ISTANBUL TECHNICAL UNIVERSITY ⋆ GRADUATE SCHOOL

FEMALE POLITICIANS AND ROLE-MODEL EFFECTS: EVIDENCE FROM INDIA

M.A. THESIS

Apoorva ORSU

Department of Economics

Economics M.A. Programme

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Apoorva ORSU
(412191002)

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Thesis Advisor: Assoc. Prof. Dr. Ayşegül KAYAOĞLU

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YÜKSEK LİSANS TEZİ

Apoorva ORSU
(412191002)

Ekonomi Bölümü

İktisat Yüksek Lisans Programı

Tez Danışmanı: Assoc. Prof. Dr. Ayşegül KAYAOĞLU

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Apoorva ORSU, a M.A. student of ITU Graduate School student ID 412191002, successfully defended the thesis entitled "FEMALE POLITICIANS AND ROLE-MODEL EFFECTS: EVIDENCE FROM INDIA", which he/she prepared after fulfilling the requirements specified in the associated legislations, before the jury whose signatures are below.

Thesis Advisor :	**Assoc. Prof. Dr. Ayşegül KAYAOĞLU** Istanbul Technical University	.....
Jury Members :	**Asst. Prof. Dr. Shourjo CHAKRAVORTY** Istanbul Technical University	.....
	Assoc. Prof. Dr. Murat KOYUNCU Boğaziçi University	.....

Date of Submission :
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To my Mother,

FOREWORD

"A perfect thesis is never finished and a finished thesis is never perfect"

- Unknown

Irrespective of the status of my thesis, I am deeply indebted to my advisor, Dr. Ayşegül Kayaoğlu, for her support and mentor-ship. The valuable lessons I learnt from her will stay with me for life.

I dedicate this work to my mother, sister and my partner for all their support and love. Thank you ma for the countless hours of encouragement and supporting my unorthodox decisions and most importantly giving me the freedom to make my own choices, and thanks to my partner for being the emotional anchor during times of total chaos and my sister for being the constant source of inspiration.

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ABBREVIATIONS

ECI : Election Commission of India
IIPS : International Institute for Population Sciences
IPUMS-DHS : Integrated Public Use Micro data series- Demographic and Health Surveys
IV : Instrumental Variable
MGNREGA : Mahatma Gandhi National Rural Employment Guarantee Act
MLA : Member of Legislative Assembly
MoHFW : Ministry of Health and Family Welfare
NFHS : National Family and Health Survey
RDD : Regression Discontinuity Design
SC : Scheduled Caste
SHRUG : Socioeconomic High-resolution Rural-Urban Geographic
ST : Scheduled Tribe
SVR : Sex-Ratio of Voters

SYMBOLS

$\mathbf{Y_{id}}$	**:** Outcomes
$\mathbf{F_{dt}}$	**:** Fraction of constituencies in district won by women
$\mathbf{TC_{dt}}$	**:** Fraction of constituencies in the district that had close elections between man and women
$\mathbf{I_{jdt}}$	**:** Indicator of whether there was a man-woman election
$\mathbf{M_{jdt}}$	**:** Margin of victory/loss for the female candidate
θ_d, χ_d	**:** State Fixed effects
$\mathbf{X_{id}}$	**:** Individual level controls
$\mathbf{FC_{dt}}$	**:** Fraction of constituencies won by female politician against men in close 5% elections

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FEMALE POLITICIANS AND ROLE-MODEL EFFECTS: EVIDENCE FROM INDIA

SUMMARY

Despite being the largest democracy in the world, the political representation of women in India, is far below an equitable representation and literature points to such disparity as having potential to influence aspirations, stereotypes and gender norms. In this thesis, I exploit a fuzzy regression design and employ two-stage least squares regression (2SLS) estimation, to study the impact of female politicians at the district level (the second geographical level of administration) on outcomes of bargaining power, gender norms and financial empowerment. I use micro-data from India's NFHS-4(2015-16) survey and combine it with aggregated state constituency election data in India from 2010 to 2014, to find the impact of having a female elected representative on aforementioned outcomes. I also provide robustness checks for various margins of victory/loss and use sharp RD design on sample of only those districts that had a single man vs woman election.

To the best of my knowledge, this thesis is the first in the literature to quantify effects of competitively elected female politicians on bargaining power, financial empowerment and domestic violence attitudes (gender norms) in the context of a developing country using individual level survey. The findings of this thesis contributes towards a growing field of literature related to the effects of female political leadership on women's empowerment. The findings are important as it demonstrates that greater gender representation in politics can have spillover effects on breaking stereotypes and gender-norms.

To sum, female representation leads to improvements in bargaining power-specifically there is an increase in the ability to decide husbands' earnings and healthcare. Importantly, there is no significant impact on women's financial empowerment and improvement in gender norms as tested by using variables related to domestic violence attitudes. Thus, I argue that female political representation in India has limited impacton the local women's empowerment.

KADIN POLİTİKACILAR VE ROL MODEL ETKİLERİ: HİNDİSTAN ÖRNEĞİ

ÖZET

Dünyadaki en genis¸ demokrasi olmasına rağmen Hindistan politikasındaki kadın temsili oldukça düşük durumda ve literatür bu temsil eşitsizliğinin örnek olma, stereotipler ve cinsiyet normları üzerinde potansiyel bir etkisi olduğuna işaret ediyor. Bu tezde ilçe düzeyindeki (ikinci idari düzey) kadın politikacıların yönetimde oldukları idari bölgelerdeki kadınların pazarlık gücü, cinsiyet normları ve finansal güçlenme çıktıları üzerine etkisini anlamak için fuzzy regresyon dizaynı ve iki aşamalı en küçük kareler (2AEKK) yöntemi kullanılmıştır. Veri olarak Hindistan'ın NFHS-4(2015-16) mikro-verisi ve 2010'dan 2014 yılına kadarki eyalet meclisi seçim sonuçları verisi birleştirilerek kadın politikacıların bahsi geçen çıktlar üzerine etkisini bulmak amaçlanmıştır. Buna ek olarak sağlamlık kontrolü için hem farklı zafer/mağlubiyet sınırları sunulmus¸ hem de sadece bir erkek ve bir kadın adayın karşı karşıya geldiği seçim bölgelerinde ise keskin regresyon süreksizlik dizaynı kullanılmıştır.

Bilindiği kadarıyla bu tez çalıs¸ması seçilmis¸ gelişen bir ülkedeki kadın politikacıların pazarlık gücü, finansal güçlenme, ve ev içi şiddet (cinsiyet normları) üzerine etkisini ferdi anket kullanarak aras¸tıran ilk çalıs¸madır. Bu tez sunduğu analizle kadın politika liderliğinin kadınların güçlenmesi üzerine etkisi gibi gittikçe büyüyen bir literatüre katkı sağlamaktadır. Sonuçlar daha yüksek cinsiyet temsilinin stereotipleri ve cinsiyet normlarını yıkmak üzerinde bir dağılma etkisi olduğunu göstermesi nedeniyle önemlidir.

Özetle, kadın temsili pazarlık gücünün -özellikle eşinin kazancı ve sağlık hizmeti alması üzerine bir karar verme gücünün artmasına yol açtığı bulunmuştur. Ev içi şiddet ile ilgili değişkenler kullanıldığında ise bunun kadınların finansal olarak daha güçlü olması ve cinsiyet normları üzerinde istatistiksel olarak anlamlı bir etkisi olmadığı bulunmuştur. Bu sebeple, Hindistan'da kadınların siyasi temsilinin genel olarak kadınların güçlenmesi üzerinde sınırlı bır etkisi olduğu bulunmuştur.

1. INTRODUCTION

The presence of women in political roles pales in comparison to their actual numbers in the Indian population. Although descriptive data shows that female representation has been increasing in the past decade, state-wise representation of women in state assemblies has consistently been below 10%[1] which is far below an equitable representation. This disparity in own-gender role models has been emphasized to have the potential to influence aspirations, stereotypes and gender norms [1]. In a just and democratic society, the equality of men and women is central to the discourse and hence it is imperative to study the effects of attributes of political leaders on various outcomes.

1.1 Motivation

There are two reasons for carrying out this study, the first and foremost being that one of India's "unique selling point" is that it is the largest democracy and Indian elections are the largest exercise of suffrage in the world [2]. In the midst of this mammoth exercise is the concern of whether Indian elections actually offer a nationally representative platform for all sections of society, especially women. Concept of "missing women" [3] has been extended to the political context, where the impactof the presence of women in politics are investigated.

My analysis does not dive into reasons for the lack of female politicians but rather studies the impact of their presence at the district level (second level of administration) on outcomes of decision making (hereafter referred to as bargaining power), gender norms (hereafter referred to as domestic violence attitudes) and entrepreneurship (hereafter referred to as financial literacy). This supports my second reason for this study- research with regards to the impact of female elected representatives have mostly focused on the quality of public goods, education and labor outcomes and very

[1] *Source: Election Commission of India*

few studies investigate the role-model effects of gender of leaders on bargaining power, domestic violence attitudes and financial literacy.

1.2 Research Design

I exploit a fuzzy regression discontinuity design (RDD) and use two stage least squares estimation- wherein, the fraction of constituencies won by women, averaged over the district is instrumented with the fraction of constituencies won by women in close 5% elections against men, averaged over the district. I use micro-data from round 4 (2015-16) of India's National Family and Health Survey (NFHS-4) and combine it with aggregated state constituency elections data in India from 2010 to 2014, to find the impact of having a female elected representative on the aforementioned outcomes. I also provide robustness checks for various margins of victory/loss and use sharp RDD on a sample of only those districts that had a single man vs woman election.

Although it is difficult to quantify the impact of politician's gender on bargaining power, domestic violence attitudes or financial literacy, by using a survey that explicitly covers these areas and an empirical strategy that isolates endogeneity issues that may influence outcomes in man vs women elections, my analyses show that female representation increases the ability to decide how to use husbands earnings and healthcare. Importantly, there is no significant impact on women's financial empowerment and improvement in gender norms as tested by using variables related to domestic violence attitudes. Thus, I argue that female political representation in India has a limited impact on local women's empowerment.

I support my findings by providing robustness checks for different margins of victory/loss as well as making use of sharp RDD methodology wherein, I restrict my data only to those districts with a single man vs women election. This would allow me to investigate whether female politicians who won by a narrow margin against their male counterparts play a more active role or not [4] and hence helps us understand if they are more visible and induce a stronger/weaker role-model effect.

1.3 Contribution

To the best of my knowledge, this paper is the first in the literature to quantify the effects of competitively elected female politicians on bargaining power, financial literacy and domestic violence attitudes in the context of a developing country. The paper contributes to a growing field of literature related to the effects of female political leadership on women's empowerment. The findings are important as it demonstrates that greater gender representation in politics can have spillover effects on empowerment.

1.4 Literature Review

Lately, there has been an increase in literature exploring the effects of female elected representatives on several developmental outcomes. This literature is, in turn, a part of models contributing to political economy.

1.4.1 Classic model in political economy

Median voter model [5]- one of the most significant theoretical models in political economy literature- theorized that gender was insignificant for policy as politicians, irrespective of demography and ideology, converged on policy issues in order to get re-elected. Subsequent empirical papers that contradicted the median voter model [2] offered 'citizen candidate model' which emphasizes the identity of elected representatives and gender in policy-making.

1.4.2 Female representation at the first unit of administration

The research that has studied female representatives in India is mostly concentrated at the panchayat level (village level, i.e. basic unit of administration in India), wherein the impact of the 73rd constitution amendment that introduced reservation for women in Gram Panchayat was the main focus. Through a randomized control trial in two districts of West Bengal and Rajasthan, found that female pradhans invested more in infrastructure more relevant to women such as water and roads; and Scheduled

[2]See [6]; [7]; [8]

Caste(Hereafter referred to as SC) pradhans invested higher share of public goods in hamlets that were predominately inhabited by Scheduled Castes [9].

In another study, OLS regression was used to investigate how reservation in gram panchayats impacted accountability, qualifications of leaders, quality of public goods, and individuals' willingness to contribute public goods [10]. Reservation reduced the perceived leader attributes, quality of public goods and increased the ability to hold leaders accountable and contribute to public goods and women's political participation. Using the same framework a logit and ordered logit model was used to test the hypothesis regarding reservation on the quality of public goods, political participation and willingness to contribute to public goods [11]. Results were ambiguous when it came to the quality of public goods although findings showed a statistically significant increase in individuals' willingness to contribute to provisions of public goods. Using intent-to-treat regression on longitudinal data of Young Lives Survey, the long-term impact of reservation for women in gram panchayat on the learning and nutrition outcomes in rural Andhra Pradesh was investigated [12]. Findings showed that learning outcomes were significantly improved if reservation occurred in very early years of a child's life. Health and nutrition also improved in the early years of their lives and in-utero.

In another study, difference-in-differences strategy was used and results showed that introducing a quota for women in gram panchayats led to a significant increase in the documented number of crimes against women due to high reporting [13]. In villages that had reservations for women in gram panchayat, there was an improvement in the implementation of the national employment guarantee program-MGNREGA(Mahatma Gandhi National Rural Employment Guarantee Act) - it also led to an increase in women's economic empowerment and political participation [14].

1.4.3 Female representation at the second unit of administration

The literature about the influence of state legislators' gender is mostly concerned with the quality of public goods and education outcomes. Fixed effects instrumental variables estimator was used to study whether female state legislators are more conducive to improving public health services [15], the results showed that female legislators are more likely to invest in public health services whereas male legislators

are more inclined to invest in financial or infrastructural programs. Competitively elected female representatives resulted in an increased likelihood of attending antenatal care, taking iron supplements, using government centers for birth, early initiation to breastfeeding and full immunization.

Another piece of evidence of the impact of politicians' gender is found in a study that used an instrumental variable (IV) approach to examine whether the gender of politicians has any impact on educational outcomes [16]. This study showed that the presence of female legislatures in a particular district led to a significant increase in the probability of completing primary education for girls in the legislature's respective constituency and this increase was more significant for girls than boys. This gender-differentiated result is caused mainly because of an increased level of access for women to education programs like Mid-day meals.

Female state legislators positively and significantly affected women's wage employment by using a two stage least squares methodology [17]. Furthermore, using panel data of 16 sixteen states in India from 1967-1999, the impact of female legislatures on public goods, policy and expenditure was evaluated [18]. This study reinstated that female legislatures' decisions were different from male legislators. For example, women who were elected from reserved seats for SC's and Scheduled Tribes (Hereafter referred to as ST's)[3] invested more in low-tier education and irrigation and supported 'women-friendly' laws like changes to inheritance laws(Hindu Succession Act). The results were echoed in another study that also investigated the impact of reservation for SC's and ST's in state legislative elections and found that this did lead to an increase in transfers to these communities [20].

1.4.4 Role-model effects of female politicians

Literature investigating role-model effects of female leaders are few and far in-between and focuses its impact on political engagement, aspirations and educational attainment. Examining the role-model effects of female parliamentarians in East and Southeast Asia by using the Asian Barometer survey of 2010, by using mixed logistic regression,

[3]Articles 341 and 342 in the Constitution of India makes special provisions for members belonging to India's "untouchable castes", in order to alleviate the burden of social stigma and economic backwardness [19]

it was found that contrary to findings based on Western democracies, female political leaders in these regions create a backlash effect on women's political engagement [21]. Exploiting the 73rd Constitutional amendment that introduced reservation for women in Gram Panchayat, in India, it was found that aspirations increased significantly both in parents and adolescents in villages that had female pradhans in at least two election cycles [1].

2. ELECTION SYSTEM IN INDIA

The Constitution of India established a federal structure of Indian government where the legislative, administrative and executive powers are distributed between the Central government, 29 States and 7 Union Territories of India. [1] Elections to the Lok Sabha (House of the People) at the central level and legislative assemblies at the state level are carried out using a first-past-the-post system and winners are decided on the basis of a simple majority. Indian Elections are the largest exercise of suffrage in the world and the Election Commission of India (hereafter referred to as ECI) is responsible for conducting free and fair elections, a *sine qua non* of any democracy.

2.0.1 Election commission of India

ECI is a permanent body established by the Constitution in 1950. This federal body oversees the entire election process in India and documents data for every election at the central and state level such as information about the total number of voters, number of candidates and their party affiliation, candidates' name, gender, caste, number of valid votes and percentage of votes secured by each candidate. This data is available for every election and constituency since 1952.

India has a multi-party-political system. The election commission grants these parties the status of either a 'National' or 'State' party. A political party is recognized as a 'State' party if it satisfies either one of the following conditions: (i)Politically active for a period of five years in the state assembly elections, resulting in at least one member elected to the legislative assembly of that state for every thirty members of that Assembly or any fraction of that number; (ii)The total number of valid votes received by all the contesting candidates of a party in the last state assembly election, is at least 6% of the total number of valid votes[2]. If a political party is recognized as a state party

[1] *Source:- https://www.elections.in/*

[2] *Source:- https://ceodelhi.gov.in/Content/PoliticalParties.aspx*

in four or more states in the subsequent State Assembly elections, then it becomes a 'National' party.

There are eight national parties, 53 state parties and 2,538 unrecognized parties in India. Unrecognized political parties are those parties that are either newly registered or have not secured enough votes in the assembly or general elections to become a state or a national party, or have never contested any election after registration. [3]

2.0.2 The state legislature

A state legislature may have two houses: A state legislative assembly (Vidhan Sabha) and a state legislative council(Vidhan Parishad) in case of a bicameral legislature[4], and only state legislative assembly in case of a unicameral legislature. The Vidhan Sabha comprises of members directly elected by electors, called MLAs (Member of Legislative Assembly). The party or coalition that wins the election, chooses the Chief Minister of their state. The Chief Minister, the council of ministers and all the MLAs hold their seats for five years unless the body is dissolved by the Governor.

2.0.3 State constituencies/seats

The state is divided into different areas called assembly constituencies such that the ratio between the population in each constituency and the seats allotted to it is the same throughout the state, and voters from this constituency elect one representative. These constituencies are also referred to as 'seats', so when we say, for example, 'ABC' party won 50 seats' from state 'X', it means that 'ABC' party has won 50 assembly constituencies from state 'X' and thus 50 MLAs in that particular cycle of assembly elections. The total number of seats allocated to each Assembly/State is decided by the ECI and this allocation depends on its population.

State legislative assemblies are held every five years, but not all of these elections are carried out at the same time. As a result, on average 5-7 state assembly elections are held every year[5]. Simultaneous elections to Lok Sabha (General elections) and

[3]For more information on political parties and in general about elections in India, see:- *https://www.elections.in/*

[4]:- Andhra Pradesh, Bihar, Jammu and Kashmir, Karnataka, Maharashtra, Telangana, and Uttar Pradesh have bicameral legislature while the rest of the states have unicameral legislature

[5]Source:- Lok Sabha Secretariat

Vidhan Sabha (Assembly elections) took place in India during 1951-1952 followed by the subsequent elections of 1957, 1962 and 1967. Due to the premature dissolution of some state assemblies in 1968 and 1969; the dissolution of the Fourth Lok Sabha in 1970 and extension of the Fifth Lok Sabha and the subsequent dissolution of the Sixth, Seventh, Ninth, Eleventh, Twelfth and Thirteenth Lok Sabhas before completing the full 5-year term and the similar premature dissolution of state assemblies couldn't realign the schedule and henceforth, since 1967 simultaneous elections to Lok Sabha and State Assemblies were not maintained.

2.0.4 Elections and reservation

In an open and competitive electoral process, weaker sections of the society may not have the resources or connections to elect their representatives to legislative assemblies or parliament (at the national level), as a result of low representation such communities would not have any say in the decision-making process and this would result in a democratic process that is less democratic and less inclusive. So, the constitution of India included a system of reserved constituencies for such weaker sections, particularly for the people belonging to SC and ST. In SC/ST reserved constituency, only a person belonging to that particular community can contest the election. In our State Assembly constituency data from 2010 to 2015, 28% of the total 4116 constituencies are reserved for SC/ST.

2.0.5 The case for political reservation for women

India ranks 148 among 193 countries by the percentage of elected female representatives in their respective national Parliaments[6]. The representation of women in state legislative assemblies are even lower. As of 2019, the state-wise participation of women in state assemblies is just 11% [7]. While the representation of women in central and state-level legislative bodies is abysmal, the sex ratio of Voters(SVR)[8] has only increased by leaps and bounds.

[6]See:- *http://archive.ipu.org/wmn-e/arc/classif010219.htm*

[7]*Source: Election Commission of India.*

[8]Number of women voters to every 1000 men voters.

In order to improve the representation of women in state assemblies, new legislation was prepared. This 108th Constitution Amendment Bill in 2008 was prepared to reserve one-third of seats in the lower house of Parliament(Lok Sabha) and state legislative assemblies. However, it has not yet been passed by the Parliament[9]Priyanka2020.

Political reservation for women, however, is present at the Gram Panchayat level of government (basic unit of administration/government at the village level), which was introduced via the 73rd Constitutional Amendment Act in 1992. This Act mandates 33.3% of all seats in panchayats, and at-least one-third of the office of Chairperson of the panchayat should be reserved for women. In rural India, women face several challenges like patriarchy, caste system, heavy household responsibilities, inadequate infrastructure and, lack of role models or women at high administrative levels. These patriarchal practices impede their voices in the local gram panchayat government and hence reservation mandated by this Act ensures that there is a more inclusive government at the local level and eventually a more gender-equal society.

[9]Till date three women's reservation bills have been introduced in Parliament in 1996,1998,1999, and 2008 and all four have been lapsed due to lack of political consensus anuja2021

3. DATA AND METHODOLOGY

3.1 National Family Health Survey

I use micro-data from India's NFHS-4(2015-16) which is provided by the free open data source IPUMS-DHS (Integrated Public Use Microdata series- Demographic and Health Surveys). IPUMS-DHS helps facilitate demographic and health surveys in 32 African and 9 Asian countries since the 1980s. Each record of the micro-data conducted at the household level contains survey responses of individuals [1]. This paper uses questions targeted at women of marriageable age and hence my unit of analysis is women aged 15-49 years.

This survey is conducted under the guidance of the Ministry of Health and Family Welfare(MoHFW), Government of India which assigned the International Institute for Population Sciences (IIPS), Mumbai, as the agency for all surveys [22].

NFHS is a large-scale survey conducted in multiple rounds[2]. I use the fourth round of survey data for analyses because, for the first time, it provides estimates for most of the indicators of all 640 districts and also covers all the areas of the outcome. Early iterations of the survey did not cover all the indicators related to domestic violence attitudes and other outcomes [22]. NFHS started covering these areas across all 640 districts only in the fourth round.

3.1.1 Benefits of using NFHS for analysis

In my objective to analyze the impact of having a female elected representative on outcomes of bargaining power, financial literacy and domestic violence attitudes, NFHS data proves to be ideal, flexible and comprehensive because this survey

[1]The documentation provided by IPUMS-DHS, includes extensive description, guidelines, background on survey procedure and comparability information along with technical information. https://www.idhsdata.org/idhs-action/variables/group

[2]Four rounds of survey have been conducted as of writing this paper: NFHS-1 (1992-1993), NFHS-2 (1998-1999), NFHS-3 (2005-2006) and NFHS-4 (2015-2016)

covers a broad area of topics from healthcare characteristics [3] at the household and individual level to employment and insurance, general demographic and geographical information, domestic violence and attitude towards it by men and women, people or organizations that women sought help for intervention against domestic violence and finally financial literacy. The questionnaires in this survey not only aid in analyzing the aforementioned outcomes but also to deep dive into the different types of domestic violence and test the theories that literature has put forward.

Below I explain all the indicators used as outcomes for my analyses and in 4 section, I expound further on the reasons for using these indicators and comment on the way they were coded.

3.1.2 Outcomes for bargaining power

To analyze the bargaining power of women, I use a questionnaire related to whether the woman has any money of her own (gifts or support from family) that only she can decide how to use, whether women alone makes decisions on large household purchases or not, final say in the way her earned money is used, final say on husband's earnings, final say on woman's healthcare. In this section, I also include two other outcomes - can the woman visit a hospital/ healthcare facility by herself and can woman leave town by herself, which provide insight into the impact on freedom of movement. In order to further understand whether the barrier to women's healthcare is freedom of movement or lack of autonomy in decision making, I use questions related to obtaining permission to go to the doctor/seek treatment.

3.1.3 Outcomes for financial literacy

For financial literacy, I use questions related to whether the woman has a bank account or savings account that is used only by her, whether the woman is aware of a loan program targeting them to start or expand their business, and whether the woman has ever received a loan to start or expand business.

[3] [23], provides a comprehensive review of all the health and nutritional surveys in India

3.1.4 Outcomes for types of domestic violence

They are different types of domestic violence that respondents faced. Emotional violence includes if the woman was humiliated, insulted, threatened and the frequency of being afraid of her husband/partner. Physical violence includes if the woman was pushed, shook or thrown something at, slapped, husband/partner twisted arm or pulled hair, punched with a fist or other harmful objects, tried to strangle or burn, kicked or dragged, threatened or attacked with a knife/gun and physical injuries, burns, sprain, broken bones/teeth because of husband's/partner's actions.

Sexual violence includes questions related to whether the spouse forced sex and other sexual acts when not wanted, whether the woman ever experienced any sexual violence from her husband/partner, whether the woman's husband/partner ever forced her with threats or in any other (non-physical) way to perform any sexual acts she did not want to do and if the previous partner ever forced sex or sexual acts.

3.1.5 Outcomes for domestic violence attitudes

The domestic violence section is further extended to understand the impact of female representatives on domestic violence attitudes, I use questions that require a simple 'yes', 'no' or 'I don't know' answer, These questions ask whether wife-beating is justified if woman argues with man, woman burns food, woman goes out without informing husband/partner, the woman refuses to have sex, woman neglects children, woman commits infidelity and finally wife-beating is justified if the woman is disrespectful towards in-laws.

3.1.5.1 Summary statistics

Table 3.1 provides a summary picture of the demography of the sample in NFHS data set used in the main analyses. 12% of the sample comprises of Muslims and 75% constitutes of Hindu population. This breakdown between religions is almost similar

to the share of Muslims and Hindus in the general population[4] as presented in Table 3.2. On average, women had 6.2 total years of education[5].

Table 3.1 : Summary Statistics

	#Obs	Mean	s.d	Min	Max
Rural resident	391340	0.725	0.447	0	1
Muslim	391340	0.118	0.323	0	1
Hindu	391340	0.753	0.431	0	1
Other Religion	391340	0.129	0.335	0	1
Sceduled Caste	391340	0.183	0.387	0	1
Scheduled Tribe	391340	0.173	0.379	0	1
Other Backward Caste	391340	0.413	0.492	0	1
Years of education	391340	6.284	5.179	0	20

Note: Other Religion includes Christian,Buddhist/neo-buddhist,Jewish,traditional/spiritual/animist,atheist etc.

Table 3.2 : Summary Statistics of Indian Demography according to 2011 Census.

	Population(in Millions)	Pct%
Hindu	966.3	79.8
Muslim	172.2	14.2
Other Religion	72.3	5.97
Scheduled Caste	201.4	16.6
Scheduled Tribe	104.3	8.6

Source : Census of India 2011

3.1.6 Data on election outcomes

In order to construct data on election outcomes, I use data from every state constituency election in India from 2010 to 2014, from the Development data lab's Socioeconomic High-resolution Rural-Urban Geographic (SHRUG) data almn2021. This open-source data repository covers 500,000 Indian villages and 8000 towns by utilizing a set of common geographic identifiers spanning over 25 years [6]. From this data set, I gather

[4]https://www.census2011.co.in/religion.php

[5]Men, on the other hand, had 8.3 years of education

[6]See:- https://www.devdatalab.org/shrug

the information on gender, margin of votes and party affiliation of the winner and the runner-up from 29 states[7,8] and 2 Union Territories [9].

3.1.6.1 Summary statistics of elections data

District means of variables related to elections can be seen in Table 3.3. On average, they are 9 constituencies per district and about 10 candidates compete for each seat/constituency. Female candidates accounted for only 7% of the candidates who ran in elections and won only 2.5% of the seats, for the time period under consideration. Female representation is lower in close 5% man-woman elections - accounting for less than 1%. For the period under consideration, figure 3.1 shows the trend of female elected representatives.

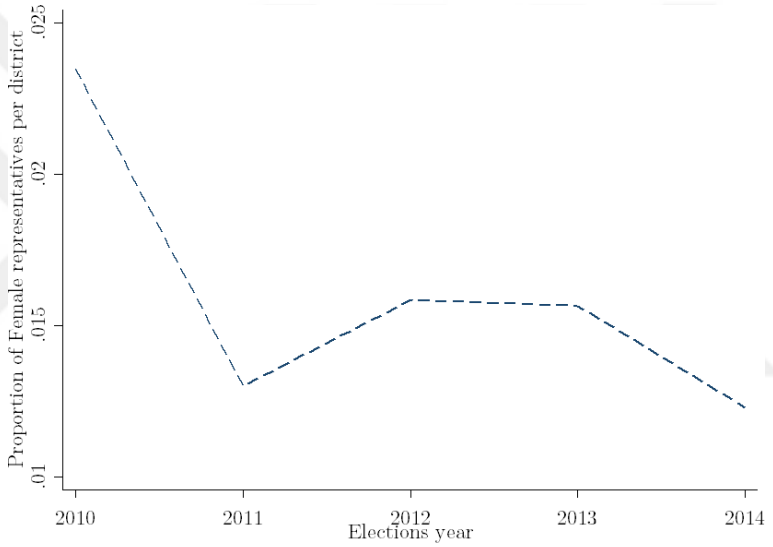

Figure 3.1 : Proportion of constituencies in a district won by female politician per year.

[7]29 states include Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Chhattisgarh, Goa, Gujarat, Haryana, Himachal Pradesh, Jharkhand, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Mizoram, Nagaland, Odisha, Punjab, Rajasthan, Sikkim, Tamil Nadu, Tripura, Uttar Pradesh, Uttarakhand, West Bengal and the erstwhile state of Jammu & Kashmir.

[8]Jammu & Kashmir was declared as Union Territory on 31st October, 2019. For the purpose of my analyses, I have used the Assembly elections data that was held in Jammu & Kashmir in the year 2014.

[9]Delhi and Puducherry are the only union territories among the seven that have their own state government with certain limitations.

Table 3.3 : Descriptive Statistics of State Elections 2010-2014

	Mean	s.d	Min	Max
Proportion of constituencies in a district	9.351	6.238	0	1
Proportion of candidates running for each seat	10.99	5.476	0	1
Proportion of Female candidates competing for each seat/constituency	0.0734	0.261	0	1
Proportion of Male candidates competing for each seat/constituency	0.889	0.314	0	1
Proportion of seats won by women in a district	0.0257	0.0892	0	1
Proportion of seats won by women in close elections	0.00524	0.0251	0	1
Proportional of seats won by women in a District with single Man Vs Women election*	0.514	0.501	0	1
Proportion of seats won by General candidate	0.704	0.457	0	1
Proportion of seats won by Scheduled Caste (SC) candidate	0.153	0.360	0	1
Proportion of seats won by Scheduled Tribe (ST) candidate	0.144	0.351	0	1

Note: I define close elections as those elections where margin of victory/loss between male and female candidate 5%. *Only districts that have a single man-woman elections is considered here. General candidates refer to candidates not belonging to SC or ST caste.

Figure 3.2 and 3.3 shows the distribution of proportion of seats won by female politician in a normal election and in close 5% man-woman elections in each district. This map [10] shows a grim picture of female representation- only 2.5% of the seats were won by women during the period of consideration of 2010-2014.

Figure 3.4 shows the heat map of sex-ratio[11] per district. There is an interesting contrary relationship between the sex-ratio and female candidates contesting for elections. [24] use the citizen candidate model and run probit estimation with the constituency level assembly elections data of 50 years. They found that states with a low sex-ratio of voters have more than twice the number of female candidates per constituency when compared to states with a better sex-ratio of voters like Kerala and Tamil Nadu.

[10]The Assembly Constituencies GIS data is made available by Data{Meet} Community Maps Project under the Creative Commons Attribution 2.5 India

[11]According to the Indian Census, Sex ratio is defined as the number of females per thousand males.

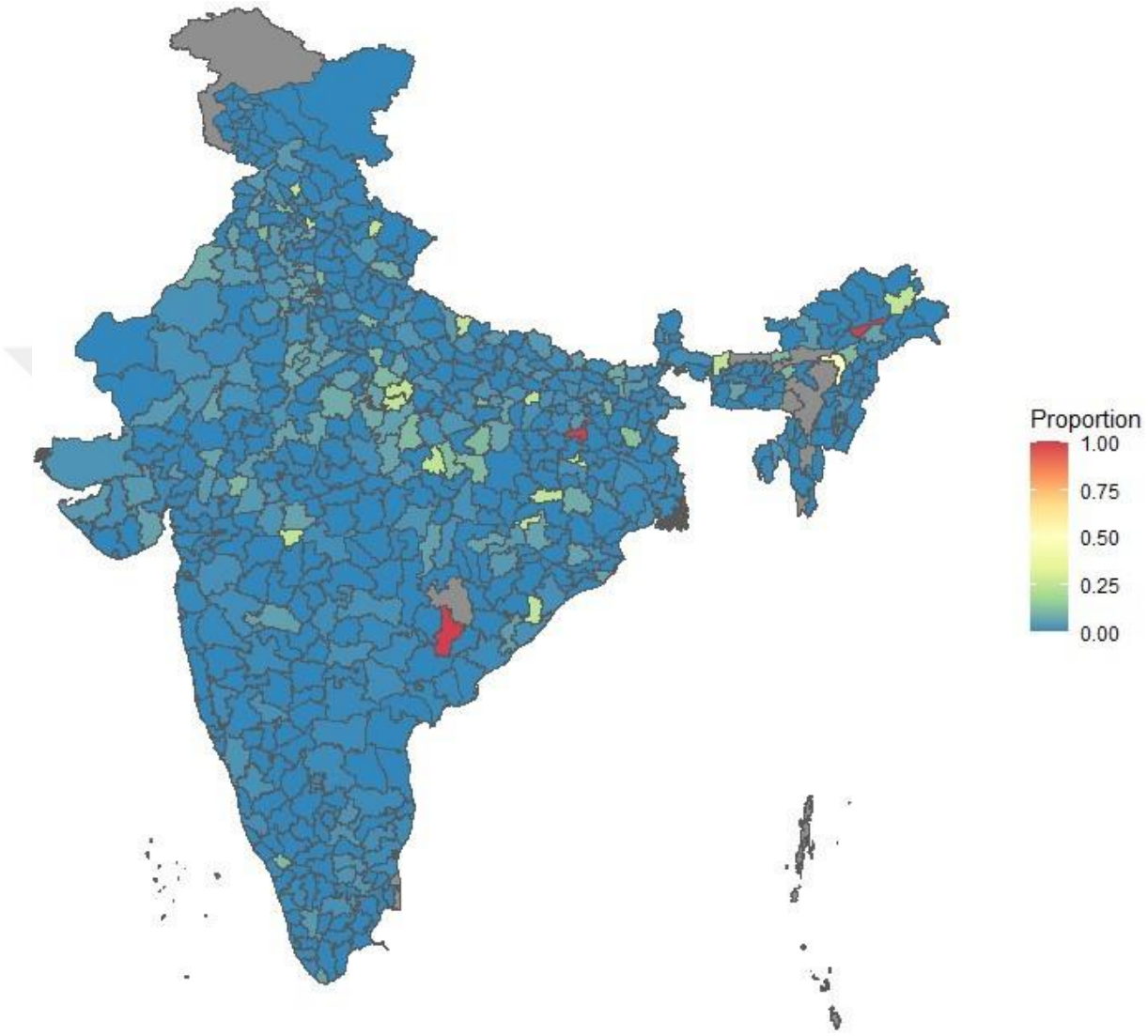

Figure 3.2 : Proportion of seats won by women in a District.

Note: Above map shows the distribution of proportion seats won by women in each district across India from 2010 to 2014. Regions shaded in grey refers to Union Territories and possible missing data. Since, constituencies & boundaries have changed multiple times (delimitation) the mapped regions incorporate the closest approximation of 2015 boundaries.

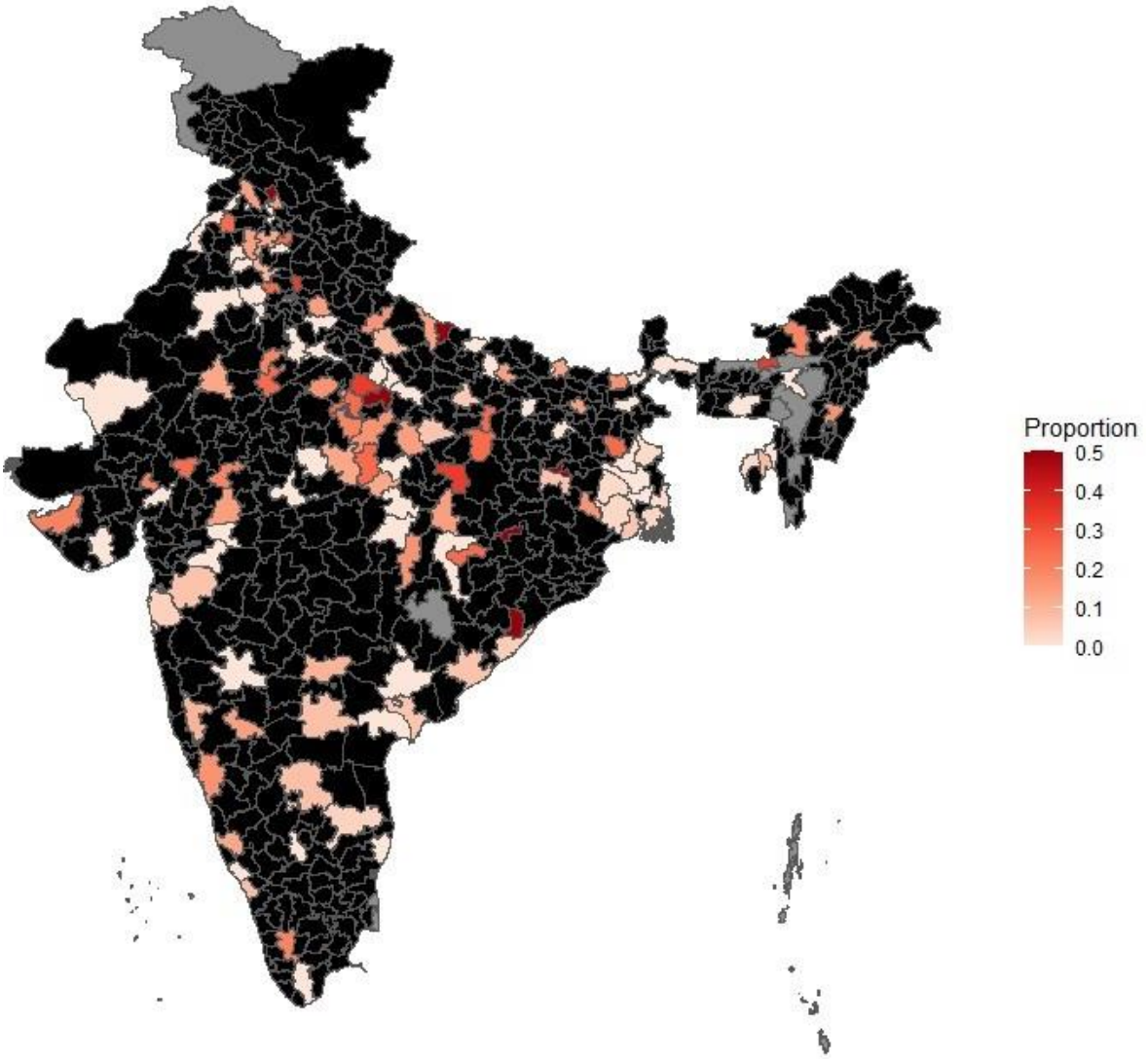

Figure 3.3 : Proportion of seats won by women in close 5% Man vs Women election. *Note:* Regions shaded in grey refers to Union Territories and possible missing data and regions shaded in black represent those districts that did not have close 5% man-woman elections. Less than 1% of the assembly constituencies from 2010 to 2014 in close 5% man-woman elections were won by women indicating a large gender-gap.

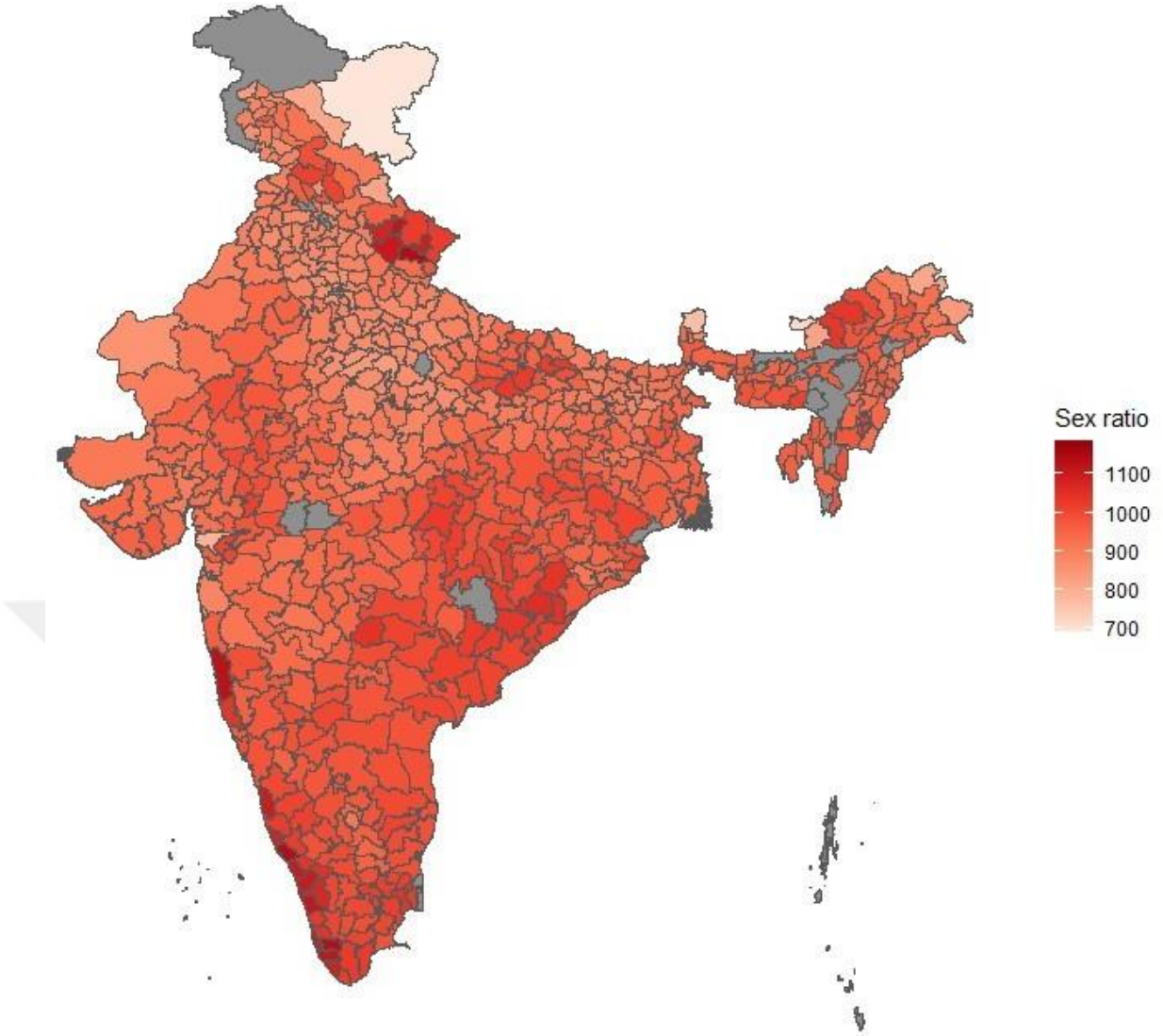

Figure 3.4 : District wise Sex ratio.
Note: The regions shaded in grey refers to any possible missing data.

3.2 Methodology

The main contribution of this paper is to study the causal impacts of having a female state legislative representative on the outcomes of bargaining power, financial literacy and domestic violence attitude. The hypothesis being tested is that of role-model effects [16]: women seeing women in political positions may improve their gender norms and increase their ambition leading to a positive change in social norms and better outcomes of empowerment, and this change may not be specifically attributed to differences in policy decisions of male and female politicians.

The challenge here would be to use a methodology that takes into account unobserved and observed local factors that influence a voter's preferences and the outcome.

It may be the case that districts that elect women have higher female literacy or less restrictive gender norms or any other factors that can correlate female elected representatives and outcomes of healthcare, bargaining power, financial literacy and domestic violence. Hence, it is imperative that our estimates are free of such biases.

Another issue while using elections data is that election outcomes are at the constituency level and NFHS data is at the district level. Constituencies are the *de jure* apportionment of space within districts - the second level of administration- for election purposes within the territorial limits of an Indian state [25]. Hence, electoral outcomes need to be aggregated at the district level for any further analyses, such limitations introduce restrictions in the choice of methodology for analyses.

Using constituency level outcomes would allow me to use RDD methodology to investigate causal pathways *a*` la [26] and [27], however, keeping in mind the restrictions set by data, using IV analyses will serve the purpose of isolating endogeneity issues as well as making use of aggregated data. In further sections, I make use of RDD methodology as well but restrict my data only to those districts with a single man vs women election. This would allow me to investigate whether female politicians who won by a narrow margin against their male counterparts play a more active role or not [4]

3.2.1 Identification

I use IV estimation wherein, the fraction of constituencies won by women averaged over the district is instrumented with the fraction of constituencies won by women in close 5% elections against men, averaged over the district. The validity of instrument can be explained by exploiting a discontinuity on treatment assignment ([28]; [29]). In close elections, the gender identity of winner is quasi-random and hence, on an average, be comparable ([26]; [27]; [17]; [4]; [15]) considering that it satisfies internal validity. The subsection 3.2.2 provides evidence that internal validity is satisfied. This identification resembles the probabilistic assignment of treatment i.e. "fuzzy" regression discontinuity. Hence, my strategy is similar to that of [4], [15] and [17].

I define close elections where the margin of victory/loss is 5% [12]. Since the outcome of close elections in a district is considered to be random, the average of these electoral outcomes can also be considered as random [4]

$$(1) \quad Y_{id} = \theta_d + \beta F_{dt} + \lambda TC_{dt} + \sum^{N}_{i=1} \alpha_{1i} I_{jdt} \times G(M_{jdt}) + \sum^{N}_{i=1} \alpha_{2i} I_{jdt} + X_{idt}\eta + Z_d\delta + \varepsilon_{idt}$$

$$(2) \quad F_{dt} = \chi_d + \kappa FC_{dt} + \mu TC_{dt} + \sum^{N}_{i=1} \vartheta_{1i} I_{jdt} \times G(M_{jdt}) + \sum^{N}_{i=1} \vartheta_{2i} I_{jdt} + X_{idt}\sigma + Z_d\xi + u_{idt}$$

Equation (1) is the second stage of two-stage least squares model and (2) is the first stage. Y_{id} is the binary outcome of individual i in district d . The main variable of interest is F_{dt} which is the mean fraction of constituencies in district won by women in the election year. I_{jdt} is an indicator of whether there was a man-woman election j in the district in the election year, M_{jdt} is the margin of victory/loss for the female candidate in election j and $G(M_{jdt})$ is the polynomial function of margin of victory. Since recent papers [30] state that high order polynomials can lead to noisy estimates, I control only for first and second-order polynomial functions. θ_d accounts for state fixed effects, X_{id} is individual level control variables that could effect outcomes like marital status, urban or rural region, ethnicity and head of household and Z_d are district level controls of total population, rural and urban population and literacy. TC_{dt} is the mean fraction of constituencies in the district during the election year that had close elections between man and women, this control variable takes into account that such close elections may not be a random event.

In equation (2) F_{dt} is instrumented by FC_{dt} which is the mean fraction of constituencies won by female politician against men in close 5% elections in district d and year t and χ_d is state fixed effects.

3.2.2 Internal validity of instrument

An RD design should satisfy two important internal validity rules [28]. One is that the forcing variable, win-margin is continuous at the discontinuity and second the control

[12] In order to have a sufficient number of observations, I choose 5% as the margin of victory

variables are not manipulated. Figure 4.1 shows the histogram of the win margin for the entire range. Figure 3.6 shows that our forcing variable is continuous at the discontinuity and the estimates of the McCrary test are insignificant. The statistic for testing the jumps in covariates are not significant proving that control variables used are not manipulated at the point of discontinuity, hence are not different from each other. Graphs are provided in section A.

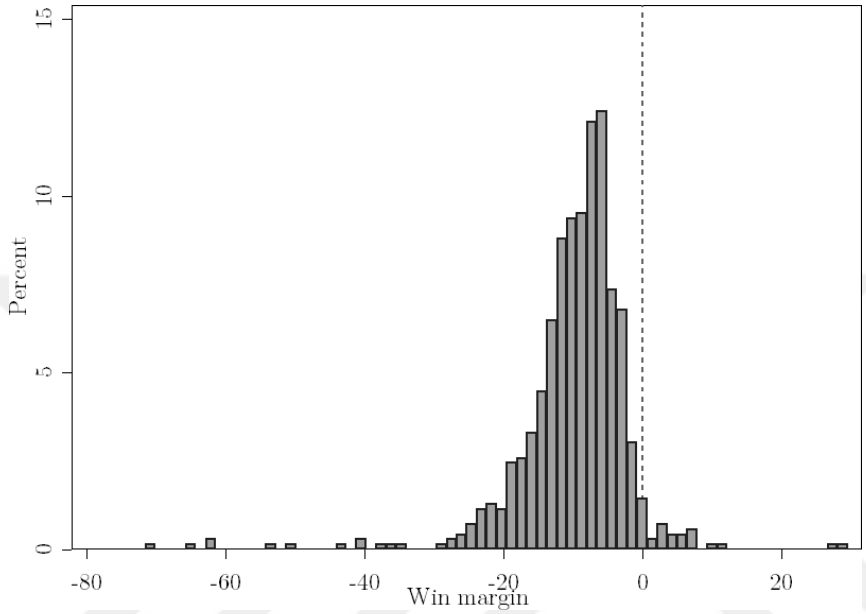

Figure 3.5 : Global Histogram.

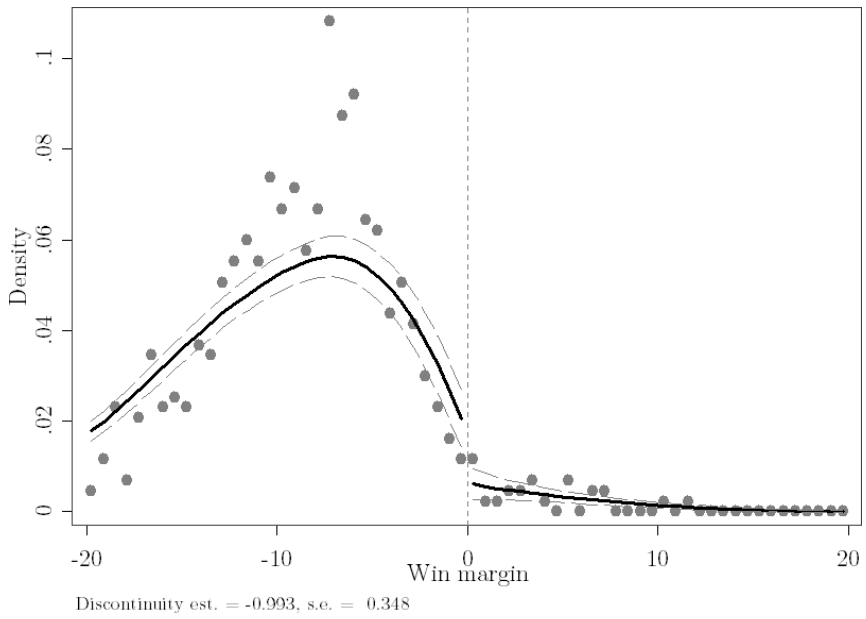

Figure 3.6 : McCrary Density test.

4. RESULTS

4.1 Results

Section 4.1.1 provides first stage results of regressing the mean of the fraction of constituencies in the district won by women on the instrument- mean of the fraction of constituencies won by women in close 5% elections between men and women. Voting patterns show that voter turnout for women is higher in rural areas than in urban [31][1], greater political participation in rural areas could hypothetically lead to a more pronounced effect on rural population than urban. So, section 4.1.2 provides the second stage results for the overall sample and rural sample.

This section is followed by 4.3 and lastly 4.3.1 that provides robustness checks for various margins of victory/loss and uses a sharp regression continuity design to investigate the role-model effects in those districts that had a single man-woman election. Panel A and B in tables in section 4.1.2 and section 4.3.1 shows the results for regression with individual and district controls and for linear and second-order margins of victory/loss respectively.

4.1.1 First stage results

First stage regression results are presented in tables 4.1 to 4.6 for linear and second-order polynomials of margins of victory/loss while controlling for individual and district controls. In both linear and second-order polynomial specifications, the estimate over the instrument- the fraction of constituencies in the district won by women in close 5% elections, is significant for all models and therefore a good predictor for the fraction of constituencies in the district won by women.

[1]The reasons for this urban - rural divide is well established in the literature and is out of scope for this study. Please refer to [31] for more details on women's participation in elections in India.

4.1.1.1 Bargaining power

The coefficient for the fraction of constituencies in a district won by women in close 5% elections in table 4.1 ranges from 0.25 to 0.26 for various outcomes of interest under bargaining power. So, if the fraction of constituencies in the district won by women in close 5% elections increases by 10 percentage points, increases the fraction of constituencies won by women by 2.5 to 2.6 percentage points.

Table 4.1 : First Stage Regressions : Bargaining Power

Dependant Variable:Fraction of constituencies in the district won by women	Fraction of constituencies in a district won by women in close 5% elections	
	Linear Margins	Quadratic Margins
Woman has money only she decides how to use.	0.254(***)	0.254(***)
	(0.008)	(0.008)
F-statistic first stage	1066.26	1066.26
Observations	15077	15077
Final say on making large household purchases.	0.254(***)	0.254(***)
	(0.008)	(0.008)
F-statistic first stage	1079.92	1074.67
Observations	10099	10099
Final say on spending woman's earnings.	0.247(***)	0.247(***)
	(0.009)	(0.009)
F-statistic first stage	735.68	760.58
Observations	2723	2723
Final say on spending husband's earnings.	0.252(***)	0.258(***)
	(0.008)	(0.007)
F-statistic first stage	1090.22	1373.14
Observations	9854	9854
Individual Controls	Yes	Yes
District Controls	Yes	Yes

(continues)

Table 4.1 Continued

Dependant Variable:Fraction of constituencies in the district won by women	Fraction of constituencies in a district won by women in close 5% elections	
	Linear Margins	Quadratic Margins
Final say on woman's health care.	0.259(***)	0.259(***)
	(0.007)	(0.007)
F-statistic first stage	1367.61	1367.61
Observations	10140	10140
Can visit health center/hospital alone.	0.260(***)	0.260(***)
	(0.007)	(0.007)
F-statistic first stage	1323.57	1323.57
Observations	15077	15077
Can leave town alone.	0.260(***)	0.260(***)
	(0.007)	(0.007)
F-statistic first stage	1323.57	1323.57
Observations	15077	15077
Barrier to woman's health care: Getting permission.	0.264(***)	0.264 (***)
	(0.004)	(0.004)
F-statistic first stage	4214.19	4214.19
Observations	92598	92598
Individual Controls	Yes	Yes
District Controls	Yes	Yes

Notes: Robust standard errors clustered at the cluster level are reported between parentheses. $*$ ($p < 0.10$),**($p < 0.05$),***($p < 0.01$)

4.1.1.2 Financial literacy

The coefficient for the fraction of constituencies in a district won by women in close 5% elections in table 4.2 ranges from 0.26 to 0.27 for various outcomes of interest under financial literacy. So, if the fraction of constituencies in the district won by women in close 5% elections increases by 10 percentage points, increases the fraction of constituencies won by women by 2.6 to 2.7 percentage points.

Table 4.2 : First Stage Regressions : Financial Literacy

Dependant Variable:Fraction of constituencies in the district won by women	Fraction of constituencies in a district won by women in close 5% elections	
	Linear Margins	Quadratic Margins
Respondent has account at bank or other financial institution.	0.259(***)	0.259(***)
	(0.007)	(0.007)
F-statistic first stage	1309.86	1309.86
Observations	15036	15036
Knows of loan programs for women to start a business.	0.269(***)	0.259(***)
	(0.007)	(0.007)
F-statistic first stage	1309.86	1309.86
Observations	15036	15036
Ever received a loan to start a business.	0.257(***)	0.257(***)
	(0.008)	(0.008)
F-statistic first stage	1002.72	1002.72
Observations	5330	5330
Individual Controls	Yes	Yes
District Controls	Yes	Yes

Notes: Robust standard errors clustered at the cluster level are reported between parentheses.
* ($p < 0.10$),**($p < 0.05$),***($p < 0.01$)

4.1.1.3 Emotional violence

The coefficient for the fraction of constituencies in a district won by women in close 5% elections in table 4.3 is 0.27 for various outcomes of interest under emotional violence. So, if the fraction of constituencies in the district won by women in close 5% elections increases by 10 percentage points, increases the fraction of constituencies won by women by 2.7 percentage points.

Table 4.3 : First Stage Regressions : Emotional Violence

Dependant Variable:Fraction of constituencies in the district won by women	Fraction of constituencies in a district won by women in close 5% elections	
	Linear Margins	Quadratic Margins
Spouse ever humiliated her.	0.269(***) (0.007)	0.269(***) (0.007)
F-statistic first stage	1519.93	1519.93
Observations	7884	7884
Spouse ever insulted or made feel bad.	0.269(***) (0.007)	0.269(***) (0.007)
F-statistic first stage	1519.93	1519.93
Observations	7884	7884
Spouse ever threatened with harm.	0.269(***) (0.007)	0.269(***) (0.007)
F-statistic first stage	1519.93	1519.93
Observations	7884	7884
Frequency afraid of husband.	0.269(***) (0.007)	0.269(***) (0.007)
F-statistic first stage	1519.93	1519.93
Observations	7884	7884
Ever any emotional violence	0.269(***) (0.007)	0.269(***) (0.007)
F-statistic first stage	1519.93	1519.93
Observations	7884	7884
Individual Controls	Yes	Yes
District Controls	Yes	Yes

Notes: Robust standard errors clustered at the cluster level are reported between parentheses.
* ($p < 0.10$),**($p < 0.05$),***($p < 0.01$)

4.1.1.4 Physical violence

The coefficient for the fraction of constituencies in a district won by women in close 5% elections in table 4.1 is 0.27 for various outcomes of interest under physical violence. So, if the fraction of constituencies in the district won by women in close 5% elections increases by 10 percentage points, increases the fraction of constituencies won by women by 2.7 percentage points.

Table 4.4 : First Stage Regressions : Physical Violence

Dependant Variable:Fraction of constituencies in the district won by women	Fraction of constituencies in a district won by women in close 5% elections	
	Linear Margins	Quadratic Margins
Spouse ever pushed, shook, or threw something.	0.269(***)	0.269(***)
	(0.007)	(0.007)
F-statistic first stage	1519.93	1519.93
Observations	7884	7884
Spouse ever slapped.	0.269(***)	0.269(***)
	(0.007)	(0.007)
F-statistic first stage	1519.93	1519.93
Observations	7884	7884
Spouse ever twisted her arm or pulled her hair.	0.269(***)	0.269(***)
	(0.007)	(0.007)
F-statistic first stage	1519.93	1519.93
Observations	7884	7884
Spouse ever punched with fist or something harmful.	0.269(***)	0.269(***)
	(0.007)	(0.007)
F-statistic first stage	1519.93	1519.93
Observations	7884	7884
Spouse ever tried to strangle or burn.	0.269(***)	0.269(***)
	(0.007)	(0.007)
F-statistic first stage	1519.93	1519.93
	(0.007)	(0.007)
Observations	7884	7884
Individual Controls	Yes	Yes
District Controls	Yes	Yes

(continues)

Table 4.4 Continued

Dependant Variable:Fraction of constituencies in the district won by women	Fraction of constituencies in a district won by women in close 5% elections	
	Linear Margins	Quadratic Margins
Spouse ever kicked or dragged.	0.269(***) (0.007)	0.269(***) (0.007)
F-statistic first stage	1519.93	1519.93
Observations	7884	7884
Spouse ever threatened or attacked with knife/gun.	0.269(***) (0.007)	0.269(***) (0.007)
F-statistic first stage	1519.93	1519.93
Observations	7884	7884
Ever experienced any severe violence.	0.269(***) (0.007)	0.269(***) (0.007)
F-statistic first stage	1519.93	1519.93
Observations	7884	7884
Ever experienced any less severe violence.	0.269(***) (0.007)	0.269(***) (0.007)
F-statistic first stage	1519.93	1519.93
Observations	7884	7884
Individual Controls	Yes	Yes
District Controls	Yes	Yes

Notes: Robust standard errors clustered at the cluster level are reported between parentheses.
* ($p < 0.10$),**($p < 0.05$),***($p < 0.01$)

4.1.1.5 Sexual violence

The coefficient for the fraction of constituencies in a district won by women in close 5% elections in table 4.1 is 0.27 for various outcomes of interest under sexual violence. So, if the fraction of constituencies in the district won by women in close 5% elections increases by 10 percentage points, increases the fraction of constituencies won by women by 2.7 percentage points.

Table 4.5 : First Stage Regressions : Sexual Violence

Dependant Variable:Fraction of constituencies in the district won by women	Fraction of constituencies in a district won by women in close 5% elections	
	Linear Margins	Quadratic Margins
Spouse ever physically forced sex when not wanted.	0.269(***)	0.269(***)
	(0.007)	(0.007)
F-statistic first stage	1519.93	1519.93
Observations	7884	7884
Spouse ever forced other sexual acts when not wanted.	0.269(***)	0.269(***)
	(0.007)	(0.007)
F-statistic first stage	1519.93	1519.93
Observations	7884	7884
Spouse ever coerced sex or sexual acts when not wanted.	0.269(***)	0.269(***)
	(0.007)	(0.007)
F-statistic first stage	1519.93	1519.93
Observations	7884	7884
Previous partner ever forced sex or sex acts.	0.256(***)	0.256(***)
	(0.021)	(0.021)
F-statistic first stage	148.42	148.42
Observations	170	170
Ever experienced any sexual violence from partner.	0.269(***)	0.269(***)
F-statistic first stage	1519.93	1519.93
Observations	7884	7884
Individual Controls	Yes	Yes
District Controls	Yes	Yes

Notes: Robust standard errors clustered at the cluster level are reported between parentheses.
* ($p < 0.10$),**($p < 0.05$),***($p < 0.01$)

4.1.1.6 Domestic violence attitude

The coefficient for the fraction of constituencies in a district won by women in close 5% elections in table 4.1 is 0.27 for various outcomes of interest under domestic violence attitude. So, if the fraction of constituencies in the district won by women

in close 5% elections increases by 10 percentage points, increases the fraction of constituencies won by women by 2.7 percentage points.

Table 4.6 : First Stage Regressions : Domestic Violence Attitude

Dependant Variable:Fraction of constituencies in the district won by women	Fraction of constituencies in a district won by women in close 5% elections	
	Linear Margins	Quadratic Margins
Attitude to wife beating: Justified if woman argues with him.	0.269(***)	0.269(***)
	(0.007)	(0.007)
F-statistic first stage	1565.89	1565.89
Observations	9652	9652
Attitude to wife beating: Justified if woman burns food.	0.269(***)	0.269(***)
	(0.007)	(0.007)
F-statistic first stage	1568.00	1568.00
Observations	9650	9650
Attitude to wife beating: Justified if woman goes out without telling him.	0.269(***)	0.269(***)
	(0.007)	(0.007)
F-statistic first stage	1570.53	1570.53
Observations	9654	9654
Attitude to wife beating: Justified if woman refused to have sex.	0.269(***)	0.269(***)
	(0.007)	(0.007)
F-statistic first stage	1563.60	1563.60
Observations	9579	9579
Individual Controls	Yes	Yes
District Controls	Yes	Yes

(continues)

Table 4.6 Continued

Dependant Variable:Fraction of constituencies in the district won by women	Fraction of constituencies in a district won by women in close 5% elections	
	Linear Margins	Quadratic Margins
Attitude to wife beating: Justified if woman neglects the children.	0.269(***)	0.269(***)
	(0.007)	(0.007)
F-statistic first stage	1567.25	1567.25
Observations	9659	9659
Attitude to wife beating: Justified if woman commits infidelity.	0.269(***)	0.269(***)
	(0.007)	(0.007)
F-statistic first stage	1572.19	1572.19
Observations	9620	9620
Attitude to wife beating: Justified if woman shows disrespect for in-laws.	0.269(***)	0.269(***)
	(0.007)	(0.007)
F-statistic first stage	1564.47	1564.47
Observations	9630	9630
Individual Controls	Yes	Yes
District Controls	Yes	Yes

Notes: Robust standard errors clustered at the cluster level are reported between parentheses.
* ($p < 0.10$),**($p < 0.05$),***($p < 0.01$)

4.1.2 Second stage results

4.1.2.1 Bargaining power

This section investigates whether female elected politicians induce a role-model effect [16] with regards to women's decision-making control over their own money, large household purchases, their own earnings, husband's earnings, healthcare and mobility. In Indian households, decisions are usually regulated by hierarchies based on gender and generation [32]. The ability to make decisions on their own without the intervention of others in the household, would indicate an improvement in gender equality and hence a positive impact of the role-model effect.

These variables are dummy variables coded as 1 if the respondent alone can make decisions or can leave town or visit the health center alone and 0 otherwise.

Since the criteria for decision making is stringent (only a woman alone makes the decision), we could expect null effects. Representative data about the participation of women in decision-making is less stringent in its criteria, wherein women are considered to participate in household decisions if the decision is made alone or along with their husbands [22]. In spite of figures stating an increase in participation in decision-making, such data fails to shed light on causal pathways in the decision-making capacity of women alone.

Since IPUMS includes questions related to barrier to healthcare, I include question that helps in understanding barriers to getting medical care- to investigate if the barrier is lacking freedom to travel or getting permission. The particular variable included in analyses for measuring this is related to obtaining permission to go to the doctor/seek treatment, this is a dummy variable which is assigned the value 0 if the respondent believes that the specific reason is a big barrier to getting medical care for herself and 1 otherwise.

Results in (1) of table 4.7 show that female representation has a positive and significant impact on the probability that a woman alone can decide how to use her own money (gift or support from family and not earnings) and the effects is not dependent on the controls. The coefficient for the rural sample is significant at 90% confidence interval whereas, for the overall sample, the coefficient is significant at 99% confidence interval.

The magnitude of the coefficient for the overall sample when controlling for linear margins and individual controls shows that when female representation in the district increases by 10 percentage points, the probability that a woman decides how to use her own money increases by 7.1 percentage points. For the rural sample, this probability changes to 5.6 percentage points.

Estimates in (2) and (3) in table 4.7 show that female representation has no impact on the probability to make final decisions on large household purchases and on spending on woman's earnings.

Estimates in (4) show that female representation has no impact on the probability to make final decisions on husbands' earnings in the overall sample. The estimates for the rural sample are significant at 95% confidence interval and when controlling for linear

margins and individual controls show that the probability of making a final decision on husbands' earnings increases by 3.3 percentage points if female representation is increased by 10 percentage points.

The estimates for making the final decision on woman's healthcare as seen in (5) is significant for both the overall and rural sample. As female representation increases by 10 percentage points, the probability to make final decisions on woman's healthcare increases by 4.2 and 5.8 percentage points respectively, when controlled for linear margins and individual controls.

(6) and (7) in Table 4.7 can be seen as a subset of bargaining power where I investigate freedom to their mobility i.e. this sections tests if the woman is allowed to visit a health care center alone and if the woman is allowed to leave town/village/city alone. The estimates are not significant for either of the samples hence, showing that there is no impact of female representation on woman's mobility. Estimates in (8) show that female representation has no impact on the probability of getting permission to visit the health center. Results are not significant for the rural sample and only significant at 90% confidence interval in the overall sample when second-order polynomials of margins of victory are controlled.

Table 4.7 : Bargaining Power

	(1)		(2)		(3)	
	Overall Sample	Rural sample	Overall Sample	Rural sample	Overall Sample	Rural sample
Panel A: Control for Margins: Linear						
Individual Controls	0.713(***)	0.560(*)	0.103	0.034	0.560	0.354
	(0.266)	(0.307)	(0.143)	(0.164)	(0.410)	(0.439)
Individual and District Controls	0.693(***)	0.541(*)	0.111	0.051	0.561	0.359
	(0.266)	(0.306)	(0.142)	(0.164)	(0.410)	(0.439)
Panel B: Control for Margins: Second-order Polynomials						
Individual Controls	0.751(***)	0.562(*)	0.092	0.049	0.382	0.209
	(0.268)	(0.311)	(0.145)	(0.165)	(0.400)	(0.435)
Individual and District Controls	0.732(***)	0.546(*)	0.098	0.063	0.382	0.214
	(0.267)	(0.310)	(0.145)	(0.165)	(0.399)	(0.435)

Notes: (1)Woman has money only she decides how to use.(2)Final say on making large household purchases. (3)Final say on spending woman's earnings.

(continues)

Table 4.7 Continued

	(4)		(5)	
	Overall Sample	Rural sample	Overall Sample	Rural sample
Panel A: Control for Margins: Linear				
Individual Controls	0.240	0.326(**)	0.420(**)	0.580(***)
	(0.150)	(0.166)	(0.187)	(0.217)
Individual and District Controls	0.244	0.340(**)	0.428(**)	0.592(***)
	(0.150)	(0.167)	(0.187)	(0.218)
Panel B: Control for Margins: Second-order Polynomials				
Individual Controls	0.198	0.349(**)	0.413(**)	0.596(***)
	(0.153)	(0.168)	(0.189)	(0.220)
Individual and District Controls	0.201	0.360(**)	0.419(**)	0.607(***)
	(0.153)	(0.169)	(0.189)	(0.221)

Notes: (4)Final say on spending husband's earnings. (5)Final say on woman's health care.

(continues)

Table 4.7 Continued

	(6)		(7)		(8)	
	Overall Sample	Rural sample	Overall Sample	Rural sample	Overall Sample	Rural sample
Panel A: Control for Margins: Linear						
Individual Controls	0.337	0.267	0.008	-0.064	0.143	0.176
	(0.270)	(0.296)	(0.282)	(0.318)	(0.132)	(0.165)
Individual and District Controls	0.355	0.281	0.031	-0.047	0.157	0.197
	(0.269)	(0.295)	(0.282)	(0.318)	(0.131)	(0.165)
Panel B: Control for Margins: Second-order Polynomials						
Individual Controls	0.280	0.205	0.005	-0.040	0.232(*)	0.186
	(0.275)	(0.303)	(0.281)	(0.319)	(0.136)	(0.167)
Individual and District Controls	0.292	0.215	0.022	-0.026	0.241(*)	0.204
	(0.274)	(0.302)	(0.281)	(0.319)	(0.136)	(0.167)

Notes: Robust standard errors clustered at the cluster level are reported between parentheses. Close elections are defined as those in which the winner won over the runner-up by less than 5 percent of votes. Weighted with IPUMS-DHS weights. (6)Can visit health center/hospital alone.(7)Can leave town alone. (8)Barrier to Healthcare: Getting Permission. Weighted with IPUMS-DHS weights. .* ($p < 0.10$) , **($p < 0.05$) , * * * ($p < 0.01$)

4.1.2.2 Financial literacy

An important measure of female empowerment is financial independence. I measure this by using variables related to awareness and uptake of loans for setting or expanding their own business and owning a savings or bank account for their own use. These variables are dummy variables which are coded 1 if they are aware or have used loans for business purposes, or have a bank account that they alone could use and 0 otherwise.

For analyses related to banks accounts, awareness and usage of loans, the sample of respondents that were interviewed after November 2016 were excluded, so as not to include the effects of demonetization[2]. (1) in table 4.8 shows that by increasing female representation, the probability of owning a bank or savings account that only woman uses increases by 5.4 percentage points when controlled for linear margins and individual controls. This is significant at 95% confidence interval and is not dependent on the controls, however, the estimates are not significant for the rural sample.

Estimates for awareness of loan programs- as seen in (2), is not significant for both the overall and rural sample. (3) in table 4.8 shows that female representation has no impact on the entrepreneurial enterprise of women. Overall, my analysis shows that there is no significant impact on women's financial empowerment.

[2]Since, the survey interview was carried from 2015 to 2016, I limited data before November 2016 so as to isolate the effects of demonetization. In spite of the inclusion, results are robust and have a considerable number of observations

Table 4.8 : Financial Literacy

	(1)		(2)		(3)	
	Overall Sample	Rural sample	Overall Sample	Rural sample	Overall Sample	Rural sample
Panel A: Control for Margins: Linear						
Individual Controls	0.548(**)	0.190	0.505(*)	0.370	0.184	-0.00007
	(0.261)	(0.288)	(0.303)	(0.353)	(0.320)	(0.377)
Individual and District Controls	0.574(**)	0.227	0.486	0.360	0.184	-0.001
	(0.260)	(0.287)	(0.302)	(0.353)	(0.320)	(0.376)
Panel B: Control for Margins: Second-order Polynomials						
Individual Controls	0.558(**)	0.257	0.373	0.291	0.068	-0.031
	(0.264)	(0.297)	(0.305)	(0.357)	(0.320)	(0.383)
Individual and District Controls	0.576(**)	0.284	0.358	0.282	0.069	-0.032
	(0.263)	(0.296)	(0.304)	(0.357)	(0.320)	(0.382)

Notes: Robust standard errors clustered at the cluster level are reported between parentheses. Close elections are defined as those in which the winner won over the runner-up by less than 5 percent of votes. Weighted with IPUMS-DHS weights. (1) Respondent has account at bank or other financial institution. (2) Knows of loan programs for women to start a business. (3) Ever received a loan to start a business. * ($p < 0.10$) , **($p < 0.05$) , * * * ($p < 0.01$)

4.1.2.3 Types of domestic violence

United Nations defines Gender-based violence as any act of violence or threat of violence or coercion resulting in physical, sexual or psychological issues. There is extensive literature highlighting health problems, demographic and inter generation consequences because of gender-based violence, this has now been recognized as a global pandemic and domestic violence is the most common type of gender-based violence (Wilson Center). In spite of it being recognized as a criminal offense under the Indian Penal code (IPC 298-A) and Protection of Women from Domestic Violence Act 2005 (PWDVA), domestic violence continues to be a huge deterrence to women's empowerment.

Only one eligible woman per household was selected randomly for questions related to domestic violence which is in accordance with World Health Organization's (WHO) ethical guidelines for collecting information related to domestic violence . Only 4% of the women in this sub-sample could not be interviewed because of lack of privacy [22]. Owing to this selection, domestic violence weights are used for analyses in sections pertaining to domestic violence, in order to make this sample nationally representative.

In order to study role-model effects on domestic violence, I first investigate the incidence of different types of domestic violence among married and never-married women in the 12 months period prior to the survey. For never-married women, information about any incidence of violence by anyone is collected.

4.1.2.4 Emotional violence

Emotional violence includes information related to whether the woman was humiliated, insulted, or threatened and the frequency of being afraid of her husband/partner.

These are dummy variables which are coded as 1 if the respondent did not face any type of emotional violence in the 12 months period before the survey was taken and 0 otherwise. Variable *"Ever any emotional violence"* is constructed based on responses to questions about humiliation, threats and insults.*"Frequency afraid of husband."* reports how frequently the respondent was afraid of husband or partner. This variable is assigned 1 if the respondent is never afraid of her husband/partner and 0 otherwise.

From (1), (2) and (3) in Table 4.9, there is no impact of female representation on decreasing the probability of being humiliated, insulted or threatened. Estimates in (4) show that if female representation increases by 10 percentage points, the probability of being afraid of her husband increases by 4.5 percentage points when linear margins of victory and individual controls are controlled for, estimates are significant for the rural sample as well and the effect is not dependent on the controls .

Overall, from the estimates in (5), female representation has no impact on facing emotional violence, however the frequency of being afraid of her husband increases.

Table 4.9 : Emotional Violence

	(1)		(2)		(3)	
	Overall Sample	Rural sample	Overall Sample	Rural sample	Overall Sample	Rural sample
Panel A: Control for Margins: Linear						
Individual Controls	0.041	0.069	0.026	0.017	-0.002	0.013
	(0.183)	(0.213)	(0.172)	(0.201)	(0.135)	(0.153)
Individual and District Controls	0.051	0.079	0.025	0.016	-0.004	0.012
	(0.182)	(0.212)	(0.172)	(0.201)	(0.134)	(0.152)
Panel B: Control for Margins: Second-order Polynomials						
Individual Controls	0.135	0.127	0.131	0.088	0.014	0.042
	(0.187)	(0.213)	(0.180)	(0.207)	(0.133)	(0.154)
Individual and District Controls	0.141	0.134	0.128	0.086	0.013	0.040
	(0.187)	(0.213)	(0.181)	(0.207)	(0.133)	(0.153)

Notes:(1)Spouse ever humiliated her.(2)Spouse ever insulted or made feel bad. (3)Spouse ever threatened with harm.

(continues)

Table 4.9 Continued

	(4)		(5)	
	Overall Sample	Rural sample	Overall Sample	Rural sample
Panel A: Control for Margins: Linear				
Individual Controls	-0.457(**)	-0.600(**)	-0.030	-0.097
	(0.229)	(0.256)	(0.219)	(0.255)
Individual and District Controls	-0.464(**)	-0.616(**)	-0.021	-0.090
	(0.229)	(0.257)	(0.219)	(0.255)
Panel B: Control for Margins: Second-order Polynomials				
Individual Controls	-0.535(**)	-0.633(**)	0.081	0.029
	(0.236)	(0.261)	(0.225)	(0.261)
Individual and District Controls	-0.540(**)	-0.645(**)	0.086	0.032
	(0.236)	(0.261)	(0.225)	(0.260)

Notes: Robust standard errors clustered at the cluster level are reported between parentheses. Close elections are defined as those in which the winner won over the runner-up by less than 5 percent of votes. Weighted with IPUMS-DHS weights. (4)Frequency afraid of husband. (5)Ever any emotional violence.* ($p < 0.10$) , **($p < 0.05$) , *** ($p < 0.01$)

4.1.2.5 Physical violence

Variables related to Physical violence section gather information whether the woman was pushed, shook or thrown something at, slapped, husband/partner twisted arm or pulled hair, punched with a fist or other harmful objects, tried to strangle or burn, kicked or dragged, threatened or attacked with knife/gun, physical injuries, burns, sprain, broken bones/teeth because of husband's/partner's actions and finally if the woman was hurt by anyone other than husband/partner.

Variable *"Ever experienced any severe violence"* indicates if the respondent has experienced "more sever" forms of violence like a partner/husband attempted to strangulate or burn, was attacked or threatened with a knife, gun or other weapons, was kicked, dragged or beat up by partner or husband. *"Ever experienced any less severe violence."* indicates if husband/partner pushed, shook or threw something at respondent, if the respondent was slapped, punched , kicked and if the arm was twisted or hair was pulled.

This classification of violence into "less severe" or "more severe" is not arbitrary but based on the classification scheme by WHO.

These are dummy variables which are coded as 1 if the respondent did not face any type of physical violence in the 12 months period before the survey was taken and 0 otherwise.

(1), (2) and (3) in table 4.10 shows that female elected representatives have no impact on the probability of being pushed, slapped or twisted arm, punched, choked and kicked. Results in (7) show that for the overall sample, female representatives decrease the probability of being threatened by a weapon like a knife/gun by 1 percentage point if representation increases by 10 percentage points. This estimate is significant at 90% confidence interval for both urban and rural sample when controlling for linear margins and individual as well as district controls, the results are also significant for rural sample when controlling for second-order polynomials of margins of victory.

Overall, from (8) and (9) we can see that female representation has no significant impact on the probability of facing physical violence, however, the probability of being threatened by a weapon decreases.

Table 4.10 : Physical Violence

	(1)		(2)		(3)	
	Overall Sample	Rural sample	Overall Sample	Rural sample	Overall Sample	Rural sample
Panel A: Control for Margins: Linear						
Individual Controls	0.004	-0.039	-0.093	-0.240	0.166	0.148
	(0.234)	(0.269)	(0.309)	(0.368)	(0.213)	(0.251)
Individual and District Controls	0.035	-0.006	-0.069	-0.216	0.187	0.165
	(0.232)	(0.267)	(0.309)	(0.368)	(0.211)	(0.250)
Panel B: Control for Margins: Second-order Polynomials						
Individual Controls	0.091	0.089	0.185	0.025	0.266	0.217
	(0.230)	(0.268)	(0.310)	(0.371)	(0.212)	(0.249)
Individual and District Controls	0.113	0.113	0.197	0.040	0.281	0.230
	(0.229)	(0.267)	(0.310)	(0.371)	(0.211)	(0.248)

Notes: (1)Spouse ever pushed, shook, or threw something.(2)Spouse ever slapped. (3)Spouse ever twisted her arm or pulled her hair.

(continues)

Table 4.10 Continued

	(4)		(5)		(6)	
	Overall Sample	Rural sample	Overall Sample	Rural sample	Overall Sample	Rural sample
Panel A: Control for Margins: Linear						
Individual Controls	-0.124	-0.072	-0.022	-0.006	0.200	0.233
	(0.178)	(0.210)	(0.072)	(0.090)	(0.175)	(0.209)
Individual and District Controls	-0.102	-0.053	-0.010	0.008	0.211	0.244
	(0.177)	(0.209)	(0.071)	(0.089)	(0.174)	(0.208)
Panel B: Control for Margins: Second-order Polynomials						
Individual Controls	0.024	0.048	0.0005	0.006	0.295(*)	0.302
	(0.177)	(0.207)	(0.073)	(0.087)	(0.176)	(0.208)
Individual and District Controls	0.040	0.063	0.009	0.017	0.303(*)	0.310
	(0.177)	(0.206)	(0.072)	(0.087)	(0.175)	(0.207)

Notes: (4)Spouse ever punched with fist or something harmful.(5)Spouse ever tried to strangle or burn.(6)Spouse ever kicked or dragged.

(continues)

Table 4.10 Continued

	(7)		(8)		(9)	
	Overall Sample	Rural sample	Overall Sample	Rural sample	Overall Sample	Rural sample
Panel A: Control for Margins: Linear						
Individual Controls	0.095(*)	0.104(*)	0.160	0.170	-0.134	-0.334
	(0.052)	(0.059)	(0.179)	(0.215)	(0.318)	(0.377)
Individual and District Controls	0.095(*)	0.105(*)	0.172	0.181	-0.102	-0.301
	(0.052)	(0.059)	(0.178)	(0.214)	(0.317)	(0.376)
Panel B: Control for Margins: Second-order Polynomials						
Individual Controls	0.078	0.115(*)	0.262	0.243	0.137	-0.086
	(0.048)	(0.060)	(0.181)	(0.214)	(0.320)	(0.383)
Individual and District Controls	0.078	0.115(*)	0.269	0.251	0.156	-0.063
	(0.048)	(0.060)	(0.180)	(0.213)	(0.320)	(0.382)

Notes: Robust standard errors clustered at the cluster level are reported between parentheses. Close elections are defined as those in which the winner won over the runner-up by less than 5 percent of votes. Weighted with IPUMS-DHS weights. (7)Spouse ever threatened or attacked with knife/gun.(8)Ever experienced any severe violence.(9)Ever experienced any less severe violence.* ($p < 0.10$),**($p < 0.05$),***($p < 0.01$)

4.1.2.6 Sexual violence

Sexual violence includes questions related to whether the spouse forced sex and other sexual acts when not wanted, whether the woman ever experienced any sexual violence from her husband/partner, whether the woman's husband/partner ever forced her with threats or in any other (non-physical) way to perform any sexual acts she did not want to do and if the previous partner ever forced sex or sexual acts.

"Ever experienced any sexual violence from the partner" variable is constructed based on responses of *"Spouse ever physically forced sex when not wanted"* and *"Spouse ever forced other sexual acts when not wanted."*These are dummy variables which are coded as 1 if the respondent did not face any type of sexual violence in the 12 months period before the survey was taken and 0 otherwise.

Estimates in (1) of table 4.11 show that female representation resulted in decreasing instances of forcing sex when not wanted by 2.6 percentage points on controlling for linear margins and individual controls. This result is significant for all controls as well as for rural samples.

Overall, from (5) we can see that by increasing female representation by 10 percentage points, the probability of facing any kind of sexual violence decreases by 3 percentage points when controlling for linear margins of victory and individual controls and the estimates are significant even for the rural sample and the effects are not dependent on the controls.

Table 4.11 : Sexual Violence

	(1)		(2)		(3)	
	Overall Sample	Rural sample	Overall Sample	Rural sample	Overall Sample	Rural sample
Panel A: Control for Margins: Linear						
Individual Controls	0.269(*)	0.335(*)	0.094	0.101	0.077	0.060
	(0.148)	(0.178)	(0.114)	(0.136)	(0.096)	(0.114)
Individual and District Controls	0.276(*)	0.345(*)	0.100	0.108	0.083	0.068
	(0.148)	(0.180)	(0.114)	(0.137)	(0.096)	(0.114)
Panel B: Control for Margins: Second-order Polynomials						
Individual Controls	0.293(**)	0.384(**)	0.105	0.144	0.080	0.106
	(0.148)	(0.177)	(0.114)	(0.137)	(0.094)	(0.113)
Individual and District Controls	0.296(**)	0.390(**)	0.109	0.149	0.084	0.111
	(0.149)	(0.178)	(0.114)	(0.138)	(0.094)	(0.113)

Notes: (1)Spouse ever physically forced sex when not wanted. (2)Spouse ever forced other sexual acts when not wanted. (3)Spouse ever coerced sex or sexual acts when not wanted.

(continues)

Table 4.11 Continued

	(4)		(5)	
	Overall Sample	Rural sample	Overall Sample	Rural sample
Panel A: Control for Margins: Linear				
Individual Controls	-0.434	-0.599	0.296(*)	0.320
	(0.659)	(0.603)	(0.165)	(0.200)
Individual and District Controls	-0.411	-0.563	0.311(*)	0.341(*)
	(0.660)	(0.593)	(0.165)	(0.201)
Panel B: Control for Margins: Second-order Polynomials				
Individual Controls	-0.518	-0.774	0.331(**)	0.388(*)
	(0.557)	(0.633)	(0.166)	(0.200)
Individual and District Controls	-0.473	-0.794	0.340(**)	0.402(**)
	(0.591)	(0.631)	(0.166)	(0.201)

Notes: Robust standard errors clustered at the cluster level are reported between parentheses. Close elections are defined as those in which the winner won over the runner-up by less than 5 percent of votes. Weighted with IPUMS-DHS weights. (4)Previous partner ever forced sex or sex acts.(5)Ever experienced any sexual violence from partner.
* ($p < 0.10$) , **($p < 0.05$) , * * *($p < 0.01$)

4.1.2.7 Domestic violence attitude

This section is the extension of understanding the role-model effect of female politicians on social norms, here it specifically examines the plausible channels for the incidence of domestic violence.

Potential channels for our findings could be that having a female elected politician in the district changes gender norms, thus changing beliefs on gender equality [22] and making women less tolerant of violence. Such norms relate to the justification of violence against women if she argues with a man, burns food, goes out without informing her husband/partner, refuses to have sex, neglects children, commits infidelity and of she is disrespectful towards in-laws. Rejection of such norms indicates an improved sense of equality and empowerment and hence a positive role-model effect of the presence of female politicians.

The variables are dummy variables that take the value 1 if wife-beating is not justified and 0 otherwise.

Overall, from table 4.12, there is no consistent impact of female representatives in improving gender norms, the only significant results are seen for attitudes related to justifying domestic violence if the wife neglects kids or disrespects in-laws when controlling for second-order margins of victory polynomials along with individual and district controls- a 10 percentage point increase in female representation results in decreasing the probability of justifying domestic violence by 5.5 and 6.4 percentage points respectively.

Table 4.12 : Domestic Violence Attitudes

	(1)		(2)		(3)	
	Overall Sample	Rural sample	Overall Sample	Rural sample	Overall Sample	Rural sample
Panel A: Control for Margins: Linear						
Individual Controls	-0.122	-0.394	0.076	-0.037	-0.283	-0.392
	(0.267)	(0.315)	(0.245)	(0.302)	(0.255)	(0.305)
Individual and District Controls	-0.069	-0.338	0.099	-0.022	-0.251	-0.362
	(0.265)	(0.313)	(0.243)	(0.301)	(0.252)	(0.303)
Panel B: Control for Margins: Second-order Polynomials						
Individual Controls	0.138	-0.160	0.285	0.181	-0.103	-0.236
	(0.265)	(0.316)	(0.244)	(0.298)	(0.257)	(0.307)
Individual and District Controls	0.172	-0.120	0.298	0.188	-0.085	-0.216
	(0.263)	(0.315)	(0.243)	(0.297)	(0.255)	(0.305)

Notes: (1)Attitude to wife beating: Justified if woman argues with him.(2)Attitude to wife beating: Justified if woman burns food.(3)Attitude to wife beating: Justified if woman goes out without telling him.

(continues)

Table 4.12 Continued

	(4)		(5)	
	Overall Sample	Rural sample	Overall Sample	Rural sample
Panel A: Control for Margins: Linear				
Individual Controls	0.087	-0.086	0.264	0.0314
	(0.185)	(0.228)	(0.270)	(0.322)
Individual and District Controls	0.109	-0.059	0.296	0.064
	(0.184)	(0.227)	(0.268)	(0.321)
Panel B: Control for Margins: Second-order Polynomials				
Individual Controls	0.282	0.108	0.553(**)	0.231
	(0.187)	(0.227)	(0.272)	(0.325)
Individual and District Controls	0.295	0.127	0.569(**)	0.253
	(0.186)	(0.226)	(0.271)	(0.324)

Notes: (4)Attitude to wife beating: Justified if woman refused to have sex.(5)Attitude to wife beating: Justified if woman neglects the children.

(continues)

Table 4.12 Continued

	(6)		(7)	
	Overall Sample	Rural sample	Overall Sample	Rural sample
Panel A: Control for Margins: Linear				
Individual Controls	-0.152	-0.338	0.439	0.203
	(0.253)	(0.299)	(0.299)	(0.351)
Individual and District Controls	-0.098	-0.289	0.492(*)	0.251
	(0.251)	(0.298)	(0.298)	(0.349)
Panel B: Control for Margins: Second-order Polynomials				
Individual Controls	0.080	-0.153	0.643(**)	0.352
	(0.253)	(0.298)	(0.301)	(0.353)
Individual and District Controls	0.120	-0.115	0.680(**)	0.389
	(0.251)	(0.297)	(0.299)	(0.351)

Notes: Robust standard errors clustered at the cluster level are reported between parentheses. Close elections are defined as those in which the winner won over the runner-up by less than 5 percent of votes. Weighted with IPUMS-DHS weights. (6)Attitude to wife beating: Justified if woman commits infidelity.(7)Attitude to wife beating: Justified if woman shows disrespect for in-laws.* ($p < 0.10$) , **($p < 0.05$) , * * *($p < 0.01$)

4.2 Discussion

With the data available and years of elections taken under consideration, the results show a mixed impact of female elected politicians on various outcomes. I first look at bargaining power which can also be seen as empowerment.

From section 4.1.2.1, despite having stringent criteria to what qualifies for women's autonomy in decision making, we see a positive and significant impact of role-model effects on bargaining power in not all but few aspects.

An interesting take-away from here is that when it comes to freedom of movement and decision-making on healthcare - despite being able to make the final decision with regards to her healthcare, this does not translate to being able to commute alone or get permission to visit healthcare center. In other words, women lack the freedom of movement to visit health centers by themselves. One reason for this could be that closer natal ties have a more pronounced impact on freedom of movement rather than role model effects of female politicians [33].

The impact on the autonomy of women making their own decisions with regards to using their own money (gift or support from family and not earnings) is more pronounced in the whole sample when compared to the rural sample. [34] hypothesize that household decision-making power of women differs from rural to urban regions and factors like education, age, husbands/partners education and employment play an important role in this regard. These factors along with the stringent criteria for autonomy could explain the null results in decision making power on making large household purchases and spending women's earnings, in section 4.3 we see that the positive significant results for final say on using own money fails robustness and provide insignificant results for all margins of victory/loss.

The positive and significant impact of a female politician's on final say on husbands' earnings can also be seen when controlling for 3%, 3.5% and 4% margins of victory/loss. This lends credence to the fact that this increase can be attributed to the positive role-model effects of female politicians.

Although they are some aspects of bargaining power like final say on husbands' earnings wherein we see a positive impact of female politicians hence proving the hypothesis of positive role model effects, I fail to establish the hypothesis in other cases of bargaining power.

Results in section 4.1.2.2 show that there is no significant impact of role-model effects of female politicians on financial literacy and empowerment. The only significant impact we see is in the probability of owning a bank or savings account that only woman uses. The impact is pronounced in the overall sample and insignificant in the rural sample. Since the proportion of women who have a bank or savings account tends to increase by age, education and wealth [22] - heterogeneity can be attributed to the fact that the urban populace tends to be more educated and wealthy when compared to their rural counterparts and hence a more pronounced impact is observed in the overall sample. Here too the hypothesis of positive role-model effects is not established in all aspects of financial literacy. These results are echoed for other margins of victory/loss in section 4.3

The results from section 4.1.2.3 show that the impact is mixed and not uniform across all outcomes of instances of domestic violence. The hypothesis of having positive role-model effects is seen in some outcomes of sexual violence and physical violence. However, in the case of emotional violence, we see the opposite effect i.e frequency of being afraid of the husband increases.

Emotional violence can be attributed to both husband and marital family [35] and in some cases, the violence is perpetrated by the family via husband. Controlling behavior of marital family and husband could also contribute towards the increase in the frequency of being afraid of husband as seen from the results of 4.1.2.1 which show that women's bargaining power does not show any improvement. The direction of effect is similar when controlling for different margins of victory/loss but insignificant.

Household wealth, woman's age at the time of marriage, education and perceiving abuse as legitimate are all found to be the determinants of domestic violence and abuse ([36]; [37]). Since, acceptance of domestic violence is also one of the contributing factors to its prevalence, in section 4.1.2.7 the results show that there is no significant impact of female representatives in improving or changing these attitudes.

Overall, results point to the notion that unequal and skewed gender norms are still pronounced in Indian society that inhabits women's empowerment and the hypothesis of role-model effects is established only in one aspect of bargaining power, interestingly we find that the frequency of being afraid of husband increases.

4.3 Robustness

This section supports the identification strategy by performing robustness checks using different margins of victory/loss as definitions for close elections. In tables 4.13 to 4.18, I test if the results are sensitive when using 2,3,3.5 and 4 percent as margin of victory/loss. For this part of the analysis, I present results only for the rural sample controlling for second-order polynomials of margins of victory/loss and individual and district controls. The 2SLS model is run in the same way except for using a different definition for instrument.

In table 4.13, unlike 2SLS results, the outcome of women being able to decide how to use her own money (not earnings) is not significant for all margins of victory/loss below 5% whereas the results are significant and positive for decision making of husbands earnings for margins of victory/loss of 3% to 4% and positive and significant for all margins of victory/loss for healthcare. The coefficients on other outcomes are not significant and overall, robustness checks support the results of 2SLS of bargaining power except for decision-making power of her own money.

Coefficients for financial literacy in table 4.14 are negative but insignificant for all margins, showing that when margins if victory/loss is very small (less than 5%) the presence of female politicians on financial inclusion, awareness of loan programs and usage of loans is very small and even negative but are insignificant just like the 2SLS results for rural sample.

Table 4.15 shows that the impact of female politicians on the incidence of emotional violence where margins of victory are very small (less than 5%), is negative for all types of emotional violence but not significant. Similar insignificant results can be seen in tables 4.16, 4.17 and table 4.18.

Table 4.13 : Bargaining Power

Dependant Variable	2%	3%	3.5%	4%
Woman has money only she decides how to use.	0.492	0.278	0.032	0.040
	(0.620)	(0.503)	(0.389)	(0.348)
Final say on making large household purchases.	0.094	0.363	0.286	0.195
	(0.353)	(0.291)	(0.204)	(0.186)
Final say on spending woman's earnings.	-1.098	0.047	-0.154	0.351
	(0.966)	(0.811)	(0.617)	(0.548)
Final say on spending husband's earnings.	0.542	0.743(***)	0.539(**)	0.508(***)
	(0.350)	(0.273)	(0.221)	(0.195)
Final say on woman's health care.	0.965(*)	0.716(*)	0.721(**)	0.587(**)
	(0.507)	(0.387)	(0.286)	(0.249)
Can visit health center/hospital alone.	0.593	0.273	0.295	0.242
	(0.687)	(0.507)	(0.363)	(0.344)
Can leave town alone.	-1.602(**)	-0.864	-0.256	-0.0762
	(0.693)	(0.532)	(0.387)	(0.359)
Barrier to woman's health care: Getting permission.	0.276	0.0673	0.026	-0.069
	(0.173)	(0.155)	(0.132)	(0.130)

Notes: Robust standard errors clustered at the cluster level are reported between parentheses. The sample is limited to rural residents and controlled for second order polynomials of margins of victory/loss. Weighted with IPUMS-DHS weights.

* $(p < 0.10)$,** $(p < 0.05)$,*** $(p < 0.01)$

Table 4.14 : Financial Literacy

Dependant Variable	2%	3%	3.5%	4%
Respondent has account at bank or other financial institution.	-0.242	-0.169	-0.049	0.004
	(0.596)	(0.509)	(0.375)	(0.326)
Knows of loan programs for women to start a business.	1.184	-0.106	-0.413	-0.076
	(0.758)	(0.551)	(0.404)	(0.372)
Ever received a loan to start a business.	-0.092	0.065	-0.130	-0.119
	(0.611)	(0.551)	(0.545)	(0.447)

Notes: Robust standard errors clustered at the cluster level are reported between parentheses. The sample is limited to rural residents and controlled for second order polynomials of margins of victory/loss. Weighted with IPUMS-DHS weights

* ($p < 0.10$) , **($p < 0.05$) , ***($p < 0.01$)

Table 4.15 : Emotional Violence

Dependant Variable	2%	3%	3.5%	4%
Spouse ever humiliated her.	0.371	-0.177	-0.191	-0.206
	(0.395)	(0.300)	(0.226)	(0.204)
Spouse ever insulted or made feel bad.	0.208	0.188	-0.018	-0.133
	(0.454)	(0.155)	(0.272)	(0.227)
Spouse ever threatened with harm.	-0.093	-0.184	-0.094	-0.130
	(0.312)	(0.239)	(0.177)	(0.167)
Frequency afraid of husband.	-0.461	-0.257	-0.093	-0.114
	(0.524)	(0.419)	(0.319)	(0.275)
Ever any emotional violence.	0.328	-0.125	-0.155	-0.296
	(0.547)	(0.407)	(0.306)	(0.270)

Notes: Robust standard errors clustered at the cluster level are reported between parentheses. The sample is limited to rural residents and controlled for second order polynomials of margins of victory/loss. Weighted with IPUMS-DHS weights

* ($p < 0.10$) , **($p < 0.05$) , ***($p < 0.01$)

Table 4.16 : Physical Domestic Violence

Dependant Variable	2%	3%	3.5%	4%
Spouse ever pushed, shook, or threw something.	-0.558	-0.286	-0.276	-0.433
	(0.446)	(0.455)	(0.359)	(0.316)
Spouse ever slapped.	-2.025(***)	-0.686	0.007	-0.188
	(0.666)	(0.579)	(0.470)	(0.440)
Spouse ever twisted her arm or pulled her hair.	-0.100	-0.019	0.129	0.001
	(0.469)	(0.468)	(0.365)	(0.309)
Spouse ever punched with fist or something harmful.	-0.047	0.012	0.058	-0.062
	(0.367)	(0.392)	(0.307)	(0.259)
Spouse ever tried to strangle or burn.	-0.056	-0.272	-0.209	-0.171
	(0.157)	(0.189)	(0.141)	(0.110)
Spouse ever kicked or dragged.	-0.069	-0.054	0.077	-0.020
	(0.352)	(0.380)	(0.296)	(0.253)
Spouse ever threatened or attacked with knife/gun.	0.095	0.087	0.065	0.064
	(0.092)	(0.080)	(0.063)	(0.052)
Ever experienced any severe violence.	-0.162	-0.140	0.008	-0.073
	(0.366)	(0.382)	(0.296)	(0.254)
Ever experienced any less severe violence.	-1.847(***)	-0.457	0.026	-0.304
	(0.689)	(0.587)	(0.474)	(0.451)

Notes: Robust standard errors clustered at the cluster level are reported between parentheses. The sample is limited to rural residents and controlled for second order polynomials of margins of victory/loss. Weighted with IPUMS-DHS weights

* ($p < 0.10$) , **($p < 0.05$) , ***($p < 0.01$)

Table 4.17 : Sexual Violence

Dependant Variable	2%	3%	3.5%	4%
Spouse ever physically forced sex when not wanted.	-0.204	-0.122	-0.113	-0.122
	(0.268)	(0.297)	(0.253)	(0.212)
Spouse ever forced other sexual acts when not wanted.	-0.114	-0.096	-0.071	-0.104
	(0.194)	(0.259)	(0.201)	(0.169)
Spouse ever coerced sex or sexual acts when not wanted.	0.030	-0.148	-0.035	-0.154
	(0.152)	(0.186)	(0.141)	(0.121)
Previous partner ever forced sex or sex acts.	0.641	-0.890	-0.459	-2.258(*)
	(0.772)	(0.940)	(0.547)	(1.195)
Ever experienced any sexual violence from partner.	-0.302	-0.134	-0.194	-0.283
	(0.297)	(0.318)	(0.268)	(0.229)

Notes: Robust standard errors clustered at the cluster level are reported between parentheses. The sample is limited to rural residents and controlled for second order polynomials of margins of victory/loss. Weighted with IPUMS-DHS weights

* ($p < 0.10$) , **($p < 0.05$) , ***($p < 0.01$)

Table 4.18 : Domestic Violence Attitudes

Dependant Variable	2%	3%	3.5%	4%
Attitude to wife beating: Justified if woman argues with him.	-0.807	0.130	-0.240	-0.785(**)
	(0.618)	(0.480)	(0.373)	(0.350)
Attitude to wife beating: Justified if woman burns food.	-0.715	-0.661	-0.350	-0.539(*)
	(0.582)	(0.407)	(0.319)	(0.289)
Attitude to wife beating: Justified if woman goes out without telling him.	-0.780	0.034	-0.096	-0.271
	(0.586)	(0.453)	(0.383)	(0.348)
Attitude to wife beating: Justified if woman refused to have sex.	-0.181	-0.266	-0.303	-0.440(*)
	(0.462)	(0.356)	(0.283)	(0.258)
Attitude to wife beating: Justified if woman neglects the children.	-0.821	0.657	0.392	0.029
	(0.682)	(0.490)	(0.386)	(0.350)
Attitude to wife beating: Justified if woman commits infidelity.	-0.154	-0.038	-0.247	-0.383
	(0.640)	(0.477)	(0.380)	(0.359)
Attitude to wife beating: Justified if woman shows disrespect forin-laws.	-0.451	0.118	0.113	0.114
	(0.747)	(0.563)	(0.435)	(0.420)

Notes: Robust standard errors clustered at the cluster level are reported between parentheses. The sample is limited to rural residents and controlled for second order polynomials of margins of victory/loss. Weighted with IPUMS-DHS weights

* ($p < 0.10$) , **($p < 0.05$) , ***($p < 0.01$)

4.3.1 RDD analyses of districts with single close election.

In this section, I use regression discontinuity (RD) design ([28]; [29]) that exploits a discontinuity on treatment assignment to analyze causal effect, in this way my approach is similar to [27].

For RDD analyses, I restrict my sample to only those districts that had a single man vs woman election. Such restriction reduces the number of districts to 222 districts that have single man-women elections during the period of analyses. About 25.52% of the sample belong to these districts. In such a case, a sharp regression discontinuity design can be applied. All the results provided in this section are restricted to optimal bandwidth 'h' obtained by using [28].

Since the districts have only a single female politician, we can expect the role model effect to be null or even negative. Any positive impact could be attributed to these politicians likely being more active than the rest of the female politicians [4] and hence more visible, thus inducing a stronger role-model effect.

The forcing variable is the win margin of elections, with c=0 being the cut-off. So, for those above the cut-off, the districts have elected a female state representative and form the treatment ($m_i = 1$). The districts below the cut-off have not elected a female representative and hence form the control group($m_i = 0$).

$$Y_{id} = \alpha + \beta M_{id} + f(x_{id}) + \varepsilon_{id}$$

$$\forall x_i \in (c-h, c+h)$$

where Y_i is the outcome in question, m_i is the treatment, x_i is the forcing variable and h is the bandwidth around the cut-off point.The control function $f(x_{id})$ is a continuous n-order polynomial function of our forcing variable on both sides of cut-off.

Forcing variable, win-margin is continuous at the discontinuity as seen from figure 4.1 and 4.2 and the estimates of McCrary test are insignificant.

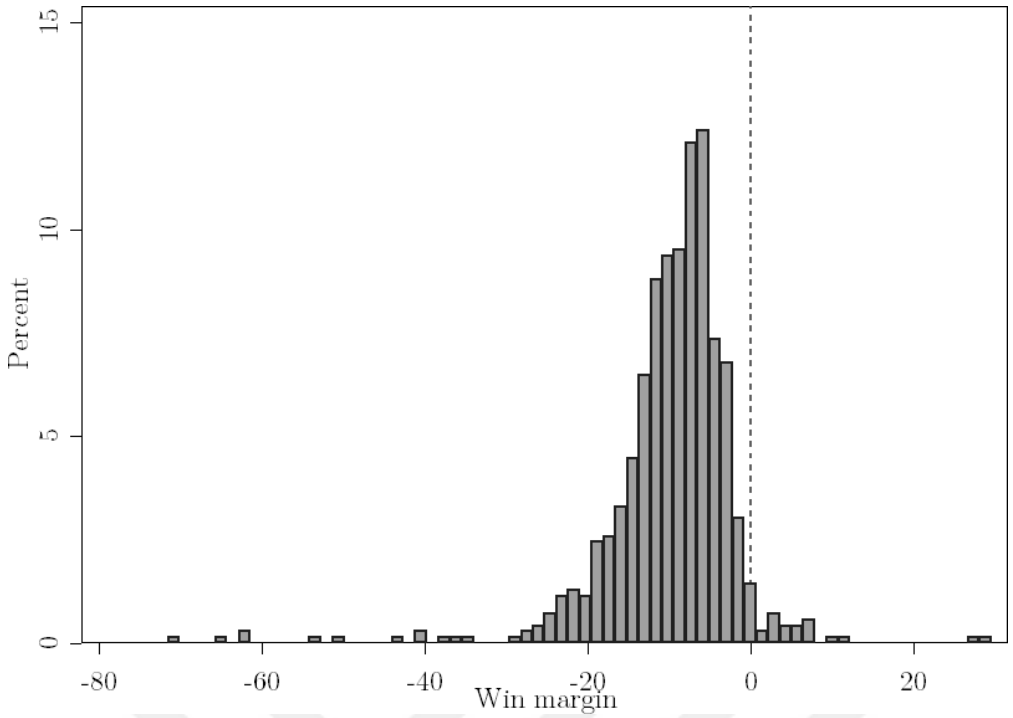

Figure 4.1 : Global Histogram of win-margin.

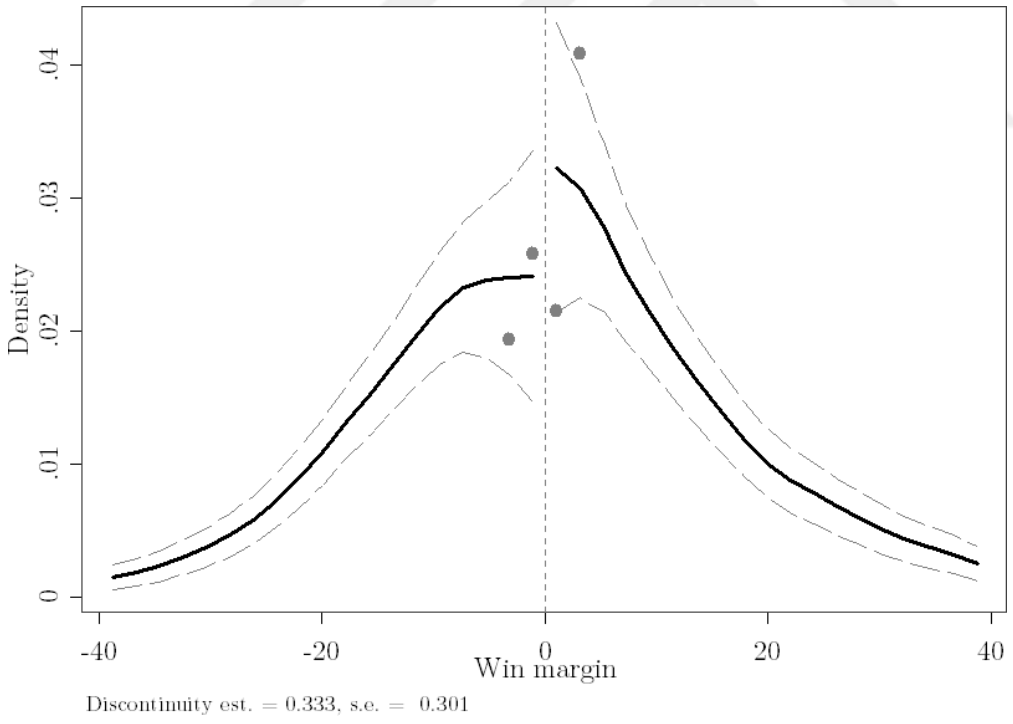

Figure 4.2 : Mc Crary Test.

4.3.1.1 Bargaining power

Table 4.19 provides the results of the impact of a single female elected representative on the bargaining power of women. The results in (1) are unlike those of IV. Here, we see that a single female elected politician has no significant impact on the probability of having a final say in using her own money. This means that as the number of female politicians increases in the district the role model effects increase with regards to bargaining power on her own money.

Estimates in (2), (3) and (4) show that a female elected representative in the district has no impact on making large household purchases, women's earnings and husbands' earnings. Estimates in (5) show that having a single female elected representative decreases the probability of having a final say on woman's healthcare by 1 percentage point in the rural sample when controlling for second-order polynomials of margins of victory/loss and individual and district controls. The results are not robust when controlling for first-order margins of victory/loss and individual controls.

Estimates on (6) and (7) show that a single female politician has no impact on a woman's mobility. Estimates in (8) show that a single female politician in the district results in a 2 percentage point increase in the probability of getting permission to visit the health centers. This estimate is similar to that of IV specification but unlike IV, the result is significant at 95% confidence interval for both rural and overall sample, however, the estimates are not robust when controlling for first-order margins of victory/loss and individual and district controls.

The role-model effect of female politicians on bargaining power in districts with a single female leader is insignificant and any significant effects are not robust when controlling for other polynomials or controls.

Table 4.19 : Bargaining Power

Dependant Variable:Fraction of constituencies in the district won by women	Optimal Bandwidth $\hat{h}$					
	(1)		(2)		(3)	
	Overall Sample	Rural sample	Overall Sample	Rural sample	Overall Sample	Rural sample
Panel A: Control for Margins: Linear						
Individual Controls	-0.047	-0.055	0.023	0.032	0.0002	0.041
	(0.037)	(0.038)	(0.024)	(0.023)	(0.058)	(0.059)
Individual and District Controls	-0.056	-0.057	0.022	0.031	0.011	0.041
	(0.038)	(0.038)	(0.024)	(0.023)	(0.055)	(0.057)
Panel B: Control for Margins: Second-order Polynomials						
Individual Controls	-0.007	-0.029	-0.014	0.030	0.018	-0.007
	(0.052)	(0.047)	(0.030)	(0.029)	(0.080)	(0.079)
Individual and District Controls	-0.017	-0.030	-0.016	0.034	0.023	0.010
	(0.052)	(0.047)	(0.030)	(0.029)	(0.077)	(0.076)

Notes: (1)Woman has money only she decides how to use.(2)Final say on making large household purchases. (3)Final say on spending woman's earnings.

(continues)

Table 4.19 Continued

Dependant Variable:Fraction of constituencies in the district won by women	Optimal Bandwidth $\hat{h}$			
	(4)		(5)	
	Overall Sample	Rural sample	Overall Sample	Rural sample
Panel A: Control for Margins: Linear				
Individual Controls	0.025	0.021	-0.001	-0.034
	(0.016)	(0.018)	(0.027)	(0.030)
Individual and District Controls	0.026(*)	0.021	-0.006	-0.050(*)
	(0.015)	(0.017)	(0.026)	(0.030)
Panel B: Control for Margins: Second-order Polynomials				
Individual Controls	0.017	0.030	-0.052	-0.102(***)
	(0.021)	(0.024)	(0.033)	(0.037)
Individual and District Controls	0.017	0.028	-0.049	-0.089(**)
	(0.021)	(0.025)	(0.035)	(0.042)

Notes: (4)Final say on spending husband's earnings. (5)Final say on woman's health care.

(continues)

Table 4.19 Continued

Dependant Variable:Fraction of constituencies in the district won by women	Optimal Bandwidth $\hat{h}$					
	(6)		(7)		(8)	
	Overall Sample	Rural sample	Overall Sample	Rural sample	Overall Sample	Rural sample
Panel A: Control for Margins: Linear						
Individual Controls	0.070(**)	0.038	0.036	-0.002	0.103(***)	0.100(***)
	(0.035)	(0.041)	(0.036)	(0.047)	(0.027)	(0.0300)
Individual and District Controls	0.050	0.020	0.026	-0.009	0.037	0.035
	(0.036)	(0.042)	(0.036)	(0.047)	(0.028)	(0.031)
Panel B: Control for Margins: Second-order Polynomials						
Individual Controls	0.017	0.039	0.016	0.003	0.217(***)	0.182(***)
	(0.054)	(0.063)	(0.054)	(0.063)	(0.041)	(0.043)
Individual and District Con-Trolls	0.251(***)	0.177(***)	0.018	0.031	0.008	-0.004
	(0.053)	(0.062)	(0.054)	(0.063)	(0.042)	(0.050)

Notes: Robust standard errors clustered at the cluster level are reported between parentheses. Close elections are defined as those in which the winner won over the runner-up by less than 5 percent of votes.(6)Can visit health center/hospital alone.(7)Can leave town alone. (8)Barrier to Healthcare: Getting Permission. Weighted with IPUMS-DHS weights.

* ($p < 0.10$) , **($p < 0.05$) , * * *($p < 0.01$)

4.3.1.2 Financial literacy

(1) in Table 4.20 shows the impact of having a single female legislator in the district on financial inclusion. Unlike in IV, RDD estimates are not significant for both the overall and rural sample. Estimates in (3) are negative and significant for the rural sample, when controlling for linear margins of victory/loss and individual and district controls when compared to insignificant results in IV but not robust for other specifications.

(2) in Table 4.20 shows the impact of having a female legislator on the awareness of loan programs available for women, targeting them, to start businesses. The table shows that having a female elected representative increases the probability of being aware of loan programs that specifically target women to start businesses. The impact is more pronounced in the overall sample than rural sample because the urban population is likely to be more educated and wealthy, however, the results are not robust when controlling for other specifications.

Table 4.20 : Financial Literacy

Dependant Variable:Fraction of constituencies in the district won by women	Optimal Bandwidth $\hat{h}$					
	(1)		(2)		(3)	
	Overall Sample	Rural sample	Overall Sample	Rural sample	Overall Sample	Rural sample
Panel A: Control for Margins: Linear						
Individual Controls	0.037	0.029	0.048	0.036	-0.023	-0.084(*)
	(0.034)	(0.033)	(0.047)	(0.050)	(0.044)	(0.045)
Individual and District Controls	0.056(*)	0.040	0.037	0.037	-0.041	-0.078(*)
	(0.034)	(0.032)	(0.047)	(0.049)	(0.042)	(0.045)
Panel B: Control for Margins: Second-order Polynomials						
Individual Controls	0.055	0.028	0.125(*)	0.089	0.041	-0.054
	(0.045)	(0.041)	(0.065)	(0.063)	(0.057)	(0.058)
Individual and District Controls	0.054	0.030	0.108(*)	0.083	0.029	-0.053
	(0.046)	(0.041)	(0.065)	(0.063)	(0.054)	(0.055)

Notes: Robust standard errors clustered at the cluster level are reported between parentheses. Close elections are defined as those in which the winner won over the runner-up by less than 5 percent of votes. Weighted with IPUMS-DHS weights. (1)Respondent has account at bank or other financial institution. (2)Knows of loan programs for women to start a business. (3)Ever received a loan to start a business.

* ($p < 0.10$) , **($p < 0.05$) , * * *($p < 0.01$)

4.3.1.3 Types of domestic violence

4.3.1.4 Emotional violence

Table 4.21 shows the impact of a single female elected representative in the district on emotional domestic violence. From (1), the estimates show that the probability of being humiliated decreases by 0.4 percentage points when controlling for linear margins of victory/loss and individual and district controls and 0.6 percentage points for second-order polynomial margins of victory/loss and individual controls. The estimate is significant for the overall sample at 95% confidence interval.

The estimates in (5) show that having a single female politician decreases the probability of facing emotional violence and is significant only for the overall sample. The hypothesis of having positive role-model effects is more prominent in the overall sample but insignificant in the rural sample.

Figure 4.3 and 4.4 illustrates the effect of the presence of female politicians on local women's probability of facing emotional violence.

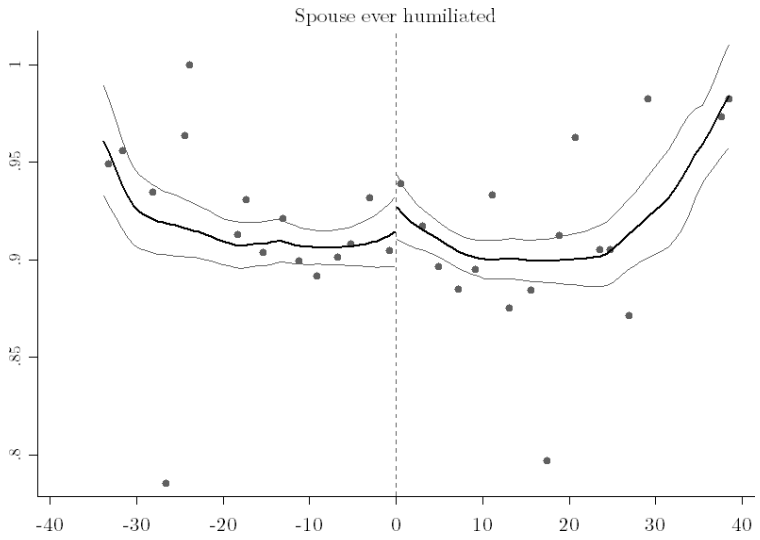

Figure 4.3 : Emotional Violence: Spouse ever Humiliated.

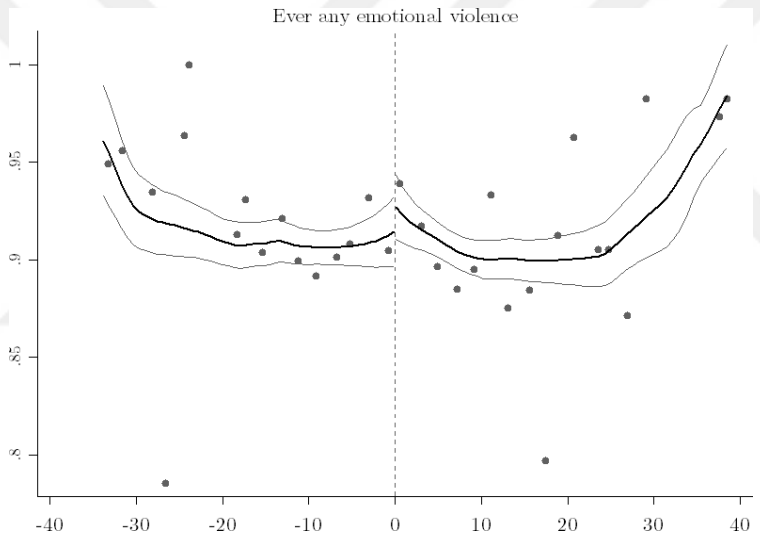

Figure 4.4 : Emotional violence: Ever any emotional violence.

Table 4.21 : Emotional Violence

Dependant Variable:Fraction of constituencies in the district won by women	Optimal Bandwidth $\hat{h}$					
	(1)		(2)		(3)	
	Overall Sample	Rural sample	Overall Sample	Rural sample	Overall Sample	Rural sample
Panel A: Control for Margins: Linear						
Individual Controls	0.049(**)	0.006	0.044(*)	0.015	-0.002	0.0005
	(0.024)	(0.023)	(0.023)	(0.026)	(0.016)	(0.018)
Individual and District Controls	0.044(*)	-0.002	0.040(*)	0.010	-0.003	-0.005
	(0.023)	(0.024)	(0.024)	(0.026)	(0.016)	(0.017)
Panel B: Control for Margins: Second-order Polynomials						
Individual Controls	0.064(*)	0.019	0.035	0.028	0.014	0.010
	(0.034)	(0.030)	(0.032)	(0.037)	(0.020)	(0.023)
Individual and District Controls	0.054(*)	0.026	0.033	0.028	0.014	0.008
	(0.032)	(0.030)	(0.031)	(0.036)	(0.020)	(0.024)

Notes:(1)Spouse ever humiliated her.(2)Spouse ever insulted or made feel bad. (3)Spouse ever threatened with harm.

(continues)

Table 4.21 Continued

Dependant Variable:Fraction of constituencies in the district won by women	Optimal Bandwidth $\hat{h}$			
	(4)		(5)	
	Overall Sample	Rural sample	Overall Sample	Rural sample
Panel A: Control for Margins: Linear				
Individual Controls	-0.006	0.034	0.097(***)	-0.0004
	(0.029)	(0.037)	(0.035)	(0.030)
Individual and District Controls	-0.010	0.036	0.089(**)	-0.006
	(0.029)	(0.036)	(0.033)	(0.031)
Panel B: Control for Margins: Second-order Polynomials				
Individual Controls	0.043	0.057	0.127(***)	0.024
	(0.039)	(0.047)	(0.043)	(0.041)
Individual and District Controls	0.041	0.058	0.120(***)	0.029
	(0.039)	(0.047)	(0.041)	(0.041)

Notes: Robust standard errors clustered at the cluster level are reported between parentheses. Close elections are defined as those in which the winner won over the runner-up by less than 5 percent of votes.Weighted with IPUMS-DHS weights. (4)Frequency afraid of husband.(5)Ever any emotional violence. * ($p < 0.10$) , **($p < 0.05$) , ***($p < 0.01$)

4.3.1.5 Physical violence

From (1) and (2) of table 4.22, there is no significant impact of a single female representative on the probability of being pushed and slapped. However, the estimates are significant in (3) show that the probability of having their arms twisted or hair pulled decreases by 0.8 and 0.7 percentage points for the overall and rural samples respectively, when controlling for second-order margins of victory/loss and individual controls. Figure 4.5 illustrates the effect of the presence of female politicians on local women's probability of facing this kind of violence.

The impact of a single female politician on the probability of being kicked or dragged decreases by 0.4 percentage points, the results are significant for the overall sample alone and fail when controlling for second-order margins.

Other significant results can be seen in (4) - the probability of being threatened with knife/gun decreases by 0.1 to 0.2 percentage points in the overall and rural sample. The coefficients are smaller when compared to IV results and are not robust when controlling for higher-order polynomials.

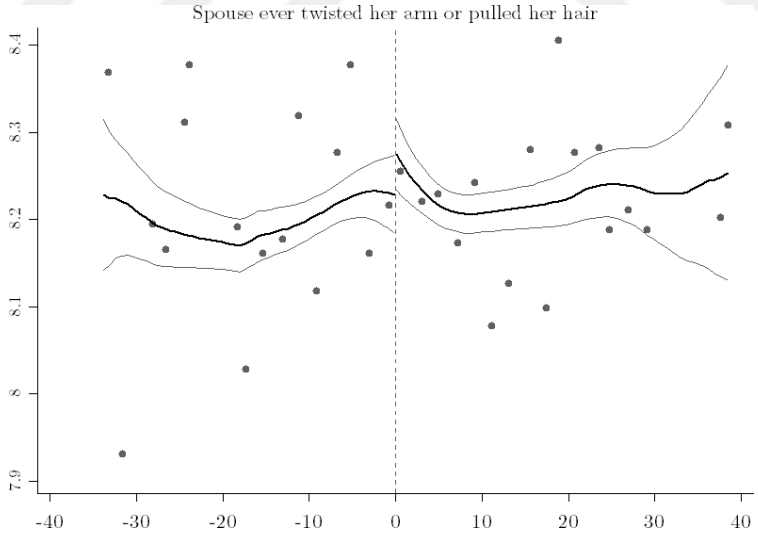

Figure 4.5 : Physical Violence: Spouse ever twisted arm or pulled hair.

Table 4.22 : Physical Violence

Dependant Variable:Fraction of constituencies in the district won by women	Optimal Bandwidth $\hat{h}$					
	(1)		(2)		(3)	
	Overall Sample	Rural sample	Overall Sample	Rural sample	Overall Sample	Rural sample
Panel A: Control for Margins: Linear						
Individual Controls	0.020	-0.001	0.053	0.035	0.043(*)	0.025
	(0.028)	(0.030)	(0.041)	(0.053)	(0.025)	(0.029)
Individual and District Controls	0.017	-0.008	0.053	0.026	0.036	0.020
	(0.028)	(0.030)	(0.040)	(0.051)	(0.025)	(0.028)
Panel B: Control for Margins: Second-order Polynomials						
Individual Controls	0.024	0.024	-0.030	-0.061	0.088(**)	0.0713(**)
	(0.038)	(0.042)	(0.057)	(0.064)	(0.034)	(0.035)
Individual and District Controls	0.002	0.011	-0.048	-0.062	0.074(**)	0.063(*)
	(0.036)	(0.040)	(0.054)	(0.062)	(0.032)	(0.035)

Notes: (1)Spouse ever pushed, shook, or threw something.(2)Spouse ever slapped. (3)Spouse ever twisted her arm or pulled her hair.

(continues)

Table 4.22 Continued

Dependant Variable:Fraction of constituencies in the district won by women	Optimal Bandwidth $\hat{h}$					
	(4)		(5)		(6)	
	Overall Sample	Rural sample	Overall Sample	Rural sample	Overall Sample	Rural sample
Panel A: Control for Margins: Linear						
Individual Controls	-0.001	0.020	-0.012	-0.015	0.047(**)	0.031
	(0.021)	(0.024)	(0.011)	(0.012)	(0.022)	(0.026)
Individual and District Controls	-0.004	0.014	-0.014	-0.017	0.045(**)	0.029
	(0.021)	(0.023)	(0.011)	(0.012)	(0.022)	(0.026)
Panel B: Control for Margins: Second-order Polynomials						
Individual Controls	0.043	0.036	0.007	0.001	0.056(*)	0.051
	(0.032)	(0.032)	(0.012)	(0.015)	(0.032)	(0.037)
Individual and District Controls	0.030	0.034	0.007	0.001	0.044	0.041
	(0.029)	(0.031)	(0.011)	(0.014)	(0.028)	(0.034)

Notes: (4)Spouse ever punched with fist or something harmful.(5)Spouse ever tried to strangle or burn.(6)Spouse ever kicked or dragged.

(continues)

Table 4.22 Continued

Dependant Variable:Fraction of constituencies in the district won by women	Optimal Bandwidth $\hat{h}$					
	(4)		(5)		(6)	
	Overall Sample	Rural sample	Overall Sample	Rural sample	Overall Sample	Rural sample
Panel A: Control for Margins: Linear						
Individual Controls	0.013(*)	0.018(**)	0.033	0.024	0.052	0.026
	(0.007)	(0.008)	(0.021)	(0.025)	(0.041)	(0.055)
Individual and District Controls	0.012(*)	0.017(**)	0.032	0.021	0.043	0.012
	(0.007)	(0.008)	(0.021)	(0.025)	(0.040)	(0.052)
Panel B: Control for Margins: Second-order Polynomials						
Individual Controls	0.012	0.011	0.065(**)	0.059	-0.029	-0.054
	(0.008)	(0.009)	(0.032)	(0.038)	(0.059)	(0.066)
Individual and District Controls	0.012	0.010	0.053(*)	0.051	-0.054	-0.056
	(0.007)	(0.007)	(0.029)	(0.035)	(0.055)	(0.064)

Notes: Robust standard errors clustered at the cluster level are reported between parentheses. Close elections are defined as those in which the winner won over the runner-up by less than 5 percent of votes. Weighted with IPUMS-DHS weights. (7)Spouse ever threatened or attacked with knife/gun.(8)Ever experienced any severe violence.(9)Ever experienced any less severe violence.

* ($p < 0.10$) , **($p < 0.05$) , ***($p < 0.01$)

4.3.1.6 Sexual violence

RDD results for the impact of a single female politician in the district on sexualviolence is insignificant for all outcomes related to this section.

Table 4.23 : Sexual Violence

Dependant Variable:Fraction of constituencies in the district won by women	Optimal Bandwidth $\hat{h}$					
	(1)		(2)		(3)	
	Overall Sample	Rural sample	Overall Sample	Rural sample	Overall Sample	Rural sample
Panel A: Control for Margins: Linear						
Individual Controls	0.013	0.006	0.015	0.016	0.007	-0.0002
	(0.017)	(0.021)	(0.013)	(0.016)	(0.010)	(0.011)
Individual and District Controls	0.011	0.006	0.010	0.016	0.006	0.002
	(0.017)	(0.021)	(0.013)	(0.016)	(0.011)	(0.011)
Panel B: Control for Margins: Second-order Polynomials						
Individual Controls	0.006	0.016	0.013	0.012	0.001	0.002
	(0.024)	(0.028)	(0.016)	(0.018)	(0.012)	(0.013)
Individual and District Controls	-0.002	0.011	0.013	0.009	0.0004	0.004
	(0.024)	(0.027)	(0.016)	(0.018)	(0.012)	(0.013)

Notes: (1)Spouse ever physically forced sex when not wanted. (2)Spouse ever forced other sexual acts when not wanted. (3)Spouse ever coerced sex or sexual acts when not wanted.

(continues)

Table 4.23 Continued

Dependant Variable:Fraction of constituencies in the district won by women	Optimal Bandwidth $\hat{h}$			
	(4)		(5)	
	Overall Sample	Rural sample	Overall Sample	Rural sample
Panel A: Control for Margins: Linear				
Individual Controls	0.126	-0.013	0.013	0.004
	(0.092)	(0.121)	(0.018)	(0.023)
Individual and District Controls	0.098	-0.107	0.012	0.003
	(0.127)	(0.120)	(0.018)	(0.022)
Panel B: Control for Margins: Second-order Polynomials				
Individual Controls	0.117	0.172	0.006	0.013
	(0.094)	(0.106)	(0.022)	(0.029)
Individual and District Controls	0.144	0.019	0.005	0.007
	(0.144)	(0.108)	(0.022)	(0.029)

Notes: Robust standard errors clustered at the cluster level are reported between parentheses. Close elections are defined as those in which the winner won over the runner-up by less than 5 percent of votes. (4)Previous partner ever forced sex or sex acts.(5)Ever experienced any sexual violence from partner.

* $(p < 0.10), **(p < 0.05), ***(p < 0.01)$

4.3.1.7 Domestic violence attitudes

The impact of a single female politician on domestic violence attitudes is mixed and is mostly significant when controlling for linear margins of victory/loss and fail for high-order polynomials.

Table 4.24 shows the impact of having a female elected representative on domestic violence attitude, reference level is if wife-beating is justified and 1 if it is not justified. We can see that having a single female representative in the district does not have anyeffect on domestic violence attitudes in women. The only significant results are for (3)and (5) but are not robust for first-order polynomials.

Table 4.24 : Domestic Violence Attitudes

Dependant Variable:Fraction of constituencies in the district won by women	Optimal Bandwidth $\hat{h}$					
	(1)		(2)		(3)	
	Overall Sample	Rural sample	Overall Sample	Rural sample	Overall Sample	Rural sample
Panel A: Control for Margins: Linear						
Individual Controls	0.073(*)	0.056	0.077(**)	0.062(*)	0.064(*)	0.062
	(0.038)	(0.041)	(0.031)	(0.036)	(0.039)	(0.039)
Individual and District Controls	0.058	0.063	0.058(*)	0.061(*)	0.052	0.047
	(0.037)	(0.041)	(0.030)	(0.035)	(0.034)	(0.039)
Panel B: Control for Margins: Second-order Polynomials						
Individual Controls	-0.0002	-0.022	-0.0003	-0.017	-0.035	-0.062
	(0.052)	(0.058)	(0.043)	(0.049)	(0.052)	(0.053)
Individual and District Controls	0.006	-0.018	-0.003	-0.020	-0.039	-0.078
	(0.051)	(0.057)	(0.042)	(0.049)	(0.051)	(0.053)

Notes: (1)Attitude to wife beating: Justified if woman argues with him.(2)Attitude to wife beating: Justified if woman burns food.(3)Attitude to wife beating: Justified if woman goes out without telling him.

(continues)

Table 4.24 Continued

Dependant Variable:Fraction of constituencies in the district won by women	Optimal Bandwidth $\hat{h}$			
	(4)		(5)	
	Overall Sample	Rural sample	Overall Sample	Rural sample
Panel A: Control for Mar-gins: Linear				
Individual Controls	0.078(***)	0.008	0.149(***)	0.080(**)
	(0.029)	(0.034)	(0.036)	(0.038)
Individual and District Controls	0.067(**)	-0.002	0.153(***)	0.089(**)
	(0.028)	(0.032)	(0.036)	(0.038)
Panel B: Control for Margins: Second-order Polynomials				
Individual Controls	0.030	-0.031	0.076	0.068
	(0.038)	(0.042)	(0.054)	(0.050)
Individual and District Controls	0.030	-0.031	0.052	0.083
	(0.037)	(0.042)	(0.053)	(0.051)

Notes: (4)Attitude to wife beating: Justified if woman refused to have sex.(5)Attitude to wife beating: Justified if woman neglects the children.

(continues)

Table 4.24 Continued

Dependant Variable:Fraction of constituencies in the district won by women	Optimal Bandwidth $\hat{h}$			
	(4)		(5)	
	Overall Sample	Rural sample	Overall Sample	Rural sample
Panel A: Control for Margins: Linear				
Individual Controls	0.076(**)	0.056	0.145(***)	0.089(**)
	(0.033)	(0.037)	(0.036)	(0.040)
Individual and District Controls	0.080(**)	0.067(*)	0.158(***)	0.102(**)
	(0.033)	(0.038)	(0.036)	(0.040)
Panel B: Control for Margins: Second-order Polynomials				
Individual Controls	0.031	0.005	0.089(*)	0.047
	(0.048)	(0.050)	(0.051)	(0.053)
Individual and District Controls	0.030	0.004	0.074	0.037
	(0.047)	(0.050)	(0.052)	(0.054)

Notes: Robust standard errors clustered at the cluster level are reported between parentheses. Close elections are defined as those in which the winner won over the runner-up by less than 5 percent of votes. Weighted with IPUMS-DHS weights. (6)Attitude to wife beating: Justified if woman commits infidelity.(7)Attitude to wife beating: Justified if woman shows disrespect for in-laws.

* $(p < 0.10), **(p < 0.05), ***(p < 0.01)$

Overall, my sharp RDD results show the effect when female politicians that won against their male counterparts by a very small margin of victory, in districts with a single man vs woman election. The difference between IV and RDD results could be attributed to the fact that female representatives who won in these districts are likely to be more active or effective than the average female politician [4] and hence more visible, thus inducing a stronger role-model effect that translates to decreasing the probability of facing any emotional violence or being humiliated. The significant results in other outcomes are not robust when controlling for other polynomials and control.

5. CONCLUSION

5.1 Conclusion

This paper set out to investigate the impact of female legislators on bargaining power, financial literacy, domestic violence attitudes and incidence of different types of domestic violence. To the best of my knowledge, this paper is the first to undertake the task of quantifying such effects. I find that female representation led to an improvement in the probability to make decisions on how to use woman's own money and decisions on healthcare both in the overall and rural samples however this improvement does not translate to improving freedom in mobility as seen by insignificant results on the ability to travel to healthcare center or outside town/village by herself.

With regards to the incidence of different types of domestic violence, the probability of facing any kind of sexual violence decreases and the frequency of being afraid of husband increases in both samples of analyses as there is no significant decrease in the incidence of physical violence, but there is a decrease in the probability of being threatened by a weapon like a knife/gun by a small amount. The results on domestic violence attitudes show that there is no impact of exposure to the female leader on changing domestic violence attitudes.

Robustness supports the results of 2SLS and sharp RDD results lend support to the hypothesis that any positive significant results are because female representatives in districts with single man vs female elections are likely to be more active or effective than the average female politician.

Overall, my results- provide some evidence in favor of role-model effects, mainly in improving bargaining power but not in changing gender norms. Results with regards to gender norms show that in the context of a country like India, gender norms are deeply entrenched into the psyche of society that mere exposure to female leaders alone will not induce a change. As debates about the reservation of seats for women in state

assemblies are still not settled yet, such analyses help convey that politicians can have an impact not only in the sphere of policy decisions but also in empowering the intra-household decision-making capability of women.

One caveat of this analysis is that I have documented a short-term impact of exposure to female politicians on women aged 15-49 years from 2010 to 2014, Future analyses should focus on capturing the long-term effects of female politicians.

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APPENDICES

APPENDIX A.1 : Covariate Continuity Test- Rural Population
APPENDIX A.2 : Covariate Continuity Test- Urban Population
APPENDIX B.1 : Covariate Continuity Test- Literacy
APPENDIX B.2 : Covariate Continuity Test- Scheduled Tribes

APPENDIX A.1

This section contains the graphs for testing the continuity of covariates that support internal validity. The statistic for testing the jumps in covariates are not significant and hence the control variables are not manipulated and hence are not different from each other.

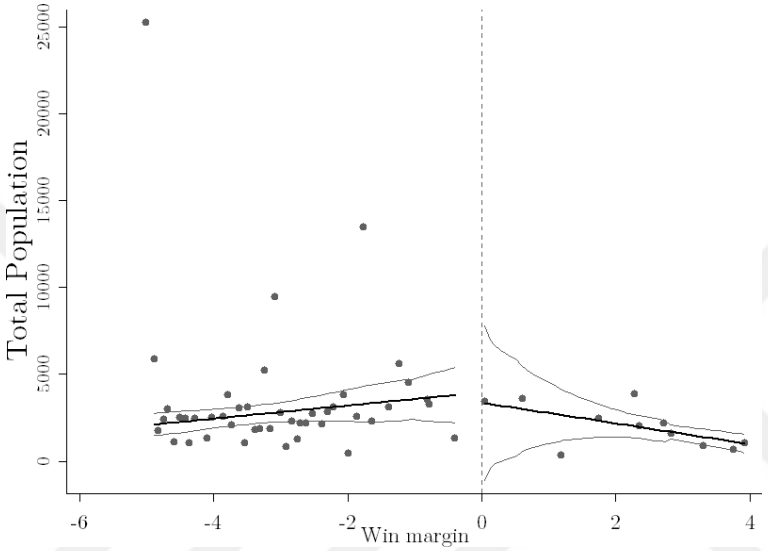

Figure A.1 : Covariate Continuity Test- Total Population.

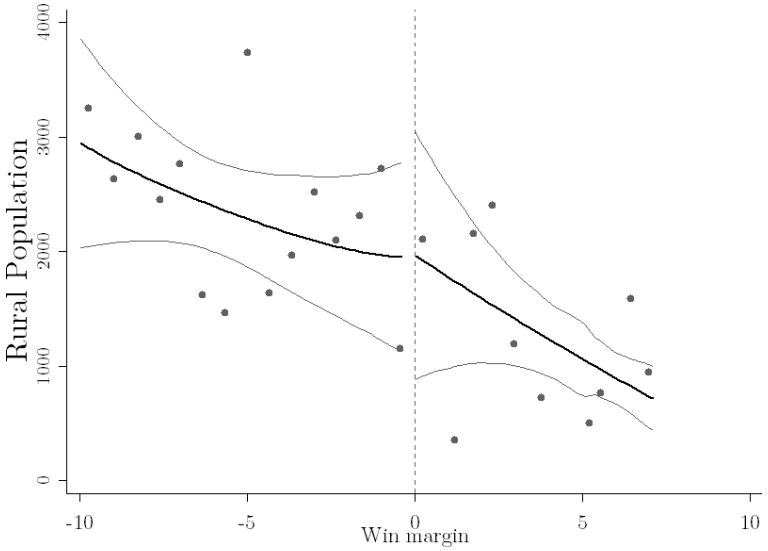

Figure A.2 : Covariate Continuity Test- Rural Population.

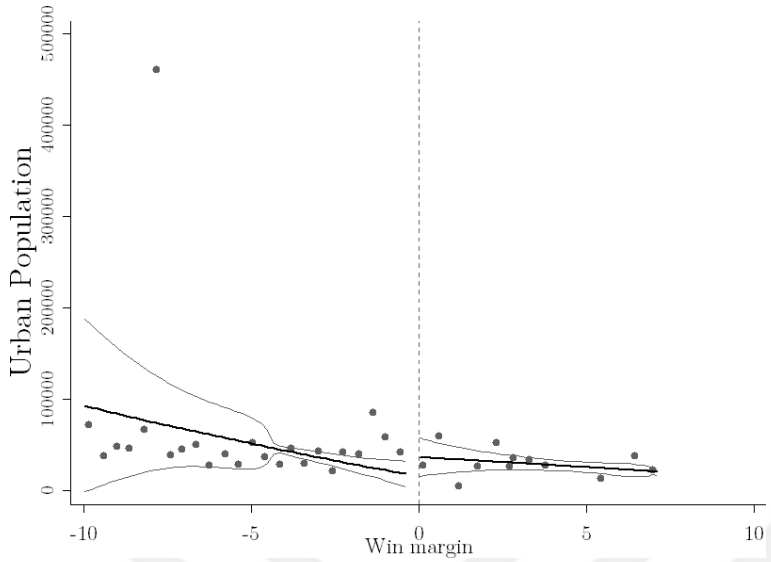

Figure A.3 : Covariate Continuity Test- Urban Population.

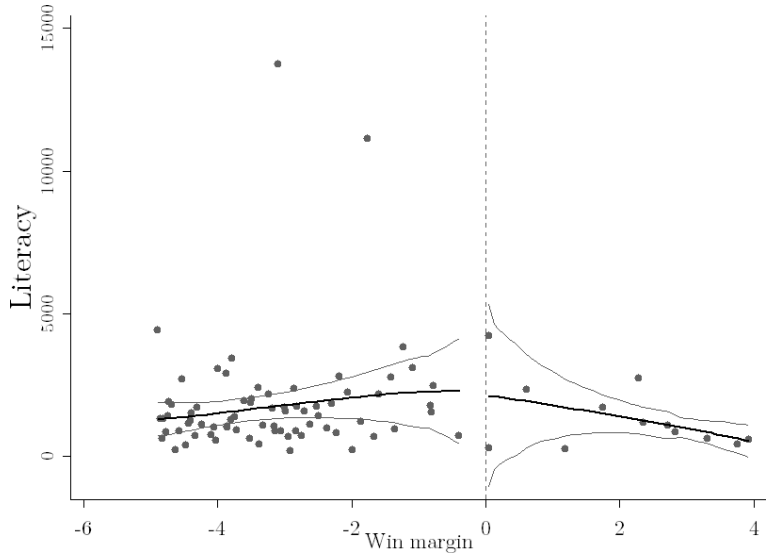

Figure A.4 : Covariate Continuity Test- Literacy.

CURRICULUM VITAE

Name Surname **:** Apoorva Orsu

EDUCATION **:**

- **B.Tech.** **:** 2013, Jawaharlal Nehru Technological University

PROFESSIONAL EXPERIENCE AND REWARDS:

- 2013-2015 Software Engineer at Accenture Services PVT LTD.,
- Supported in building bridges between multicultural and geographically dispersed technology and business divisions to eliminate conflicts, improve understanding, cooperation, and drive overall project results.
- Proficient in SDLC and AGILE methodologies.
- Knowledge of Data warehouse and Business Intelligence (BI) stack.
- Experienced working in MSPS, SPLUNK to enable reporting and analytics.
- Client Champion award (Accenture Celebrates Excellence Awards (ACE), 2015) for consistently displaying ownership and undivided focus on maximizing value to the client through contribution to the project by delivering a client-centric outcome.

PUBLICATIONS, PRESENTATIONS AND PATENTS ON THE THESIS:

- **Orsu. A.,** 2022. Female Politicians and Role-model Effects: Evidence from India. *International Graduate Research Symposium - IGRS'22*, June 1–3, 2022 Istanbul, Turkey. (Presentation Instance)

A. ORSU	FEMALE POLITICIANS AND ROLE-MODEL EFFECTS: EVIDENCE FROM INDIA	2022