Appropriation Act, which gives authority to the government to withdraw money

from the Consolidated Fund.[3] Usually a budget speech is given to the legislature by the Finance Minister of each state, two days after there is a general discussion in the legislature about the budget proposal presented. This discussion lasts 6 days. After that, and during a maximum period of 18 days, individual demands made by the individual legislators are voted 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.

4.3 Data Description

4.3.1 Electoral Data

I use data on the sixteen main states in India during the period 1967-1999. My aim is to test the effects of having higher female representation in the State Legislatures on expenditure, public goods and different laws passed by the states. I also test whether female legislators in Scheduled Caste or Scheduled Tribe seats (SC/ST) have a different impact than those in general seats.

The electoral data has been collected from the different reports on the State Elections published by the Election Commission of India.

The data on individual candidates for the state elections in India from 1967-2001 allows me to calculate how many candidates were involved in a close election[4] against a candidate of the opposite sex for each state and year and for both SC/ST and general seats. I also use information on the fraction of seats won by each political party.

Figure 4.1 shows the variation across election years and states of both SC/ST and general female representation. SC/ST and general female representation has been low in all states during the time period under consideration. In fact, between 1967 and 2001 at most 11% of seats have been won by a general woman and 5% of the seats

[3]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".

[4]A close election is defined as one in which the winner won the runner up by a very small margin. As in the previous chapters, I define close elections as those in which the margin was less than 3.5%.

have been won by a SC/ST woman. Moreover, different states follow different trends in what regards both general and SC/ST female political representation.

Table 4.1 shows descriptive statististics on the electoral variables used in this study. During this time period, 3.5% of seats have been won by women, 2.7% in general seats and 0.7% in SC/ST reserved seats. Despite the fact that female political representation is very low for all states in India, both general and SC/ST female representatives are shown to have an effect on policy decisions. Due to the way decisions are taken 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 by the legislature. Mishra, R.C. (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.

4.3.2 Dependent Variables

As policy variables I use some educational inputs and public goods measures. Descriptive statistics for these variables are shown in Table 4.2.

As educational inputs I use the number of teachers per 1000 individuals in primary, middle and secondary institutions, both in aggregate and divided by gender. 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 other 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 provision. Data on kilometres of surfaced state roads per km^2 is used as a measure of infrastructure.

To obtain evidence on whether female politicians favour women and the poor in policymaking, I use two measures of laws enacted: one serving the interests of the poor and the other serving women's interests. For the first one I use the cumulative number of land reforms designed to tackle poverty enacted by the different states in India during 1967-1999. The types of land reforms used are Tenancy Reforms, Abolition

of Intermediaries reforms and Land Ceiling legislation.[5] The "women-friendly" policy variable I use is a dummy variable which equals one the year a given state has made an amendment to the Hindu Succession law. These amendments are designed to ensure that both women and men have the same inheritance rights.

Finally, I analyse the impact of female legislators on different components of the state budget. For this I have collected data on actual Revenue and Capital expenditure for each state and year. All the states in India use the same budgetary classification.

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

Revenue expenditure in each one of the state's budgets 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 towards 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 Development expenditure, which includes both Social and Economic Services. Discharge of Internal Debt includes different types of loans. Figure 4.2 shows graphically how all the different expenditure categories are organized in both the capital and the revenue budgets in all the Indian states.

I use the 15 larger expenditure categories in both the capital and revenue budgets, and I aggregate capital and revenue expenditure for each one. I then use the share of 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. Summary statistics for these expenditure variables appear in Table 4.2.

[5] I use the land reform measure created by Besley and Burgess (2000). Details on this variable can be found there.

4.3.3 Control variables

I analyse the effects of having higher female representation in both general and SC/ST seats in the State Assemblies on different policy variables. Aside from any causality considerations, which I will make clear in the next section, I should include as controls in the regressions variables that vary across states and across time and that may have an independent effect on the policy variables.

I include the proportion of seats won by each one of the parties in each election, in order to distinguish the effect of gender from the effect of party ideology[6].

Other control variables include the real net state domestic product per capita, total grants received by the central government in real per capita terms, the share of rural population over total population and a dummy for the year before the elections took place.

All these variables could affect the dependent variable in different ways: the higher the amount of grants received by the state, the higher will be their expenditure capacity, and this can affect their expenditure decisions. On the other hand, the rural population variable and the real net state domestic product per capita could also give an idea of 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, in order to increase their probability of being re-elected. I also include state-specific time trends in the regressions, as dependent variables may have different trends in different states and the representation variable may proxy for these trends.

Since in 1985 there was a budgetary reclassification, I also include a dummy variable for the years before 1985 in the expenditure regressions. This will be especially relevant

[6]There are eight main party groups: Congress, Hard Left, Soft Left, Janata, Hindu, Regional, Independent candidates and other parties. Congress parties include Indian National Congree 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.

for Economic expenditure, since this was the expenditure category in the Revenue Account which changed the most after the reclassification took place. Another budget reclassification took place in 1972, however, budget data for the period 1967-1972 can not be safely compared for all the expenditure categories to budget data from later periods. For this reason I focus on the time period 1972-1999 for the expenditure variables.

The nominal variables are deflated using the 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.

4.4 Identification

4.4.1 Identification question

To analyse the effects of having higher female representation in both SC/ST and general seats in the State Assemblies in India on government expenditure, public goods and laws enacted, I use panel data for the 16 main states in India during the period 1967-1999. The main difficulty is to assess the causal effect of female representation on outcomes.

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

$$Y_{it} = \alpha_i + \beta_t + \gamma F_{it} + X_{it}\delta + u_{it} \tag{4.1}$$

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

For the election years I use female representation as it was in the previous elections, under the assumption that newly elected legislators might not have much power during

the first year.[7] Moreover, this controls for the fact that some of the elections are held at the end of the year, when decisions have already taken place.

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.

Even though the state fixed effects control for permanent differences across states in female representation and the outcome variables, I can not 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, there might be some endogeneity concerns. In this case, the OLS estimates reported in this econometric specification would be biased and specification 4.1 would not allow me to correctly identify the effect of having higher female representation on the dependent variables of interest.

In the next subsection I will explain how do I solve the causality problem. The identification challenge faced when dividing female politicians according to whether they contested for a SC/ST reserved seat or not is similar. 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 a 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 the identity of the legislator is defined by both gender and caste. I then include both general and SC/ST female representation variables in the regression. In addition, this allows me to provide evidence on the difference between the gender and class effects. In other words, if the cost of running for election is higher for women than for men politicians, female legislators will be of comparatively higher classes than men legislators. Thus, the female representation variable may only indicate class, not gender. This will not be the case for SC/ST female legislators, as they come from the poorest section of the society.

The equation I am then testing is:

[7]Results are robust to including the contemporaneous women representation variable in the election years. Results are available from the author.

$$Y_{it} = \alpha_i + \beta_t + \varphi Fgen_{it} + \theta Fscst_{it} + X_{it}\delta + u_{it} \quad (4.2)$$

Where α_i and β_t are the state and year fixed effects and X_{it} are other controls. $Fgen_{it}$ is the fraction of seats won by general women as elected in the previous elections and $Fscst_{it}$ if the fraction of seats won by SC/ST women as elected in the previous elections.

As before, the omitted variable could 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 might also affect how many general and SC/ST female legislators are elected, thus, biasing the results obtained.

As reported in Table 4.3, however, states where female representation is above the median and states where female representation is below the median do not differ on variables that might be correlated with "preference for women politicians". States above and below the median are very similar in both male and female literacy rates, infant mortality rates, income inequality, newspaper circulation per capita, the percentage of voters who are women and voter turnout.

4.4.2 Identification Strategy

To identify the causal effect of female legislators on the variables of interest I use a parallel strategy to those used in Chapters 2 and 3. The difference is that now variables are defined at the state level, so I exploit variation across states and across time. In order to identify the causal effect of female politicians I take advantage of the existence of close elections between a woman and a man candidate, elections in which the winner won the runner up by a very small number of votes.[8] The identification strategy used in this chapter follows the same idea as the regression discontinuity approach. This methodology has been widely used and was first introduced in the context of elections by Lee (2001) for incumbency advantage and Pettersson-Lidbom (2001) 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 (2003), who used close elections between

[8] I define close elections as those in which the winner won the runner up by less than 3.5% of votes.

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.[9]

In order to construct the instrument I use data on the votes' share received by each one of the female candidates in state elections in India during then period 1967-2001, together with the margins of votes obtained against the winner or, in the case they won the elections, data on the runner-ups and the margin of votes obtained against them.

I can then use the information on women candidates who barely won the elections against a man. This should happen in constituencies where there is no clear "preference for women" politicians. If we consider that the last few votes received by both candidates are random, both the women and the men candidates could have won the elections and, thus, the fact that the woman candidate won the seat instead of the man is random as well.

The fact that there have been close elections between a woman and a man candidate generates "near-experimental" causal estimates of the effect that women political representation has on the policy variables.

The first stage regression would then be:

$$F_{it} = \alpha_i + \beta_t + \kappa FC_{it} + \mu TC_{it} + X_{it}\delta + \varepsilon_{it} \tag{4.3}$$

F_{it}, is the fraction of seats in the state that were won by a female politician as 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.

The second stage regression is specification 4.4 , Y_{it} is the policy outcome variable for state i at time t. Since observations in the same state and electoral cycle could be

[9]This identification strategy is based on the regression discontinuity design, although it is not directly used in this study.For this I should be able to relate each particular legislator to an expenditure measure number. Since in India, State Assemblies are composed by many legislators who choose a single expenditure measure each year, I used close elections as an instrument.

correlated, I compute the robust standard errors clustered at the state and electoral cycle.[10]

$$Y_{it} = \alpha_i + \beta_t + \gamma F_{it} + \lambda TC_{it} + X_{it}\delta + u_{it} \tag{4.4}$$

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 elections may not be a random event. However, the outcome of a close election is random, meaning that the winner's gender in close elections between women and men is 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 by in specification 4.4 and partialled out of the instrument in specification 4.3.

To identify the effects of female politicians who contested for SC/ST seats separately than the effect of female politicians who contested for general seats I use a similar strategy, 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 female politicians were contesting in a SC/ST reserved seat or not.

I instrument the fraction of seats won by SC/ST female politicians by the fraction of seats won by SC/ST women in a close election against a man, defining close elections in the same way as before. Similarly, I instrument the fraction of seats won by a general woman by the fraction of seats won by a general woman in a close election against a general man. I then estimate a first stage regression similar to 4.3 separately for SC/ST and general female politicians and a second stage regression of the form:

$$Y_{it} = \alpha_i + \beta_t + \varphi Fgen_{it} + \theta Fscst_{it} + \lambda TC_{it} + X_{it}\delta + u_{it} \tag{4.5}$$

4.4.3 Validity of the Identification Strategy

To identify the effect of female politicians, both in aggregate and for general and SC/ST seats I take advantage of the fact that some of these female politicians won in close

[10] I can not cluster at the state level as I only have included 16 states in the sample.

elections against men.

For this to be a valid identification strategy, one should show that the fraction of close elections won by women in a given state and year can not be predicted by any other state characteristic. This is done in Table 4.4. I have tried to predict the fraction of close elections between women and men won by women in a given state and election year. This is done for all seats, and then separately for SC/ST reserved seats and for unreserved seats. I have regressed these variables against different state characteristics, controlling for state and year fixed effects. Reassuringly, variables like electoral turnout, the proportion of seats in close elections contested by the different parties, the proportion of reserved seats, political competition[11], 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 won by women.

In addition, if the outcome of a close elections is random, it should be observed that states and electoral years in which more men than women won in close elections have similar characteristics as 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 4.5 I compare different characteristics for both types of states and years for three cases, those in which more men won, those in which more SC/ST men won and those in which more general men won. 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.

Candidate and constituency characteristics should as well be very similar, whether female or male candidates won the election. Results reported in Chapters 2 and 3 show that this is the case, both in aggregate and for SC/ST and general seats.

Identification comes from variation across states and years in the proportion of seats

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

won by women in a close election against a man, once controlling for the fraction of seats that had close elections between women and men. In order to derive policy implications from the results obtained, I should check that states and electoral years that had more close elections between women and men do not have different characteristics than the rest. In Table 4.6 I compare different characteristics, for states and years that had more and less 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 favour of the external validity of the results obtained.

4.5 Results

4.5.1 Educational inputs

The first set of variables that I am going to use to identify whether male and female legislators have different policy preferences are education variables. In this section I look at the effect of women representatives on some educational inputs measures, in order to analyse their impact on the supply of education. In Chapter 2 I found that female politicians increase primary education in urban areas in the districts where the constituency where they were elected was located. Educational policies are taken at the state level, so it is interesting to analyze whether having higher female representation at the state increase the amount of educational inputs provided.

I first use the number of primary, middle and secondary schools per thousand individuals. Panel A in Table 4.7 provides results for the OLS regressions. In columns 1-3 I show the coefficient for the fraction of seats in the state won by female politicians. In columns 4-6 I show coefficients for both SC/ST and general female legislators. These results could be contaminated by endogeneity bias, but they show that female representatives affect negatively the number of secondary schools per thousand individuals. While SC/ST female politicians have a positive effect on secondary schools, general female politicians have a positive effect on middle schools. Panel B provides results for the corresponding 2SLS regressions. Results are quite different, and the difference between the 2SLS and the OLS coefficients is positive in all cases, which could indicate

that female politicians are elected where more education is needed, or where there are less educational inputs.[12] Columns 1-3 show that female political representation has a positive effect on the number of secondary schools per thousand individuals. When dividing the female representation variable according to whether the female politicians contested for a SC/ST seat or not, SC/ST female politicians have a positive effect on primary schools, while general female politicians increase middle and secondary schools. By increasing SC/ST female representation by 1 percentage point, the number of schools per 1000 individuals increases by 0.029 units, which is 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 0.0013 units per 1000 individuals, which is 1.5% and 1.4% of the average respectively. Given that SC/STs, especially SC/ST women, have less access to education, they will invest in lower tiers of education, as they may not benefit from middle or secondary education. In contrast, general women have more access to higher tiers of education, and thus they invest in middle and secondary schools once in politics.

As another educational input, I use the number of teachers per 1000 individuals in each type of schools. Results are shown in Table 4.8. Panel A shows OLS regressions, while Panel B shows results for the 2SLS regressions. In columns 1-3 I report results for the female representation variable, while in columns 4-6 I report results for general and SC/ST female politicians separately. OLS regressions show that female politicians, and specifically general female politicians, increase the number of teachers per thousand individuals in middle and secondary schools. In contrast, results for the 2SLS regressions show that female politicians only have an effect on the number of teachers per thousand individuals in primary schools; see columns 1-3. In addition, when dividing the female representation variable according to whether they were contesting for general or SC/ST reserved seats, SC/ST female politicians have a positive effect on teachers in primary schools, while general female politicians increase the number of teachers in middle and secondary schools. Results for teachers are consistent with those obtained for schools and confirm that low caste female legislators will favour lower tiers of education, while general female legislators will favour higher tiers of education. By increasing SC/ST female representation by one percentage point, the number of teachers in primary schools per thousand individuals increases by 0.41, which is 21% of the average. By increasing general female representation by one percentage point, the number of teachers per thousand individuals increases by 0.028 in middle schools and

[12]This is consistent with results obtained in Chapter 2 and 3.

0.025 in secondary schools, which accounts for 2.1% and 1.6% of the mean, respectively.

Finally, I analyse the impact of female politicians on the number of both female and male teachers per thousand individuals in primary, middle and secondary schools. There is some evidence that female teachers may encourage girls to go to school, thus, it is interesting to understand whether female politicians have had any impact on the number of female teachers per each type of schools. Results are provided in Table 4.9. OLS results in this table are not reported for brevity. In columns 1-6, I show coefficients for the fraction of seats in the state won by female politicians, while in columns 7-12 I show results for both the fraction of seats won by SC/ST female politicians and the fraction of seats won by general female politicians. Female politicians only have an effect on primary education by increasing the amount of female teachers, see column 2, but not the amount of male teachers. Once dividing the female representation variable according to whether they contested for a SC/ST reserved seat or not, general female politicians favour both male and female teachers in middle and secondary education, see columns 9-12. In contrast, SC/ST female politicians increase both male and female teachers in primary schools, but the difference between the two is larger, by increasing SC/ST female representation by one percentage point, the number of female teachers per 1000 individuals increases in 0.33, while the number of male teachers per 1000 individuals increases by 0.077. This accounts for 77% and 6.5% of the average, indicating that SC/ST female politicians are keen on increasing the number of female teachers in primary education.

4.5.2 Public goods

Results obtained so far show that the identity of the legislator is indeed defined by gender and caste, as general and SC/ST female politicians choose different policies. Moreover, results suggest that they choose policies that may benefit their groups more. However, it is also interesting to see whether female politicians also favour investment in other public goods, like those related to health and transportation. For this, I use information on the number of hospitals, dispensaries and beds in hospitals and dispensaries per thousand individuals to grasp an idea of their effect on health provision. In addition, I use information on the kilometres of surfaced roads per kilometre squared. Results are shown in Table 4.10. Columns 1-4 show results for the fraction of seats in the state won by female politicians, while columns 5-8 divide female politicians ac-

cording to whether they contested for a SC/ST seat or not. Female politicians do not have any differential effect as compared to men on roads, hospitals and dispensaries, in contrast, by increasing female representation by one percentage point, the number of beds in hospitals and dispensaries increases by 0.052, which is 7% of the average. When dividing the female representation variable in columns 5-8, neither SC/ST nor general female politicians have a differential effect than men on roads, hospitals and dispensaries, however, SC/ST female politicians are those who increase the number of beds in hospitals and dispensaries. In particular, by increasing SC/ST female representation by one percentage point, the number of beds in hospitals and dispensaries increase by 0.11 beds per thousand individuals.

Results suggest that female politicians, and specifically SC/ST female politicians increase health provision. Even if 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. In fact, more beds in hospitals and dispensaries may mean more efficient health provision.

4.5.3 Laws

In this section I explore the effects of having higher female representation in the State Assemblies in India in two types of policies, one which is directly targeted to women and another one which 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 Hindu Succession Act (1956) deals with intestate succession among Hindus[13]. It includes the concept of the Mitakshara Joint Family, under which on 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 coparcenaries, 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

[13]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.

daughter needs to be treated equally and become a coparcener in her own right in the same way as the son.

The state of Kerala in 1975 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, solving the gender differentials in inheritance rights[14].

The other four states, namely Andhra Pradesh, Tamil Nadu, Maharashtra and Karnataka instead amended the Hindu Succession law by removing the gender discrimination in the Mitakshara Coparcenary system.[15]

I create a variable which is equal to one if the state has passed one of these amendments in that particular year or in the past and zero otherwise.

Land reforms can be considered redistributive policies, 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 on attempts to abolish intermediaries. Intermediaries worked under feudal lords and collected rents for the British. They were known for extracting large 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, 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.

Results for these policies are reported in Table 4.11. In columns 1 and 2 I report results for the 2SLS regressions in which I analyze the effect on these laws of having more female politicians in the state. In columns 3 and 4 I report results for the 2SLS

[14]The Kerala Joint Family System (Abolition) Act, 1975.

[15]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.
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.

regressions in which I analyze the effect of having more SC/ST female politicians and more general female politicians in the state on both types of laws enacted.

While female politicians do not have a significant effect on any of the two types of laws, 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 have a positive and significant effect; see columns 1 and 3. This is consistent with the fact that general women legislators may be part of the elite and will then oppose these reforms. Given that SC/STs are poorer, results obtained for land reforms clearly reflect the caste effect.

Results for the Hindu Succession Law are reported in columns 2 and 4 of this table. In this case women representatives do not have any impact on these amendments when considered in aggregate. In contrast, results in column 4 show that only SC/ST women legislators have a positive and significant effect on this variable. The fact that no effect is found for general female legislators might be due to their class position. In fact, elite women will be less likely to favour women-friendly policies and class and gender effects may go in opposite directions. Low caste women, since reservations are already made for SC/ST people, will be more likely to perceive themselves as representatives for women as well as representatives for the Scheduled Castes and Scheduled Tribes.

4.5.4 Expenditure

Results show that female politicians have an impact on investment in public goods and laws approved in India. Moreover, whether they contested for a SC/ST reserved seat or not also has an impact. In this section I analyse the impact of female representation on the composition of total expenditure in the state budgets in India.

In Table 4.12 I show results for the main expenditure classifications. In columns 1-6 I show results for the female representation variable, while in columns 7-12 I show the results obtained when dividing the female representation variable according to caste. In column 1 I provide results 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 very close to zero and not significant. This indicates that female politicians did not increase the size of the government. In column 2 I show results for the fraction of

total expenditure devoted to capital investments; as before, the coefficient obtained is not significant. This means that female politicians do not have an effect on how expenditure is divided among the revenue and capital budgets. It is now interesting to analyze whether they affected the actual composition of expenditure.

Both capital and revenue expenditure can be divided among two broad categories: Development expenditure and Non-Development expenditure. Results for these categories are shown in columns 3 and 4. Female politicians have a positive effect on development expenditure, but the effect on non-development expenditure is not significant. By increasing female representation by one percentage point, the fraction of total expenditure devoted to development expenditure increases as well by one percentage point.

Development expenditure can be further divided among Economic and Social expenditure. I show results for these two categories in columns 5 and 6. Female political representation does not have any effect, neither on Social, nor in Economic expenditure.

Columns 7-12 show 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 expenditure or the fraction of total expenditure spent on capital expenditures. SC/ST female politicians have a positive effect on Development expenditure, but not in Non-Development expenditure; see columns 9 and 10. By increasing SC/ST female representation by one percentage point, Development expenditure increases by two percentage points. In contrast, general female politicians do not have any impact on these two expenditures categories.

Results in columns 11 and 12 show that SC/ST female politicians do not have an effect on Social and Economic expenditure. However, general female politicians decrease Social expenditure while increasing Economic expenditure. A one percentage point increase in general female representation decreases Social expenditure by 0.6 percentage points and increases Economic expenditure by one percentage point. Given that general female politicians may belong to higher classes, they will be less inclined to spend in social issues, and more on economic issues.

It is then as well interesting to understand whether female representation has had an impact on smaller expenditure categories within Social and Economic expenditure. Results are reported in Table 4.13. In Panel A I report 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 the female politicians contested for a SC/ST reserved seat or not. I report results for seven categories within Social expenditure: Education, Health, Family Welfare, Water Supply and Sanitation, Housing, SC/ST Welfare and Social Security. I also report results for 4 categories within economic expenditure. These are agriculture, industry and minerals and general economic services. Results in Panel A show that female politicians only have an effect on one of the categories: Housing expenditure, which they reduce. Results in Panel B show that SC/ST female politicians only have an effect in one expenditure category: Social Security and Welfare, which they reduce. This is surprising, since part of this expenditure are transfers to women and children. General female politicians only have an effect on the fraction of total expenditure devoted to Housing, which they as well reduce.

Even if female politicians have an effect on schools and beds in hospitals, 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. This may be the case because these expenditure categories are too broad, and include many different categories. Surprisingly, they do not have an effect on the fraction of total expenditure spent on SC/ST welfare. Pande (2003) found that SC politicians did not increase SC welfare expenditure, while ST politicians increased ST welfare expenditure. The fact that SC/ST female politicians do not have an impact on this expenditure may be due to the aggregation. In addition, SC/ST female politicians may reduce Social Security and Welfare expenditure because lower castes do not benefit much from it.

4.6 Conclusions

This chapter shows that female legislators have different effects on expenditure, public goods and policy decisions than their male counterparts. Moreover, whether 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 favour investments on primary education, and beds in hospitals and dispensaries. They favour development expenditure, "women-friendly" laws, such as amendments to the Hindu Succession Act, pro-

posed to give women the same inheritance rights as men. They also favour pro-poor redistributive policies such as land reforms. In contrast, general female legislators do not have any impact on "women-friendly" laws, oppose redistributive policies such as land reforms, invest in higher tiers of education and reduce social expenditure.

In order 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 will specially be the case for general female legislators, are Schedule Caste/Tribe female legislators will have lower economic backgrounds. Moreover, some of these women decided to work in politics because of their family background. If general female legislators belong to a comparatively higher class than general male legislators, maybe results for these legislators are such that they capture more the "class" than the gender effect. However, this will not be the case for SC/ST female legislators, for whom the gender effect can indeed be captured by results in this chapter.

SC/ST female legislators increase expenditure in Development, favour land reforms and women-friendly laws. These results seem to indicate that SC/ST female legislators identify themselves with women, especially the poor and disadvantaged ones when taking their 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 [16]. 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, R.C. (2000)), these results seem to be explained by the class of these legislators. Moreover, the fact that general female legislators favour investment in middle and secondary education is consistent with this hypothesis, since only relatively rich women will be likely to attend middle and secondary education.

In summary, even though reservation may have other effects on policy which are out

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

of the scope of this chapter, one of them would be to increase female political representation. However, one has to keep in mind that not only an increase in female representation is important. Since both SC/ST and general women legislators have different effects on the policies adopted, the social and economic position of these female legislators also needs to be taken into account. Results in this chapter are consistent with those obtained in Chapter 3, as female politicians seem to favour those who share their gender and social position in policy making.

This chapter shows how male and female legislators take different policy decisions, and that the class of these legislators is important too. Results further suggest that increasing the proportion of SC/ST seats won by female legislators would have important implications for the provision of primary education, for women and for the poor.

4.7 Figures and Tables

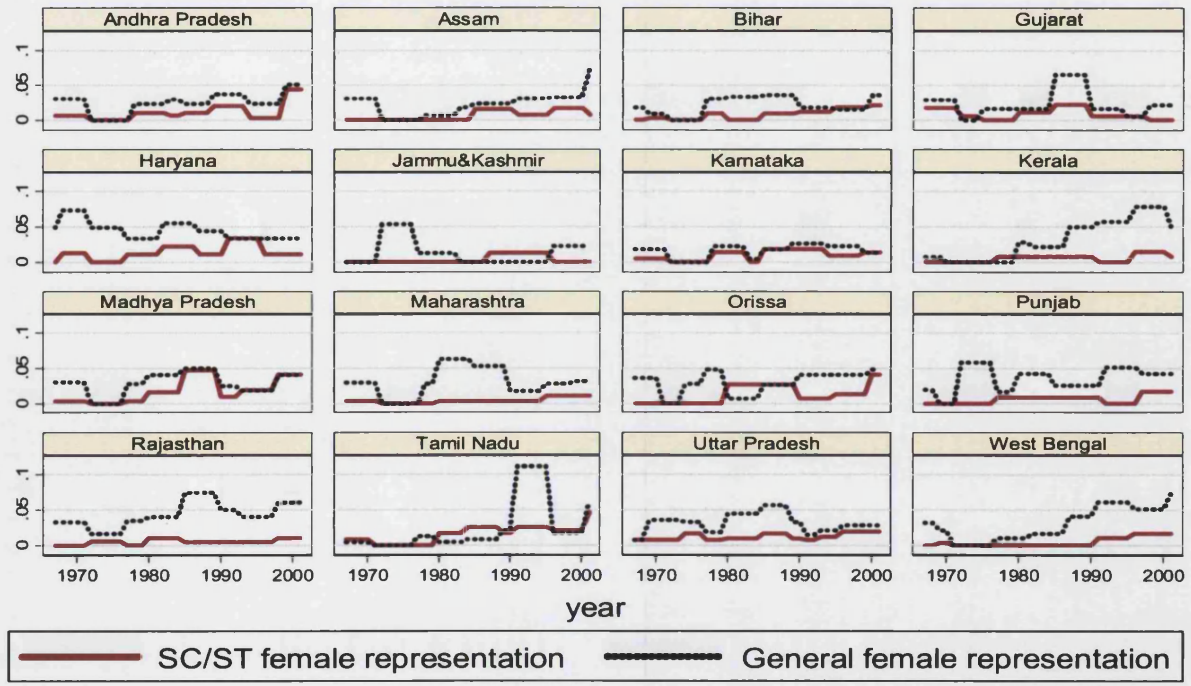

Figure 4.1 SC/ST and General Female Representation

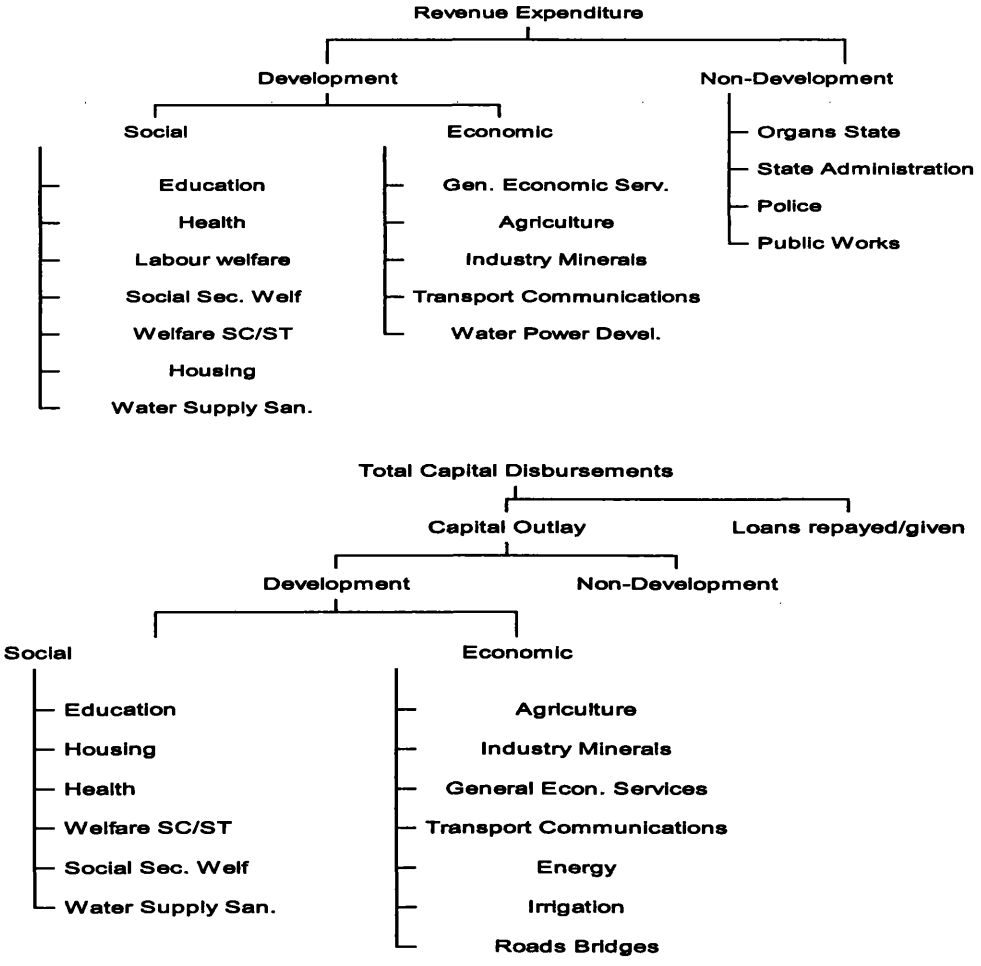

Figure 4.2. State Budgets

Table 4.1: Descriptive Statistics: State Political Dataset
Unit of observation: state in an electoral year

Variable (as a fraction of the total seats in the state)	Obs.	Mean	Sd
Proportion of seats won by women	119	0.035062	0.024188
Proportion of seats won by SC/ST women	119	0.007808	0.008476
Proportion of seats won by general women	119	0.027254	0.02043
Proportion of seats reserved for SC/ST	119	0.21584	0.078618
Proportion of seats won by women in close elections against men	119	0.003778	0.005557
Proportion of seats won by SC/ST women in close elections against SC/ST men	119	0.00056	0.001734
Proportion of seats won by general women in close elections against general men	119	0.003219	0.005151
Proportion of seats that had close elections between women and men	119	0.007942	0.009568
Proportion of seats won by Congress	119	0.423986	0.253889
Proportion of seats won by Hard Left	119	0.087628	0.153685
Proportion of seats won by Soft Left	119	0.016469	0.043067
Proportion of seats won by Hindu	119	0.074948	0.131507
Proportion of seats won by Janata	119	0.149068	0.217928
Proportion of seats won by Regional	119	0.137668	0.231642
Proportion of seats won by Others	119	0.043589	0.071794
Proportion of seats won by Independent	119	0.066644	0.049699

Table 4.2: Descriptive Statistics: Dependent Variables and Socio-Economic Characteristics
Unit of observation: state and year

Variable (Educational inputs and expenditure)	Obs.	Mean	Sd
Teachers in primary education per 1000 individuals	320	1.9644	0.7093
Teachers in middle education per 1000 individuals	320	1.3684	0.7543
Teachers in secondary education per 1000 individuals	320	1.5132	0.7055
Male teachers in primary education per 1000 individuals	320	1.4218	0.5998
Female teachers in primary education per 1000 individuals	320	0.5433	0.4083
Male teachers in middle education per 1000 individuals	320	0.9383	0.4661
Female teachers in middle education per 1000 individuals	320	0.4305	0.3590
Male teachers in secondary education per 1000 individuals	320	1.0603	0.3692
Female teachers in secondary education per 1000 individuals	320	0.4533	0.4018
Primary schools per 1000 individuals	480	0.747	0.3133
Middle schools per 1000 individuals	480	0.195	0.1132
Secondary schools per 1000 individuals	416	0.0903	0.0329
Variable (Other Public Goods)	**Obs.**	**Mean**	**Sd**
Km of surfaced roads per km2	252	0.2729	0.2606
Number of beds in hospitals and dispensaries per 1000 individuals	263	0.7746	0.4345
Number of dispensaries per 1000 individuals	251	0.0295	0.0284
Number of hospitals per 1000 individuals	323	0.0116	0.0133
Variable (Laws)	**Obs.**	**Mean**	**Sd**
Land reforms	416	3.2115	2.6295
Hindu succession law	560	0.1286	0.3350
Variable (Expenditure-defined as a fraction of total expenditure)	**Obs.**	**Mean**	**Sd**
Total expenditure in the state per capita	448	13.444	13.9238
Share of total expenditure devoted to capital investment	448	0.2503	0.0819
Development expenditure (both revenue and capital as a fraction of total expenditure)	446	0.6092	0.0645
Non-Development expenditure (both revenue and capital as a fraction of total expenditure)	442	0.2423	0.0765
Social expenditure (both revenue and capital as a fraction of total expenditure)	444	0.3069	0.0490
Economic expenditure (both revenue and capital as a fraction of total expenditure)	444	0.2987	0.0734
Education expenditure (both revenue and capital as a fraction of total expenditure)	447	0.1597	0.0352
Health expenditure (both revenue and capital as a fraction of total expenditure)	448	0.059	0.0200
Family Welfare expenditure (both revenue and capital as a fraction of total expenditure)	329	0.0082	0.0033
Water Supply and Sanitation expenditure (both revenue and capital as a fraction of total expenditure)	210	0.0266	0.0158
Housing expenditure (both revenue and capital as a fraction of total expenditure)	427	0.0059	0.0039
Welfare of SC/STs expenditure (both revenue and capital as a fraction of total expenditure)	250	0.0188	0.0151
Social Security and Welfare expenditure (both revenue and capital as a fraction of total expenditure)	336	0.0213	0.0152
Agriculture expenditure (both revenue and capital as a fraction of total expenditure)	424	0.0836	0.0452
Industry and Minerals expenditure (both revenue and capital as a fraction of total expenditure)	421	0.0173	0.0098
Transport and Communications expenditure (both revenue and capital as a fraction of total expenditure)	168	0.0534	0.0298
General Economic Services expenditure (both revenue and capital as a fraction of total expenditure)	425	0.0158	0.0175
Variable (Other controls)	**Obs.**	**Mean**	**Sd**
Real net state domestic product per capita	522	0.1234	0.0518
Fraction of the population that is rural	560	0.7698	0.0804
Grants received from the central government per capita (in real terms)	536	0.4269	0.6949

Table 4.3 Differences in State Characteristics according to Female Political Representation

	Female Representation Above Median				Female Representation Below Median			
Variable	Obs	Mean	[95%	Conf.Interv]	Obs	Mean	[95%	Conf.Interv]
F. Literacy rate	220	26.57	24.58	28.56	166	26.01	23.76	28.27
M. Literacy rate	220	55.35	53.54	57.16	166	54.53	52.68	56.38
Infant mortality rate	97	93.81	87.57	100.06	115	94.02	88.33	99.71
Gini	241	29.44	28.91	29.96	189	29.55	29.04	30.05
Newspaper circ. Pc	264	0.06	0.05	0.07	232	0.06	0.05	0.07
women as % voters	224	0.58	0.56	0.59	228	0.58	0.56	0.6
turnout	279	0.63	0.62	0.64	281	0.63	0.61	0.64

Table 4.4 : 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

	All	general	SC/ST
	1	2	3
Turnout	0.0258	0.1078	-0.0602
	[0.0375]	[0.0912]	[0.2203]
Proportion of seats contesting close elections Congress	-0.0769	0.9668	-2.1759
	[0.5479]	[1.3294]	[3.2103]
Proportion of seats contesting close elections Hard Left	0.2743	3.4327	-2.1599
	[1.4046]	[3.4082]	[8.2300]
Proportion of seats contesting close elections Soft Left	0.5939	-3.0082	2.1278
	[1.6335]	[3.9637]	[9.5714]
Proportion of seats contesting close elections Hindu	-0.1605	-0.2920	0.7617
	[0.1516]	[0.3678]	[0.8882]
Proportion of seats contesting close elections Regional	-0.0568	0.0143	-0.1724
	[0.1938]	[0.4702]	[1.1355]
Proportion of seats contesting close elections Janata	-0.0037	0.0377	0.2259
	[0.1450]	[0.3519]	[0.8499]
Proportion of seats contesting close elections Others	-0.4862	-1.1208	1.5350
	[0.4809]	[1.1668]	[2.8176]
Porportion of seats reserved for SC/ST	35.1162	120.4467	-118.0462
	[34.7117]	[84.2278]	[203.3920]
Political competition in the state	-0.4242	-1.4727	1.1823
	[0.9766]	[2.3697]	[5.7223]
Proportion of seats that had close elections in the past	8.4983	16.7611	-41.3098
	[11.2641]	[27.3324]	[66.0017]
Proportion of seats won by women in the past	-1.0359	3.4677	-17.9777
	[4.7389]	[11.4989]	[27.7673]
Literacy rate	-0.0784	-0.1298	-0.0538
	[0.1084]	[0.2629]	[0.6349]
Observations	41	41	41
Adjusted R-Squared	0.7255	-0.1887	-4.4577

Table 4.5 : State Characteristics: Men Contesting against Women and Women Contesting against Men in Close Elections

	All Seats	SC/ST Seats	General Seats
Difference in the proportion of seats won by women in elections that were not close	-0.0036	0.0345	-0.0051
(States in which more men than women won in close elections compared to States in which more women than men won)	[0.0047]	[0.0184]	[0.0034]
Difference in the number of female candidates per seat	-0.0457	-0.03418	-0.07148
(States in which more men than women won in close elections compared to States in which more women than men won)	[0.0413]	[0.0521]	[0.0443]
Difference in male turnout	0.1015	-0.00403	-0.13997
(States in which more men than women won in close elections compared to States in which more women than men won)	[0.1136]	[0.0255]	[0.1268]
Difference in female turnout	0.0619	-0.00448	-0.15113
(States in which more men than women won in close elections compared to States in which more women than men won)	[0.0994]	[0.0375]	[0.1101]
Difference in the proportion of seats reserved for SC/ST	-0.0122	0.0010	-0.0167
(States in which more men than women won in close elections compared to States in which more women than men won)	[0.0160]	[0.0240]	[0.0171]
Difference in newspaper circulation per capita	-0.00314	-0.00372	-0.01287
(States in which more men than women won in close elections compared to States in which more women than men won)	[0.0115]	[0.0096]	[0.0128]
Difference in real net state domestic product per capita	-0.0025	-0.00283	-0.00481
(States in which more men than women won in close elections compared to States in which more women than men won)	[0.0122]	[0.0179]	[0.0134]
Number of state-elections	90	39	81

Table 4.6 : State Characteristics:States who Had more and less Close Elections between women and men

(Difference between states with more and less close elections than the median)	All Seats
Urban population	0.0044
	[0.0141]
Male literacy rate	1.4583
	[2.6901]
Female literacy rate	-0.69783
	[3.1047]
Proportion of seats reserved for SC/ST	-0.0060
	[0.0136]
Female turnout	0.0520
	[0.0716]
Male turnout	0.0786
	[0.0809]
Newspaper circulation per capita	-0.0094
	[0.0088]
Proportion of seats won by Congress	0.0657
	[0.0435]
Proportion of seats won by Hard Left	0.0095
	[0.0261]
Proportion of seats won by Soft Left	0.0008
	[0.0070]
Proportion of seats won Regional	-0.0182
	[0.0401]
Proportion of seats won Hindu	-0.01799
	[0.0243]
Proportion of seats won Janata	0.0031
	[0.0362]
Number of state-elections	135

Table 4.7 : Schools

Dependent variable: number of schools per 1000 individuals

PANEL A: OLS	1 OLS primary schools	2 OLS middle schools	3 OLS secondary schools	4 OLS primary schools	5 OLS middle schools	6 OLS secondary schools
Fraction of seats won by a woman	0.1645	-0.1286	-0.2023**			
	[0.1548]	[0.1002]	[0.0981]			
Fraction of seats won by a SC/ST woman				0.5693	0.1123	0.1849**
				[0.4766]	[0.1543]	[0.0771]
Fraction of seats won by a general woman				0.1122	0.1472**	0.0346
				[0.1571]	[0.0739]	[0.0319]
Controls	yes	yes	yes	yes	yes	yes
Observations	464	464	400	464	464	400
R-squared	0.99	0.99	0.98	0.99	0.99	0.98

PANEL B: 2SLS

Dependent variable: number of schools per 1000 individuals

	1 2SLS primary schools	2 2SLS middle schools	3 2SLS secondary schools	4 2SLS primary schools	5 2SLS middle schools	6 2SLS secondary schools
Fraction of seats won by a woman	0.3188	0.1358	0.1902*			
	[0.6138]	[0.1586]	[0.1052]			
Fraction of seats won by a SC/ST woman				2.9174*	0.1902	0.4146
				[1.5603]	[0.3626]	[0.2666]
Fraction of seats won by a general woman				0.2756	0.3076**	0.1292*
				[0.4127]	[0.1338]	[0.0697]
Controls	yes	yes	yes	yes	yes	yes
Observations	464	464	400	464	464	400
R-squared	0.99	0.99	0.98	0.99	0.99	0.98

Robust standard errors clustered at the state and electoral year are reported between parentheses. * Significant at the 10%, ** significant at the 5%, *** significant at the 1%. Panel A shows OLS regressions. Panel B shows 2SLS regressions in which the fraction of seats in the state won by a woman in a close election against a man is used to instrument the fraction of seats in the state won by a woman, both in aggregate and for SC/ST and general politicians separately. For these regressions I also include as a control the fraction of seats in the state that had close elections between women and men. Close elections are defined as those in which the winner won the runner up by less than 3.5% of votes. . Regressions include state and year fixed effects, as well as other controls like the fraction of seats won by each political party grouping, the fraction of reserved seats, the fraction of rural population, grants received from the central government, real per capita net state domestic product, a dummy for the year before the elections took place and state specific time trends.

Table 4.8 : Teachers

Dependent variable: number of teachers per 1000 individuals						
	1	2	3	4	5	6
	OLS	OLS	OLS	OLS	OLS	OLS
	primary	middle	secondary	primary	middle	secondary
PANEL A: OLS						
Fraction of seats won by a woman	0.1980	1.2165**	2.0107***			
	[0.9414]	[0.5339]	[0.5471]			
Fraction of seats won by a SC/ST woman				4.2659	-1.1230	1.4826
				[4.0484]	[1.4628]	[1.6394]
Fraction of seats won by a general woman				-0.3571	1.5357**	2.0827***
				[1.1532]	[0.6100]	[0.5791]
Controls	yes	yes	yes	yes	yes	yes
Observations	304	304	304	304	304	304
R-squared	0.83	0.99	0.98	0.83	0.99	0.98
PANEL B: 2SLS						
Dependent variable: number of teachers per 1000 individuals						
	1	2	3	4	5	6
	2SLS	2SLS	2SLS	2SLS	2SLS	2SLS
	primary	middle	secondary	primary	middle	secondary
Fraction of seats won by a woman	9.0287**	0.4582	1.8799			
	[4.4384]	[1.068]	[1.5573]			
Fraction of seats won by a SC/ST woman				41.4268*	-4.6086	6.1604
				[21.4501]	[3.5008]	[5.3886]
Fraction of seats won by a general woman				-3.3546	2.7857***	2.4712**
				[3.9788]	[0.8222]	[0.9994]
Controls	yes	yes	yes	yes	yes	yes
Observations	304	304	304	304	304	304
R-squared	0.8	0.99	0.98	0.78	0.98	0.98

Robust standard errors clustered at the state and electoral year are reported between parentheses. * Significant at the 10%, ** significant at the 5%, *** significant at the 1%. Panel A shows OLS regressions. Panel B shows 2SLS regressions in which the fraction of seats in the state won by a woman in a close election against a man is used to instrument the fraction of seats in the state won by a woman, both in aggregate and for SC/ST and general politicians separately. For these regressions I also include as a control the fraction of seats in the state that had close elections between women and men. Close elections are defined as those in which the winner won the runner up by less than 3.5% of votes. . Regressions include state and year fixed effects, as well as other controls like the fraction of seats won by each political party grouping, the fraction of reserved seats, the fraction of rural population, grants received from the central government, real per capita net state domestic product, a dummy for the year before the elections took place and state specific time trends.

Table 4.9 : Male and Female Teachers

Dependent variable: number of teachers per 1000 individuals

	1	2	3	4	5	6	7	8	9	10	11	12
	2SLS primary male teachers	2SLS primary female teachers	2SLS middle male teachers	2SLS middle female teachers	2SLS secondary male teachers	2SLS secondary female teachers	2SLS primary male teachers	2SLS primary female teachers	2SLS middle male teachers	2SLS middle female teachers	2SLS secondary male teachers	2SLS secondary female teachers
Fraction of seats won by a woman	2.9372	6.0476**	0.0475	0.3881	1.3399	0.5294						
	[1.9795]	[3.028]	[0.7219]	[0.5087]	[1.0966]	[0.6965]						
Fraction of seats won by a SC/ST woman							7.7777*	33.1645*	-4.0883	-0.7473	4.446	1.5319
							[4.3408]	[19.0408]	[2.607]	[1.6647]	[3.8131]	[1.8698]
Fraction of seats won by a general woman							-1.2762	-1.9804	1.6648***	1.1686**	1.3265*	1.1946***
							[1.3333]	[3.4635]	[0.5480]	[0.4586]	[0.6829]	[0.4323]
Controls	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Observations	304	304	304	304	304	304	304	304	304	304	304	304
R-squared	0.94	0.57	0.98	0.98	0.96	0.99	0.94	0.57	0.98	0.98	0.96	0.99

Robust standard errors clustered at the state and electoral year are reported between parentheses. * Significant at the 10%, ** significant at the 5%, *** significant at the 1%. All columns are 2SLS regressions in which the fraction of seats in the state won by a woman in a close election against a man is used to instrument the fraction of seats in the state won by a woman, both in aggregate and for SC/ST and general politicians separately. For these regressions I also include as a control the fraction of seats in the state that had close elections between women and men. Close elections are defined as those in which the winner won the runner up by less than 3.5% of votes. . Regressions include state and year fixed effects, as well as other controls like the fraction of seats won by each political party grouping, the fraction of reserved seats, the fraction of rural population, grants received from the central government, real per capita net state domestic product, a dummy for the year before the elections took place and state specific time trends.

Table 4.10 : Other Public Goods

	1 2SLS surfaced roads km	2 2SLS beds in hospitals and dispensaries	3 2SLS hospitals per 1000 ind	4 2SLS dispensaries per 1000 ind	5 2SLS surfaced roads km	6 2SLS beds in hospitals and dispensaries	7 2SLS hospitals per 1000 ind	8 2SLS dispensaries per 1000 ind
Fraction of seats won by a woman	0.4414	5.2748**	-0.0093	0.3019				
	[0.8054]	[2.2032]	[0.0491]	[0.2073]				
Fraction of seats won by a SC/ST woman					1.2166	11.0469**	0.0308	0.9488
					[1.3254]	[4.7363]	[0.1118]	[0.7944]
Fraction of seats won by a general woman					-0.4959	1.9709	-0.0435	0.0994
					[1.2355]	[1.5827]	[0.0585]	[0.1782]
Controls	yes	yes	yes	yes	yes	yes	yes	yes
Observations	240	263	322	251	240	263	322	251
R-squared	0.99	0.94	0.9	0.87	0.99	0.95	0.9	0.87

Robust standard errors clustered at the state and electoral year are reported between parentheses. * Significant at the 10%, ** significant at the 5%, *** significant at the 1%. All columns are 2SLS regressions in which the fraction of seats in the state won by a woman in a close election against a man is used to instrument the fraction of seats in the state won by a woman, both in aggregate and for SC/ST and general politicians separately. For these regressions I also include as a control the fraction of seats in the state that had close elections between women and men. Close elections are defined as those in which the winner won the runner up by less than 3.5% of votes. . Regressions include state and year fixed effects, as well as other controls like the fraction of seats won by each political party grouping, the fraction of reserved seats, the fraction of rural population, grants received from the central government, real per capita net state domestic product, a dummy for the year before the elections took place and state specific time trends.

Table 4.11 : Laws

Dependent variables: Land Reforms and Hindu Succession Law

	1	2	3	4
	Land reform	Hindu success.	Land reform	Hindu success.
	2SLS	2SLS	2SLS	2SLS
Fraction of seats won by a woman	0.2714	4.1493		
	[5.7694]	[2.5551]		
Fraction of seats won by a SC/ST woman			25.0290**	17.0208*
			[12.5278]	[9.1027]
Fraction of seats won by a general woman			-6.0599*	-0.9635
			[3.2303]	[1.6065]
Controls	yes	yes	yes	yes
Observations	400	505	400	505
R-squared	0.98	0.79	0.97	0.74

Robust standard errors clustered at the state and electoral year are reported between parentheses. * Significant at the 10%, ** significant at the 5%, *** significant at the 1%. All columns are 2SLS regressions in which the fraction of seats in the state won by a woman in a close election against a man is used to instrument the fraction of seats in the state won by a woman, both in aggregate and for SC/ST and general politicians separately. For these regressions I also include as a control the fraction of seats in the state that had close elections between women and men. Close elections are defined as those in which the winner won the runner up by less than 3.5% of votes. . Regressions include state and year fixed effects, as well as other controls like the fraction of seats won by each political party grouping, the fraction of reserved seats, the fraction of rural population, grants received from the central government, real per capita net state domestic product, a dummy for the year before the elections took place and state specific time trends.

Table 4.12 : Expenditure Measures: Broad Classification

Dependent variable: expenditure category as a fraction of total expenditure

	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	-0.0121	-0.1800	1.0054*	0.6455	0.2584	0.7373						
	[0.0332]	[0.5762]	[0.5813]	[0.4768]	[0.3877]	[0.5322]						
Fraction of seats won by a SC/ST woman							0.0111	-0.4902	2.3740*	1.6479	0.3796	1.8693
							[0.0785]	[0.8302]	[1.3585]	[1.0526]	[0.6803]	[1.6415]
Fraction of seats won by a general woman							0.0188	0.4956	0.2001	0.2299	-0.5913**	1.0058***
							[0.0359]	[0.6121]	[0.5451]	[0.3824]	[0.2969]	[0.3786]
Controls	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Observations	410	410	408	404	406	406	410	410	408	404	406	406
R-squared	0.96	0.82	0.67	0.79	0.73	0.77	0.96	0.80	0.65	0.80	0.73	0.74

Robust standard errors clustered at the state and electoral year are reported between parentheses. * Significant at the 10%, ** significant at the 5%, *** significant at the 1%. All columns are 2SLS regressions in which the fraction of seats in the state won by a woman in a close election against a man is used to instrument the fraction of seats in the state won by a woman, both in aggregate and for SC/ST and general politicians separately. For these regressions I also include as a control the fraction of seats in the state that had close elections between women and men. Close elections are defined as those in which the winner won the runner up by less than 3.5% of votes. . Regressions include state and year fixed effects, as well as other controls like the fraction of seats won by each political party grouping, the fraction of reserved seats, the fraction of rural population, grants received from the central government, real per capita net state domestic product, a dummy for the year before the elections took place and state specific time trends.

Table 4.13 : Expenditure Measures: Detailed Classification

PANEL A: FEMALE REPRESENTATION

Dependent variable: expenditure category as a fraction of total expenditure

	1	2	3	4	5	6	7	8	9	10	11
	2SLS	2SLS	2SLS	2SLS	2SLS	2SLS	2SLS	2SLS	2SLS	2SLS	2SLS
	Education	Health	Family welf.	Water sup.	Housing	SC/ST welf	Soc. secur.	Agriculture	Ind. miner.	Transport	Gen..ec.serv.
Fraction of seats won by a woman	0.2342	0.0244	0.0821	-0.0982	-0.1130*	-0.0434	-0.1559	-0.3358	0.118	-0.0565	0.0622
	[0.1989]	[0.1429]	[0.0697]	[0.1083]	[0.0652]	[0.2135]	[0.1412]	[0.6312]	[0.0830]	[0.4160]	[0.2282]
Observations	410	410	291	181	389	214	302	387	385	168	387
R-squared	0.84	0.83	0.64	0.84	0.49	0.91	0.69	0.65	0.74	0.9	0.47

PANEL B: SC/ST AND GENERAL FEMALE REPRESENTATION

Dependent variable: expenditure category as a fraction of total expenditure

	1	2	3	4	5	6	7	8	9	10	11
	2SLS	2SLS	2SLS	2SLS	2SLS	2SLS	2SLS	2SLS	2SLS	2SLS	2SLS
	Education	Health	Family welf.	Water sup.	Housing	SC/ST welf	Soc. secur.	Agriculture	Ind. miner.	Transport	Gen..ec.serv.
Fraction of seats won by a SC/ST woman	0.0609	0.0252	0.0357	0.1381	-0.0651	-0.2444	-0.5840**	0.5215	0.203	-0.1418	0.7654
	[0.3057]	[0.2138]	[0.0935]	[0.2135]	[0.095]	[0.2966]	[0.2916]	[0.6965]	[0.1543]	[3.6049]	[0.5057]
Fraction of seats won by a general woman	-0.1056	-0.0918	0.0272	-0.2041	-0.0545**	0.1222	-0.08	0.3203	0.0809	0.2367	-0.1235
	[0.1509]	[0.1295]	[0.0286]	[0.1664]	[0.0268]	[0.1356]	[0.1777]	[0.3892]	[0.0625]	[1.3491]	[0.1631]
Observations	410	410	291	181	389	214	302	387	385	168	387
R-squared	0.86	0.83	0.72	0.82	0.61	0.91	0.67	0.68	0.75	0.9	0.43

Robust standard errors clustered at the state and electoral year are reported between parentheses. * Significant at the 10%, ** significant at the 5%, *** significant at the 1%. All columns are 2SLS regressions in which the fraction of seats in the state won by a woman in a close election against a man is used to instrument the fraction of seats in the state won by a woman, both in aggregate and for SC/ST and general politicians separately. For these regressions I also include as a control the fraction of seats in the state that had close elections between women and men. Close elections are defined as those in which the winner won the runner up by less than 3.5% of votes. . Regressions include state and year fixed effects, as well as other controls like the fraction of seats won by each political party grouping, the fraction of reserved seats, the fraction of rural population, grants received from the central government, real per capita net state domestic product, a dummy for the year before the elections took place and state specific time trends.

Chapter 5

Conclusion

Results obtained in this PhD thesis show that the legislator's identity matters for policy, and that politicians tend to favour individuals who share their same identity in policy making.

Results in the first substantive chapter of this PhD thesis show that the identity of the legislator affects educational outcomes. Female politicians have a larger effect than male politicians on the education received by individuals living in urban areas, while this is not the case for those living in rural areas. By increasing female representation in the district by 10 percentage points, the probability that an individual attains primary education in an urban area increases by 6 percentage points, which accounts for 8% of the total probability that an individual obtains primary education in urban areas. A possible explanation for these results is that if both female and male politicians implement their own preferences when they are in power, it is then reasonable to assume that these politicians will care about the needs of those who share their identity. Thus, if female politicians care about empowering those who share their identity, then they would choose to invest in education in urban areas as returns for women are higher there than in rural areas and hence demand for women's education is higher.

Results in the second substantive chapter show that politicians favour those who share their identity in policymaking. The analysis focuses on reservations for Scheduled Castes and Tribes and on female political representation and analyses their effects on the probability that individuals who share the same identity as the politicians attain primary education. This chapter finds that female politicians tend to increase girls'

education in urban areas. SC/ST female politicians favour girls and the SC/ST individuals, while general female politicians favour girls and general individuals. In contrast, it finds that reservation for SC/STs has a negative impact on the education received by SC/ST citizens. However, this result is reversed when there are a large number of SC/ST individuals living in the district. A possible explanation for this is that SC/ST politicians will favour more their own group if they are a significant proportion of the electorate, as their seats are reserved and they do not compete on caste issues against other candidates.

Results thus indicate that the identity of the legislator has an effect both on educational outcomes and on who receives education in the districts where these legislators were elected, however educational policies are decided at the state level. The third substantive chapter shows how politicians'gender and caste had an impact on state policies. Scheduled caste and scheduled tribe female legislators favour investments on primary education, and beds in hospitals and dispensaries. They favour "women-friendly" laws, such as amendments to the Hindu Succession Act, proposed to give women the same inheritance rights as men. They also favour pro-poor redistributive policies such as land reforms. In contrast, general female legislators oppose redistributive policies such as land reforms, do not have any impact on "women-friendly" laws, invest in high tiers of education and reduce social expenditure. In summary, results in this chapter also show that SC/ST and general female legislators tend to favour their groups when deciding which policies to implement.

Results in this PhD thesis show that female political representation in India has had an effect on policies chosen and on the education received by citizens who lived in the districts where they were elected. It also shows how both the gender and caste of the politicians matter for policy determination. The link between the politicians' identity and development may have important policy implications. This is especially the case regarding the women reservation bill debate, as results in this thesis show that both gender and caste of the legislators matter for policy determination and for who is affected by those policies.

Data Appendix

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 is data at the constituency level for the 16 main states in India for elections held during 1967-2001.

-*Proportion of seats in the district won by women*: defined as the total number of seats in which a woman won the election in the district divided by the total number of seats in the district. Then three years averages for each district are computed.

-*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 district*: defined as the total number of seats reserved for Scheduled Castes and Tribes in the district divided by the total number of seats in the district. Then three years averages for each district are computed.

-*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 district 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 district or the total number of seats won by general female politicians divided by the total number of seats in the district. Then

three years averages are taken.

-*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 district won by women in a close election against a man*: defined as the number of women in the district who won by less than 3.5% of votes against a man over the total number of seats in the district. Then three years averages for each district are computed.

-*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 district in which a man and a woman contested in a close election*: defined as the number of men and women in the district who won by less than 3.5% of votes against a candidate of the other gender over the total number of seats in the district. Then three years averages for each district are computed.

-*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 district won by SC/ST women in a close election against a SC/ST man*: defined as the number of SC/ST women in the district who won by less than 3.5% of votes against a SC/ST man over the total number of seats in the district. Then three years averages for each district are computed.

-*Proportion of seats in the state won by SC/ST women in a close election against a SC/ST man*: defined as the number of SC/ST women in the state who won by less than 3.5% of votes against a SC/ST man over the total number of seats in the state. This variable is then lagged one period.

-Proportion of seats in the district won by general women in a close election against a general man: defined as the number of general women in the district who won by less than 3.5% of votes against a general man over the total number of seats in the district. Then three years averages for each district are computed.

-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 district won by each political party: number of seats won by the political party divided by total seats in the district. Then three years averages for each district are computed. Congress parties include Indian National Congree 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.

-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. Then three years averages for each district are computed. Congress parties include Indian National Congree 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.

NSS Data:

55th Round of the National Sample Survey Organization Data. Household Schedule 10: Employment and Unemployment. The survey was conducted in India between July 1999 and June 2000. I use the questions asked to individual members of each household.

-*Primary education attainment*: There is a question that classifies individuals according to whether they are illiterate, literate through attending non-formal education courses or adult education centers, literate through the Total Literacy Campaign or other programmes, literate below primary education, individuals who achieved primary education and individuals who achieved middle, secondary, higher secondary or graduate education. I then create a variable that is equal to one if the individual obtained primary or a higher level of education

-*Gender:* Question about gender. I create a dummy variable that is equal to one if the individual is a woman.

-*Caste:* Question about the individual's social group. Dummy variable that is equal to one if the respondent belongs to Scheduled Castes or Tribes.

-*Religion*: Question about the individual's religion. Dummy variables that are equal to one if the respondent is Muslim or Hindu, respectively.

-*Migration:* Question about the last usual residence. There are various possibilities: same district (urban/rural), same state but another district (rural/urban), another state (urban/rural) and another country. There is another question about the period in years since the individual left the last usual residence.

-*Workers:* Individuals older than 15 who are employed according to "Usual Activity Status" defined by the NSS. I create a variable that is equal to one if the individual falls in this category and zero otherwise.

-*Non-agricultural workers:* Classified according to NIC code of the "Usual Activity Status". Workers (as before) who did not work in the primary sector. I create a dummy equal to one if the individual works in the secondary or terciary sectors and zero if the individual works in the primary sector.

-*Wages:* Wages received for the work done during the reference week as reported by the respondent. Includes wages in kind and in cash.

Demographics:

Data from 1961-1991 were obtained from the Indian district database created by Vanneman and Barnes. Data from the Indian Census 2001 comes from the webpage "Education For All in India".

-Data on male and female literacy rates: literate males (and females) older than 5 over total population of males (and females) older than 5 in the district.

-Data on SC/ST population: number of SC/ST individuals over the total population in the district.

-Data on female population: number of women over total population in the district.

-Data on urban population: number of individuals living in urban areas over total population in the district.

-Data on rural population in the state: obtained from the Indian Census.

-Data on total population in the state: obtained from the Indian Census.

President's rule:

Collected from Arora (1990), Kumar Sethy (2003) and web pages of the State Governments in India. Data on the number of months with President's rule per State and year.

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 000.

-Data on teachers: defined as the number of male and female primary, middle and secondary school teachers in the state divided by the total population in 000.

Other public goods:

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

-Roads: Variable defined as the kilometers of surfaced road in the state divided by the area of the state. Data on roads can be found in various issues of the Reserve Bank of India Report on Currency and Finance.

-*Hospitals:* Variable defined as the total number of hospitals in the state divided by the total population in 000.

-*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 000.

-*Dispensaries:*Variable defined as the total number of dispensaries in the state divided by the total population in 000.

Expenditure:

Collected from different monthly bulletins of the Reserve Bank of India. Some of the Revenue Expenditure data was updated from the Tim Besley and Robin Burgess database.

-*Data on Total expenditure:* 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 in the Capital budget plus the total amount spent in the Revenue budget on that particular category, divided by Total Expenditure.

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.

-*Data on Real Grants Received from the Government per Capita:* Grants received by the state from the central government deflated with the deflator described below and divided by 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

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

-*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.

Appendix

In India there is a uniform structure of school education, although within the States and Union Territories there are differences in the number of years constituting primary, middle and secondary education.

The primary stage consists of classes I-V, in Andhra Pradesh, Bihar, Haryana, Jammu & Kashmir, Madhya Pradesh, Orissa, Punjab, Rajasthan, Tamil Nadu, Uttar Pradesh and West Bengal.[1] On the other hand, it consists of classes I-IV in Assam, Gujarat, Karnataka, Kerala and Maharashtra.

The middle stage consists of classes VI-VIII in Bihar, Haryana, Jammu & Kashmir, Madhya Pradesh, Punjab, Rajasthan, Tamil Nadu, Uttar Pradesh and West Bengal. Classes V-VII in Assam, Gujarat, Karnataka, Kerala and Maharashtra. And classes VI-VII in Andhra Pradesh and Orissa.

The secondary stage consists of classes IX-X in Bihar, Haryana, Jammu & Kashmir, Madhya Pradesh, Punjab, Rajasthan, Tamil Nadu, Uttar Pradesh and West Bengal. And classes VIII-X in Assam, Gujarat, Karnataka, Kerala and Maharashtra, Andhra Pradesh and Orissa.

The minimum age for admission in the first class of the primary stage is 5 or 6 years of age, depending on the State or Union Territory. The majority of States and Union Territories have established free education, however, in some States education is not free for classes IX and above.[2]

[1] Among others. Only the 16 main states in India are considered in this study.

[2] The highest annual fee is Rs. 360 in Meghalaya, when the lowest is Rs. 48 in Assam. Mean annual household income lies arund Rs. 34551.

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