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Political role models and child marriage in India

Carolina Castilla

Colgate University, Hamilton, New York

Correspondence
Department of Economics, Colgate University, 13 Oak Drive, Hamilton, NY 13346.
Email: ccastilla@colgate.edu

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Abstract
Drawing data from the most recent wave of the India Human Development Survey and the year of the first election with reserved seats for women, I estimate the effect of the Panchayati Raj institutions on child marriage. In India, marriage traditions dictate that two ceremonies take place: the wedding and the gauna ceremony. These differ in timing and purpose. After the wedding, the bride and groom do not necessarily live together. The gauna ceremony indicates the start of marital life and the consummation of the marriage. Results indicate that women in local government decrease the likelihood of child marriage, and delay the age at first marriage and the gauna ceremony. Delaying marriage has important policy implications for both the bride and her future children as it improves education, autonomy over fertility, and health. The results indicate that after 18 years of implementation, exposure to women in government can reduce the prevalence of child marriage.

1 | INTRODUCTION

The status of women in Indian society has not significantly improved despite India’s rapid growth. In 2015, India was placed in the lowest group of the United Nations Gender Development Index, which indicates a deviation of more than 10 percent from gender parity in the Human Development Index (UNDP, 2016). According to the 2011 census, only 65 percent of women in India were literate, compared with 82 percent of men (Iyer, Mani, Mishra, & Topalova, 2012). Strong gender norms and lack of opportunities hinder women’s ability to get an education, participate in the labor force, and make decisions over marriage and fertility. In India, arranged marriages are
still common practice, and young girls are matched as early as at a couple of years of age. The latest UNICEF report on the world prevalence of child marriage indicates that India has the largest number (33 percent) of child brides in the world. In an effort to decrease the prevalence of early marriage, in November of 2007 the Indian government enacted the Prohibition of Child Marriage Act. The Act establishes severe penalties for those engaging in child marriage, and allows the parties (children at the time of marriage) to get an annulment. The latest figures indicate that among women aged 20 to 49, 58 percent married before the legal age of 18, and over 25 percent married prior to turning 15, which is also below the legal age of consent in the country (UNICEF, 2014).

Child marriage has been found to have negative consequences on the young bride’s health, autonomy, economic opportunities, and her children’s health. Early marriage negatively affects the bride’s autonomy over contraceptive use and fertility resulting in a higher likelihood of early and high-risk pregnancies, being at risk of sexually transmitted infections, and experiencing intimate partner violence (Mathur, Greene, & Malhotra, 2003; Chari, Heath, Maertens, & Fatima, 2017; Raj, Saggurti, Balaiah, & Silverman, 2009; Svanemyr, Chandra-Mouli, Christiansen, & Mbizvo, 2012). Child marriage also makes young girls more vulnerable because it leads to lower schooling attainment and diminished opportunities to develop social networks (Chari et al., 2017; Field & Ambrus, 2008). Young brides are likely to have early pregnancies. Young age childbearing is associated with complications during pregnancy and delivery, which are leading causes of death among adolescent girls, in part because young mothers are less likely to seek care (Buchmann et al., 2017). Children born to young mothers are more likely to be born prematurely and underweight, are more prone to illness, and even later in life are more likely to be malnourished (Chari et al., 2017). Further, children resulting from early marriage are less likely to enrol in school, and attain lower reading, mathematics, and writing scores (Chari et al., 2017).

The main objective of this paper is to examine the effect of the Panchayati Raj institutions—which reserve seats at the district level for women Pradhans on a rotating basis—on child marriage. A Pradhan is the leader of a village panchayat. There are reasons for expecting district-level women Pradhans to have an effect on the practice of child marriage. There can be direct effects of policies to enforce the legal minimum of marriage by women in leadership positions. While evidence has been found that female elected officials shift policymaking towards increased investment in public goods preferred by women (Beaman et al., 2011; Chattopadhyay & Duflo, 2004a and 2004b), the authors argue in favor of changes in cultural norms. It is also possible that political role models have a pervasive effect such that the stereotypes held by men about the role of women in society change, thus relaxing gender norms in relation to their partners and daughters. Beaman, Chattopadhyay, Duflo, Pande, and Topalova (2012) find that increased female political representation improves parental aspirations for daughters (Beaman et al., 2012) and increases the establishment of female-owned businesses in the informal sector (Ghani, Kerr, & O’Connell, 2014), in addition to decreasing sex selection (Kalsi, 2017).

I draw data from the India Human Development Survey (IHDS) collected between 2011 and 2012 to estimate the effect of women Pradhans on the incidence of child marriage. The research design exploits random variation in the timing of the first election with reserved seats for women Pradhans across districts within a state. While the 73rd and 74th constitutional amendments were enacted in 1993, the first elections with reserved seats varied considerably across states and districts. For instance, West Bengal made adjustments that went into effect during the 1993 election; whereas, Bihar’s elections were delayed owing to a lawsuit challenging reservations for Other Backward Castes, and elections in other states were delayed for budgetary reasons (Iyer, Mani, Mishra & Topalova, 2012). Further, one-third of districts within a state are randomly chosen to have reserved seats for women Pradhans on each election cycle. As a result, the assignment of reserved seats for
women in local governments is exogenous within and across states. Women who married before the first election reserving seats for women in local government and those in districts that are yet to experience reserved seats for women constitute the control group, while women who married after the first election cycle with reserved seats for women Pradhan are the treatment group.

In India, marriage traditions dictate that two ceremonies take place: the wedding and the gauna ceremony. These differ in timing and purpose. After the wedding, the bride and groom do not necessarily move in together, especially when one or both of them marry before the legal age of consent. The wedding is a commitment, but until they are of age, the bride may either remain with her family or move in to live with her husband’s family. The gauna ceremony indicates the start of marital life and the consummation of the marriage. In the sample, the gauna ceremony takes place on average one year after the wedding. My results indicate that reserved seats for women in local governments significantly reduce the likelihood of child marriage, increase the age at first marriage, and delay the gauna ceremony. The likelihood of child marriage decreases by 20 percentage points, and age at marriage increases by 2.3 years, such that after the policy the average marriage age increases to 19. The gauna ceremony is delayed by 1.6 years. I find that the results are robust to restricting the sample to women who married prior to 2007 when the Prohibition of Child Marriage Act came into effect.

The paper is organized as follows. First, I describe the 73rd and 74th Amendments to the Indian Constitution, and then I discuss the empirical evidence on the effect of reserving seats in local governments for women on a variety of political and economic outcomes. The next section includes a description of the data and summary statistics. I then explain the empirical approach and discuss the results. The paper ends with concluding remarks and policy recommendations.

2 | PANCHAYATI RAJ INSTITUTIONS: BACKGROUND INFORMATION

In April and June 1993 respectively, the 73rd and 74th Amendments to the Indian Constitution were enacted. The 73rd Amendment decentralized government in rural India, while the 74th Amendment did so in urban areas. The Amendments required each state to set up a three-tier system of local government, comprising village-, block- (sub-district), and district-level governance bodies, collectively known as the Panchayati Raj institutions. Thus, the Amendments provided the foundation for political and administrative decentralization in favor of local governments. Traditionally, panchayats operated at the village level and consisted of a small number of individuals chosen by a village to oversee various local affairs. Panchayats were not necessarily elected bodies, nor were they standardized in their structure, organization, or responsibilities (Kalsi, 2017). The Amendments stipulated that all members of the panchayats were to be directly elected by popular vote every 5 years, and State Election Commissions were established to conduct such elections. ‘Responsibilities of the panchayat include administration of state transfer programmes, planning and implementation of schemes for economic development, establishment and administration of educational and medical facilities, oversight of local infrastructure (water, sewage, roads, etc.), and monitoring of civil servants’ (Ghani et al., 2014).

The Amendments contain provisions to strengthen the representation of political minorities, such that seats at the village, intermediate, and district levels are required to be filled by women or Scheduled Castes and Tribes. In particular, the 73rd Amendment stipulated that one-third of all seats on panchayat councils, as well as one-third of Pradhan positions, would be reserved for women or Scheduled Castes and Tribes. The reservation is done by rotation. In each election cycle
one-third of the districts reserve seats for women, and another set of districts has this reservation in the next election cycle. Depending on the rotation, one-third of the seats are reserved for women, or a number of seats are reserved for Scheduled Castes and Tribes proportional to their share of the population in the village. In order to ensure that the rotation is random, all the gram panchayats (GPs) are listed in order of serial number, and every third GP starting with the first on the list reserves its Pradhan position for a woman. For the next election, every third GP starting with the second on the list is reserved, and so on (Chattopadhyay & Duflo, 2004a). Similar provisions were made for urban local bodies as well, with the exception of Delhi, which passed no Panchayati Raj legislation, and the states of Nagaland, Mizoram, and Meghalaya, which were not required to comply with the new constitutional provision (Iyer et al., 2012). The system functions such that individuals who are not eligible for reserved seats may only compete for the seats left free. Members of groups eligible for reserved seats, however, may contest both reserved and unreserved seats in government.

The Amendments required states to adjust or amend local elections to comply with the provisions of the Amendments, and all states complied within one year of the passing of the Amendments. Eventually, most states/union territories held compliant elections, and there was considerable variation across states in the timing of the first election held under the provisions of the Amendments. The timing of the effective compliance varied exogenously primarily owing to state authorities waiting for the term of existing elected local governing bodies to expire before conducting elections under the quotas (Ghani et al., 2014). For instance, Karnataka had already implemented the reservation for women before the Amendments, and West Bengal made adjustments that came into effect during the 1993 election. In contrast, Bihar’s elections were delayed because of a lawsuit challenging reservations for Other Backward Castes, and elections in other states were delayed for budgetary reasons (Iyer et al., 2012). A key feature of the reservations policy in the Panchayat is that the Pradhan seats to be reserved were randomly allocated (Duflo, 2005). At each appropriate level of government, the reservations subsequently rotate around the included bodies to maintain the one-third target (Ghani et al., 2014; Iyer et al., 2012).

3 | EVIDENCE ON THE EFFECT OF POLITICAL RESERVATIONS IN INDIA

A number of studies have examined aspects of the Panchayati Raj and its effect on economic and social outcomes. The findings suggest that gender quotas have had an effect on several spheres. First, quotas increase female leadership in politics, and through leadership influence policy outcomes. Political quotas directly increase the number of women in leadership positions, and they can have indirect effects on women’s participation in politics through running for election, voting, or voicing political preferences (Bhalotra, Clots-Figueras, & Iyer, 2017; Pande & Ford, 2011). Empirical evidence indicates that very few women are elected without reservations. In the GPs in districts not reserved for women in West Bengal and Rajasthan, 6.5 percent and 1.7 percent of Pradhans respectively were women (Duflo, 2005). Bhavnani (2009) finds that in Mumbai, women are 10 times more likely to run for seats in reserved constituencies where they do not have to compete against men. He also finds that the number of female candidates increases by 7.4 percent in open districts in the election cycle following the cycle where the seat was reserved for a woman. Beaman, Chattopadhyay, Duflo, Pande, and Topalova (2009) present evidence suggesting that gender norms take time to adjust. They find that in West Bengal the number of female candidates increased from 4.8 percent in never-reserved panchayats to 10.1 percent in twice-reserved
Regarding political participation, Beaman, Duflo, Pande, and Topalova (2011) show that the likelihood of a woman speaking in a village meeting increases by 25 percent when the Pradhan seat is reserved for a woman. Duflo and Topalova (2004) combine individual-level data on satisfaction with public services with independent assessments of the quality of public facilities to measure the quantity and quality of public goods, as well as satisfaction with male and female leaders. They find that villages reserved for women leaders have more public goods, the quality is no different from villages without reservations, and there is less corruption. However, residents of villages with reserved seats for women are less satisfied with the public goods provided.

Gender quotas can result in policies that better represent women’s interests. Pradhans have significant policymaking power, as they have the final say in the allocation of public funds, which allows direct attribution of policy results to the presence of a female leader (Pande & Ford, 2011). Pande (2003) finds that political reservations increase transfers to groups that benefit from the mandate. Chattopadhyay and Duflo (2004a) show that in West Bengal and Rajasthan, men and women differ in their policy preferences. For instance, in West Bengal and Rajasthan, women made 31 and 54 percent of requests for investment in drinking water respectively, relative to 17 and 43 percent by men. They find that the reservation policy increases investment in the public goods preferred by women in Panchayats that reserved seats for women (Chattopadhyay & Duflo, 2004a). While some have suggested the effects may be region-specific (Ban & Rao, 2008; Bardhan, Mookherjee, & Parra Torrado, 2010), Beaman et al. (2011) convincingly show this is not the case. Using data on 11 states, they find that on average gender quotas increase the attention given to issues that are important to women, in addition to a visible increase in investments in water infrastructure and education. They further find that local female leaders in reserved seats accept fewer bribes than their male counterparts. Finally, Iyer et al. (2012) find that gender quotas in India have increased the reporting of crimes against women and the number of arrests for these crimes.

Quotas can change gender norms more broadly, both through role models for women and through men’s exposure to women leaders. However, there are few studies examining the effect of the quotas at the individual level. Beaman et al. (2009, 2012) find evidence to support role model effects. Surveying adolescent girls aged 11 to 15 years in West Bengal, they show that the gender gap in career aspirations closes significantly in both parents and adolescent girls, and they find no educational attainment gap after two election cycles of women Pradhan. There is also evidence that the length of exposure to women politicians increases female labor force participation, employment opportunities given to women under the National Rural Employment Guarantee Act, and women-owned establishments in the informal sector (Ghani, Mani, & O’Connell, 2013; Ghani et al., 2014). Kalsi (2017) provides evidence of a reduction in sex selection in rural India as a result of the 73rd Amendment, and argues that the mechanism is the increased status of women rather than differential investments made by women politicians. In this paper, I add to this literature by providing evidence that women Pradhans increase age at marriage (and gauna) thus reducing the likelihood of child marriage.

4 | DATA DESCRIPTION AND SUMMARY STATISTICS

4.1 | Data

I draw data from the India Human Development Survey (IHDS) collected by the National Council of Applied Economic Research (NCAER) in New Delhi and researchers at the University of Maryland. The IHDS is a nationally representative household survey collected in 2004 to 2005 (IHDS-I) (Desai, Vanneman, & NCAER, 2005) and 2011 to 2012 (IHDS-II) (Desai, Vanneman, & NCAER, 2011–2012). IHDS-I consists of 41,554 households in 1,503 rural villages and 971 urban
neighborhoods across India. IHDS-II surveyed 42,152 households in 1,420 villages and 1,042 urban neighborhoods. Women aged 15 to 49 years were eligible to be interviewed, although in practice women outside this age range were also surveyed. For IHDS-II, enumerators interviewed the same eligible woman from IHDS-I if she was still part of the household, or another eligible woman if not, and a second eligible female if available. Given that the interest of this paper is in age at first marriage and that IHDS-II surveyed more women, I focus the analysis only on IHDS-II. Women were interviewed privately and were asked questions about control over money, decision-making, and autonomy over fertility, social interactions, and children. In 1993 the NCAER conducted the Human Development Profile of India (HDPI) (NCAER, 1994), which is a household survey that can be linked to IHDS-I and IHDS-II. I use this data to show that there were no differences in age at first marriage or age at gauna prior to the implementation of the 73rd and 74th Amendments.

The data on the year of first election with reserved seats for women Pradhan at the district level comes from Iyer et al. (2012). They collected data on the year of the first election with political representation for a given minority group for the 17 major states of India, which account for 97 percent of the total population (see Table 1). The states are Andhra Pradesh, Assam, Bihar, Gujarat, Haryana, Himachal Pradesh, Jammu and Kashmir, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Orissa, Punjab, Rajasthan, Tamil Nadu, Uttar Pradesh, and West Bengal. They also collected data on the reservation status of the district Pradhan in 10 of the 17 major states: Andhra Pradesh, Bihar, Gujarat, Haryana, Kerala, Maharashtra, Orissa, Punjab, Rajasthan, and West Bengal (Iyer et al., 2012). Because reservations for women Pradhans are randomly allocated across districts, in this paper I focus the analysis on these 10 states only. About 39,000 women were interviewed in IHDS-II. Of those women, 18,125 were eligible and lived in states for which I have information about the year of first election with reservations for women Pradhan (recall that they also surveyed women who were not eligible). This is the main sample used in this paper.

4.2 Summary statistics of outcome variables and controls

As mentioned earlier, women were eligible to be interviewed if they were married and between 15 and 49 years old, although in practice the survey includes a small fraction of women over 50. I restrict the sample to eligible women only. Age at first marriage is constructed using data on year of first marriage and year of birth for 13,392 women out of 18,089. For the remaining 4,697, reported age at first marriage is used. For age at gauna, I use self-reported age when the woman first started living with her husband. Table 1 presents summary statistics on the dependent variables of interest by treatment. Women married before the first election under reserved seats for

| Variable | Overall | Control | Treated | t test diff |
|----------|---------|---------|---------|-------------|
| Child bride (=1 if married age<18) | 0.460 (0.498) | 0.503 (0.500) | 0.287 (0.452) | 0.221*** (0.009) |
| Age at first marriage | 17.58 (3.639) | 17.22 (3.635) | 19.00 (3.289) | −1.837*** (0.067) |
| Age at gauna | 18.20 (3.060) | 17.94 (2.983) | 19.22 (3.149) | −1.338*** (0.057) |

Note. Standard errors in parentheses.
women Pradhan, and those in never-reserved districts constitute the control group. The treatment group then consists of women who married after the first election under the amendment. The legal minimum age of marriage in India is 18 and the minimum age of consent is 16. Yet the average age at first marriage in the sample is 17.6, with 46 percent reporting that they married before they turned 18. There is less than a year’s difference between age at marriage and gauna. Even though girls and women in India may marry early in their lives, it is not until after the gauna ceremony that they start cohabiting with their husbands. The time between marriage and gauna can be spent with their own family or with the husband’s family, depending on the age of the bride at the time of the wedding. Younger brides tend to stay with their parents, while brides that can work on farms or help with household chores tend to move in with their in-laws. It is usually not public knowledge that a girl/woman is married until she starts cohabiting with her husband.

There are statistically significant differences between women who married after the first election with reserved seats for women relative to both women in never-reserved districts and those who married before the first election with reserved seats. Women who married after being exposed to women Pradhans on average married 1.8 years later and delayed the gauna ceremony by 1.3 years. Further, the prevalence of child marriage is 22 percentage points lower among women who married after the first election with women in local leadership positions.

In India, extended households are common where the wife of the household head is only one of the women living in the household. It is usual for the head of household’s mother, daughters-in-law, and unmarried daughters to live in the same house. The bargaining power of women within an extended household varies, and woman rank is a way to capture these differences. In IHDS-II two women from each household were interviewed, the wife of the household head (if available) and another eligible woman. In my sample, 57 percent of the women are married to the head of household (age rank = 1), 35 percent are the second most senior woman in the household (age rank = 2), and 7 percent are the third most senior woman (age rank = 3) (see Table 2). Women in the sample on average are 34 years old, have 5.6 years of education, and live in households with 5.6 members. There is a 1.5-year average difference in education between husbands and wives. Most of the population in India are Hindu, and this is reflected in the sample, where only 11 percent of women are Muslim. Twenty-three percent and 6 percent belong to Scheduled Castes and Tribes respectively, and 39 percent belong to Other Backward Castes. About one-third of the sample resides in urban communities. Average household income is 143,000 INR per year (equivalent to 2,478 usd) with considerable dispersion.

5 | EMPIRICAL STRATEGY

While the 73rd and 74th Amendments to the Constitution were approved in 1993, some states had elections with reserved seats immediately, and some did not have an election with reserved seats until years later. This creates variation in the length of exposure to women in government across states. Further, within a state, districts with reserved seats for a woman Pradhan are randomly chosen each election cycle, such that in any given election one-third of districts have reserved seats for women. The random assignment of districts to reserve seats for women Pradhans generates plausibly exogenous variation on the length and timing of exposure to women leaders. I exploit this variation at the district level to test whether women in local governments influence age at first marriage and age at gauna. The random assignment of districts to reserve seats for women Pradhan, however, does not prevent the possibility of spillovers through social networks and the fact that citizens know that at some point all districts will be selected. This argument, however,
| Variable                          | Overall | Control | Treated | \( t \) test diff | Variable                          | Overall | Control | Treated | \( t \) test diff |
|----------------------------------|---------|---------|---------|-------------------|-----------------------------------|---------|---------|---------|-------------------|
| Age rank 2nd in household        | 0.354   | 0.318   | 0.496   | -0.183***        | Muslim                            | 0.109   | 0.103   | 0.134   | -0.033***        |
|                                  | (0.478) | (0.466) | (0.500) | (0.009)          |                                   | (0.311) | (0.303) | (0.340) | (0.006)          |
| Age rank 3rd in household        | 0.0724  | 0.0520  | 0.153   | -0.10***         | Scheduled caste                   | 0.232   | 0.236   | 0.216   | 0.023***         |
|                                  | (0.259) | (0.222) | (0.360) | (0.005)          |                                   | (0.422) | (0.425) | (0.412) | (0.008)          |
| Age                              | 33.95   | 35.92   | 26.17   | 9.979***         | Scheduled tribe                   | 0.0597  | 0.0586  | 0.0639  | -0.004           |
|                                  | (8.331) | (7.848) | (4.944) | (0.138)          |                                   | (0.237) | (0.235) | (0.245) | (0.004)          |
| Schooling                        | 5.583   | 5.082   | 7.562   | -2.55***         | Other backward caste              | 0.387   | 0.385   | 0.393   | -0.011           |
|                                  | (4.914) | (4.835) | (4.717) | (0.090)          |                                   | (0.487) | (0.487) | (0.489) | (0.009)          |
| Spouse schooling                 | 6.910   | 8.599   | 7.251   | -1.69***         | Urban residence                   | 0.340   | 0.338   | 0.347   | -0.008           |
|                                  | (4.846) | (4.350) | (4.798) | (0.090)          |                                   | (0.474) | (0.473) | (0.476) | (0.009)          |
| Household Income (TINR)          | 143.6   | 140.7   | 154.8   | -16.29***        | Household size                    | 5.573   | 5.489   | 5.905   | -0.473***        |
|                                  | (248.0) | (257.6) | (205.5) | (4.591)          |                                   | (2.390) | (2.323) | (2.615) | (0.045)          |
| Assets index (0–33)              | 16.37   | 16.22   | 16.97   | -0.78***         |                                   |         |         |         |                  |
|                                  | (6.419) | (6.544) | (5.867) | (0.120)          |                                   |         |         |         |                  |

Note. ***\( p < 0.01; **p < 0.05; *p < 0.1 \) in \( t \) tests of differences in averages across treatments. Standard errors in parentheses.
suggests that the results obtained from comparing women in districts that have experienced reserved seats with those who have not are a lower bound of the potential effects of the policy.

There are some limitations to the empirical strategy using variation at the district level. Iyer et al. (2012) collected data on all the districts in states where it was available. However, this is a subset of all districts located only in 10 states in India. Further, there is not a perfect overlap between districts chosen for the survey and those in Iyer et al. Figure 1 summarizes the years of elections with reserved seats for women Pradhans in each of the 10 states. Note that while Kerala, Maharashtra, and Orissa had state-level elections with reserved seats for women prior to 1993, the first elections at the district level with reserved seats for women Pradhans took place after the enactment of the national amendment.

I draw data from IHDS-II on married women between 15 and 49 years of age and restrict the analysis to the 10 states for which Iyer et al. (2012) had data on the first year of elections with a reserved seat for a woman Pradhan. Given the variables of interest and the available data, there are two groups of women whose timing of marriage can be argued to be independent of exposure to women in government. The first corresponds to women in never-reserved districts and the second consists of women who were already married at the time of the first election with seats reserved for women Pradhans in a district. The treatment group then consists of women who married after the first election with reserved seats. The reserved seats for women Pradhan are randomly rotated across districts within a state, and thus the treatment is plausibly exogenous to the timing of marriage. I use a difference-in-difference (DD) model (specified in a set of different ways) using variation across districts based on whether they experienced elections with reserved seats for women, and the timing of the first election relative to the timing of first marriage. The basic difference-in-difference specification is as follows:

$$y_{i,b,d}^k = \theta_{i,b,d}^{Post \ Pradhan} + \pi_k X_{i,b,d} + \delta_{d}^k + \alpha_{k}^i + \epsilon_{i,b,d}^k.$$  

(1)

There are three dependent variables of interest ($k = 3$). Child marriage is an indicator variable equal to 1 if woman $i$, in birth cohort $b$, and district $d$ married before she turned 18. The other two are age at first marriage, and age at gauna. Post Pradhan$_{i,b,d}$ is an indicator variable equal to 1 if woman $i$, in birth cohort $b$, married after the first election with reserved seats for women Pradhans. I include district, $\delta_{d}^k$, and birth-cohort fixed effects, $\alpha_{k}^i$. The birth cohorts are defined for women born within 2 years of each other starting in 1960 up until 1991, and then combining all women in the sample born after 1991 as there were very few born after 1992. I also include a matrix of individual and household control variables, $X_{i,b,d}$, including the woman’s age rank in the

![FIGURE 1](https://example.com/figure1.png)
household, years of schooling for both spouses, household income, caste, religion, an assets index, and household size. The DD estimate of the treatment effect of political reservations on age at marriage (gauna) is given by $\theta^k$. Conditional on district and birth-cohort fixed effects, $\theta^k$ captures the difference in age at marriage (gauna) across women who married after seats were reserved for women Pradhan relative to women who married prior to the first election in their district of residence.

The validity of the DD design relies on the assumption that once all other variables are controlled for, trends in age at marriage (gauna) are identical prior to the law change and they would have remained the same in the absence of the law change. I present evidence that the pre-trends assumption holds in two ways. First, I use the HDPI conducted in 1993 to show there were no differences in age at first marriage or age at gauna prior to the implementation of the policy. Because of changes in districts over time, I am only able to match districts in the HDPI and the Iyer et al. (2012) data for eight states: Andhra Pradesh, Gujarat, Kerala, Maharashtra, Orissa, Punjab, and West Bengal. I estimate a simple linear regression of age at first marriage (age at gauna) on indicator variables of the years of first elections with reserved seats for women Pradhans, controlling for state and birth-cohort fixed effects. Table 3 contains the results. In 1993 the average age at first marriage was 15.5 and conditional on state and birth-cohort fixed effects, age at first marriage and age at gauna were no different in 1993 in districts that eventually had a woman Pradhan relative to never-reserved districts.

I now use IHDS-II to test the pre-trends assumption in an alternative way. In Figure 2, I present results from estimating the following model:

$$y^{k}_{i,b,d} = \beta_{1,k} Reserve_d + \sum_{m=1}^{7} \theta^k_{0,m} YMarri_{i,b,d,m} + \sum_{m=1}^{7} \theta^k_{1,m} (YMarri_{i,b,d,m} \times Reserve_d) + \pi_k X_{i,d,s} + \delta^k_s + \alpha^k + \epsilon^k_{i,b,d}$$

(2)

where $Reserve_d$ is an indicator variable equal to 1 for women in districts that have held elections with reserved seats, and 0 for never-reserved districts; $YMarri_{i,b,d,m}$ is a categorical variable defined over the number of years that woman $i$ has been married relative to the first election with reserved seats for women Pradhans. The first three categories contain women who married before the first woman pradhan, some of which married more than 25 years prior. For women in never-reserved districts $YMarri_{i,b,d,m}$ is computed as the year of first marriage minus the year of the survey. The fourth category contains women who married within a year of the first election under the quotas. $\delta^k_s$ are state fixed effects, and the rest of the variables are the same as in (1). The parameters $\theta^k_{0,m}$ capture the trend in age at marriage (gauna) of women never-reserved districts. The parameters $\theta^k_{1,m}$ capture the same trend for women in districts who have held elections with reserved seats for a woman Pradhan.

Figure 2 contains graphs of the marginal effects of women Pradhan on the probability of child marriage, age at first marriage, and age at gauna. The marginal effects are plotted for women who married before the first election with reserved seats in their district of residence (treated districts), and women in districts that are yet to experience elections with quotas (not treated districts). The likelihood of child marriage was already decreasing, and age at first marriage and gauna were already increasing in districts that have yet to experience a first election with quotas. However, the likelihood of child marriage was higher, and age at first marriage and gauna were significantly lower in districts that had elections with reserved seats. Additionally, the trend in districts that held elections with reserved seats is flatter indicating that the change was taking longer. Table 3 and Figure 2 indicate that the trends in age at marriage and gauna, while different across districts that
have held elections with reserved seats and those yet to experience the policy, were flatter in the former. This suggests that an increase in age at marriage (gauna) post-policy is underestimating the effect of women in government had the trends have been the same. The probability of child marriage in districts that are yet to have an election under reserved seats is decreasing at a faster rate thus attenuating any effect of women Pradhan.

### 6 | EMPIRICAL RESULTS

The results of Equation 1 on the effect of political reservations for women are presented in Table 4. Columns (1), (3) and (5) contain results on the effect of women Pradhans on women who married after the first election with reserved seats controlling only for district and birth-cohort fixed effects. Columns (2), (4), and (6) include individual- and household-level controls in addition to district and birth-cohort fixed effects. The first notable result is that, on average, women who married after the

| Dependent variable | Age at marriage | Age at gauna |
|-------------------|----------------|-------------|
| Year first Pradhan 1995 | 0.005 | 0.264 |
| Year first Pradhan 1997 | 0.332 | 0.299 |
| Year first Pradhan 1998 | −0.104 | 0.102 |
| Year first Pradhan 2000 | 0.203 | 0.719 |
| Year first Pradhan 2001 | 0.004 | 0.001 |
| Year first Pradhan 2002 | −0.045 | −0.007 |
| Year first Pradhan 2003 | 0.229 | 0.268 |
| Year first Pradhan 2005 | 0.247 | 0.426 |
| Year first Pradhan 2006–2007 | 0.348 | −0.036 |
| Constant | 15.567*** | 15.462*** |
| Observations | 13,871 | 13,871 |
| R² | 0.058 | 0.056 |
| F-statistic: No differences | 0.551 | 0.585 |
| Age cohort FE | Yes | Yes |
| State FE | Yes | Yes |

Note. Standard errors clustered at the district level in parentheses. ***p < 0.01; **p < 0.05; *p < 0.1.
first election with reserved seats are significantly less likely to be child brides on average relative to women who married prior to the policy in treated districts. Women marry 2.3 to 2.8 years older and delay their gauna ceremony by 1.6 to 2 years. Women who married after the first woman Pradhan are on average 19 to 24 percentage points less likely to be child brides. While slightly smaller in magnitude, the results are robust to controlling for women’s age rank within the household, household size, schooling of each spouse, household income, assets, caste, and religion.

It is of interest to examine whether different groups of women exhibit varying effects. For ease of interpretation, the heterogeneity analysis is estimated using Equation 1. Table 5 presents the results. Panel (a) contains results of the differential effects of reserved seats across age rank in the household. The most senior women in a household who married after the first election under reserved seats delay their wedding and gauna ceremony by 2.3 and 1.6 years respectively. The second most senior woman in the household marries 6 months later and has her gauna ceremony around 4 months later than the most senior woman has.

Panel (b) presents the results on the treatment effects by caste. For this purpose, I group together scheduled castes, scheduled tribes, and other backward castes. Women in backward and scheduled castes or tribes in untreated districts marry at a small but statistically younger age and have their gauna ceremonies earlier. Age at marriage increases by 4 months, and the likelihood of child marriage decreases by 5 percentage points among women in SBCTs after the first election under the policy, while age at gauna does not show any significant differences. In Panel (c), I examine results by household income. There are no heterogeneous effects on age at marriage by income level, and the effect on age at gauna is too small to be economically meaningful. In Table A2 in the Appendix, I examine whether reserved seats have a differential effect on women living in rural relative to urban districts and find no differences either. Altogether, these results suggest that differences in economic opportunities via parental income (likely correlated to household income) or degree of rurality do not explain the changes in age at marriage (and gauna) after the gender quotas polity. The results are somewhat stronger among women in SBCTs and women that are less senior in the household. This evidence seems to support the change in cultural norms rather than the economic policies channel.

The 73rd and 74th Amendments stipulate that seats be reserved for women and minorities on elections both at the state and at local level. While some of the states included in the analysis had
elections with reserved seats for women for state-level representatives already, only a subset of districts had held local-level (district) elections under the policy. Additionally, there are considerable differences on the timing of the first election with reserved seats for women Pradhan across districts. The results, therefore, could vary by timing of the first election. Women in districts that were chosen to implement the policy earlier were exposed to women in government longer. Alternatively, if women in government only have a temporary effect, the effect on women in districts that had earlier elections under quotas could have faded over time. The latter is a concern because there is little to no evidence that women are more likely to be elected after the removal of reserved seats at the district, block, or village level. To examine the effect of women Pradhans by timing of the first election under reserved seats for women, I estimate the following model:

$$y_{i,b,d}^k = \beta_{1,k}Post\ Pradhan_{i,d} + \sum_{m=1}^{6} \theta_{1,m}^kYWPradhan_{d,m} \times Post\ Pradhan_{i,d}$$

$$+ \pi_k X_{i,b,d} + \delta_d^k + \sigma_b^k + \epsilon_{i,b,d}^k$$ (3)

| Dependent variable | Child bride | Age at first marriage | Age at gauna |
|--------------------|------------|-----------------------|--------------|
|                    | (1)        | (2)                   | (3)          | (4)      | (5)      | (6)      |
| Married post Pradhan | -0.241*** | -0.191***             | 2.738***     | 2.298*** | 2.015*** | 1.607*** |
|                    | (0.019)    | (0.017)               | (0.169)      | (0.150)  | (0.131)  | (0.118)  |
| Rank 2nd in HH     | -0.083***  | 0.712***              |              |          |          |          |
|                    | (0.010)    | (0.068)               |              |          |          |          |
| Rank 3rd in HH     | -0.152***  | 1.227***              |              |          |          |          |
|                    | (0.017)    | (0.124)               |              |          |          |          |
| Years of schooling | -0.028***  | 0.231***              |              |          |          |          |
|                    | (0.001)    | (0.011)               |              |          |          |          |
| Spouse’s years of schooling | -0.003*** | 0.019**               |              |          |          |          |
|                    | (0.001)    | (0.009)               |              |          |          |          |
| Household income (thousand INR) | 0.000**    | 0.000                 |              |          |          |          |
|                    | (0.000)    | (0.000)               |              |          |          |          |
| Number of household members | 0.013***   | -0.099***             |              |          |          |          |
|                    | (0.002)    | (0.013)               |              |          |          |          |
| Constant           | 1.076***   | 1.119***              | 12.583***    | 12.072***| 13.796***| 13.372***|
|                    | (0.022)    | (0.032)               | (0.153)      | (0.222)  | (0.113)  | (0.175)  |
| Observations       | 18,089     | 16,928                | 18,089       | 16,928   | 18,088   | 16,928   |
| $R^2$              | 0.213      | 0.301                 | 0.270        | 0.384    | 0.258    | 0.389    |
| Birth cohort FE    | Yes        | Yes                   | Yes          | Yes      | Yes      | Yes      |
| District FE        | Yes        | Yes                   | Yes          | Yes      | Yes      | Yes      |
| Controls           | Yes        | Yes                   |              |          |          |          |

Note. Standard errors clustered at the district level in parentheses. Controls include district and birth-cohort fixed effects, age rank, years of schooling of both spouses, religion, caste, household income, household size, and an asset index that varies from 0 to 33. ***$p < 0.01$; **$p < 0.05$; *$p < 0.1$
TABLE 5  Effect of woman Pradhan on child marriage, heterogeneity

| Dependent variable | Panel (a): by age rank | Panel (b): by caste | Panel (c): by income |
|--------------------|------------------------|---------------------|----------------------|
|                    | Child bride | Age at 1st marriage | Age at gauna | Child bride | Age at 1st marriage | Age at gauna | Child bride | Age at 1st marriage | Age at gauna |
| Married post Pradhan in districts with reservations | -0.199*** | 2.312*** | 1.685*** | -0.154*** | 2.059*** | 1.584*** | -0.199*** | 2.347*** | 1.604*** |
| | (0.020) | (0.173) | (0.141) | (0.022) | (0.171) | (0.148) | (0.018) | (0.164) | (0.126) |
| Rank 2nd in HH | -0.114*** | 1.235*** | 1.064*** | (0.013) | (0.110) | (0.091) |
| Rank 3rd in HH | -0.190*** | 1.889*** | 1.867*** | (0.024) | (0.197) | (0.160) |
| Post Pradhan × Rank 2nd | 0.000 | 0.486*** | 0.288** | (0.021) | (0.154) | (0.133) |
| Post Pradhan × Rank 3rd | -0.102** | 0.233 | 0.162 | (0.040) | (0.230) | (0.198) |
| Scheduled and backward castes and tribes (SBCT) | 0.026* | -0.252** | -0.268*** | (0.014) | (0.103) | (0.087) |
| Post Pradhan × SBCT | -0.056** | 0.367** | 0.041 | (0.022) | (0.160) | (0.139) |
| Household income | 0.579*** | 15.627*** | 16.418*** | 0.555*** | 15.973*** | 16.759*** | 0.566*** | 15.928*** | 16.638*** |
| | (0.027) | (0.210) | (0.172) | (0.027) | (0.215) | (0.170) | (0.028) | (0.209) | (0.175) |
| Post Pradhan × HH income (thousand INR) | 0.000 | -0.000 | 0.000 | (0.000) | (0.000) | (0.000) |
| Constant | 0.579*** | 15.627*** | 16.418*** | 0.555*** | 15.973*** | 16.759*** | 0.566*** | 15.928*** | 16.638*** |
| | (0.027) | (0.210) | (0.172) | (0.027) | (0.215) | (0.170) | (0.028) | (0.209) | (0.175) |

(Continues)
| Dependent variable | Panel (a): by age rank | Panel (b): by caste | Panel (c): by income |
|--------------------|------------------------|---------------------|----------------------|
|                    | Child bride | Age at 1st marriage | Age at gauna | Child bride | Age at 1st marriage | Age at gauna | Child bride | Age at 1st marriage | Age at gauna |
| Birth cohort FE    | Yes         | Yes                 | Yes          | Yes         | Yes                 | Yes          | Yes         | Yes                 | Yes          |
| District FE        | Yes         | Yes                 | Yes          | Yes         | Yes                 | Yes          | Yes         | Yes                 | Yes          |
| Controls           | Yes         | Yes                 | Yes          | Yes         | Yes                 | Yes          | Yes         | Yes                 | Yes          |
| Observations       | 16,928      | 16,928              | 16,928       | 16,928      | 16,928              | 16,928       | 16,928      | 16,928              | 16,928       |
| $R^2$              | 0.302       | 0.388               | 0.393        | 0.301       | 0.384               | 0.388        | 0.301       | 0.384               | 0.389        |

Note. Standard errors clustered at the district level in brackets. Controls include age rank, caste, years of schooling of both spouses, household income, rural district, household size, religion, and an assets index that varies from 0 to 33. ***p < 0.01; **p < 0.05; *p < 0.1.
where all the variables are the same as in Equation 1 except for $YWPradhan_{d,m}$, which is a categorical variable defined over the dates of the first election under reserved seats for women at the district Panchayats. Districts were grouped into categories depending on the year of the first election under reserved seats (and number of observations in that group to maximize power). Table A1 contains frequencies by category of $YWPradhan_{d,m}$ by treatment status.

The results of Equation 3 are presented in Table 6. Women Pradhans reduce the likelihood of child marriage by 9 to 19 percentage points in districts that held elections in 1995. The effect of the policy on the likelihood of child marriage remains the same in districts that held elections between 1997 and 2003. After 2005 exposure to women Pradhans further reduces the likelihood of child marriage by 16 to 18 percentage points relative to districts that held elections in 1995.

Age at marriage and age at gauna show similar results. Women in districts that held elections with reserved seats before to 2000 marry between 1.1 and 2.3 years later than women in the same district who married before the policy. Age at marriage increases by 0.6 to 1 year among women who married after the 2000 to 2003 elections, and increases by one additional year (1.3 to 1.9 years relative to the early elections) after the 2005 election. After exposure to women in government, women delay their gauna ceremonies by 0.6 to 1.6 years. The effect of women Pradhans is larger among women who married between the 1997 and 2005 elections, and then increases once more after the 2006 to 2007 elections. There is evidence that the two different marriage ceremonies are converging. Age at marriage responds more to exposure to women Pradhans than age at gauna, which is expected as brides are more likely to be beyond the age of consent.

**7 | ROBUSTNESS**

The enactment of the Prohibition of Child Marriage Act by parliament took place in 2007. This is a national law that applies to all citizens of India, except to those in Jammu and Kashmir. The Act criminalizes men who marry child brides, and establishes the conditions for child marriages to be void at the petition of the child bride. The Act states that any child marriage is to become void retrospectively as well. It is possible that some of the women in the sample were child brides who took advantage of the Prohibition of Child Marriage Act to void their first marriage. Of the sample of women used in this paper, only 196 (out of over 18,000) have married more than once, of those, 157 have divorced or separated. It is also possible that when asked about their first marriage women do not report a voided marriage, which in turn could generate an upward bias in their reported age at first marriage. Further, if the increase in age at first marriage is driven by marriages that occurred after the Act, it is not possible to identify whether the changes are due to the Act or to exposure to women leaders.

Panel (a) in Table 7 contains the results of Equation 3 for women who married for the first time prior to 2007. The effect of women Pradhan on age at marriage and gauna is robust. Women who married after the first election with reserved seats for women delayed marriage by 2 years in early-election districts. The effect continues to increase as we consider women in districts that held elections in the 2005 cycle. I find similar results for age at gauna and the likelihood of child marriage. Therefore, the Prohibition of Child Marriage Act is not the cause of the reduction in the incidence of child marriage.

While the 73rd and 74th Amendments to the Indian Constitution had a national jurisdiction, the introduction of local governments was most relevant in rural areas. Further, women living in metropolitan and other urban areas are exposed to a wider range of factors that can contribute to
changes in gender and cultural norms regarding marriage and more broadly regarding education, women’s empowerment, etc. In Panel (b) in Table 7, I present the results of Equation 3 for women residing in rural areas. The results on the effect of the policy, while less precise and smaller in magnitude, are very similar to those in Table 6.

It is not usual for women in India, particularly in rural areas, to move across states unless it is to join the family of a new husband. Nonetheless, it is relevant to examine whether women and/or their families could be self-selecting into states or districts that have cultural norms over marriage closer to their own preferences. Unfortunately, I can only observe the place of origin of 6,260 women in states for which I observe the year of the first election with reserved seats. From this subsample, I know that less than 2.5 percent grew up in another state or country. Among the women for whom I do not observe the place of origin and who I know did not grow up in their husband’s village or town (11,877), 4,660 married their current husbands before 1993. The 73rd and 74th Amendments passed in 1993, so these women were already married when the policy came into effect in their district of origin, and thus have only experienced the policy in their husband’s village.

The remaining 7,217 women who married after 1993 could have been exposed to the policy prior to marriage if their home district reserved seats for women Pradhan before they moved to the

| TABLE 6  | Treatment effects on timing of the first election with reserved seats |
|----------|------------------------------------------|
| Variables | Child bride | Age at first marriage | Age at gauna |
|          | (1)         | (2)                 | (3)   | (4) | (5) | (6) |
| Married post Pradhan (Post) | –0.186*** | –0.0933*** | 2.260*** | 1.142*** | 1.565*** | 0.633*** |
| Interactions: | | | | | | |
| Post × Election in 1997–1999 | –0.0694* | –0.0857*** | 0.267 | 0.405 | 0.546*** | 0.581*** |
| Post × Election in 2000 | –0.0554 | –0.0568 | 0.894** | 1.005*** | 0.351* | 0.678** |
| Post × Election in 2001–2003 | –0.0794*** | –0.0482 | 0.644** | 0.672** | 0.888*** | 0.754*** |
| Post × Election in 2005 | –0.186*** | –0.164*** | 1.741*** | 1.886*** | 1.326*** | 1.398*** |
| Post × Election in 2006–2007 | –0.138*** | –0.179*** | 1.399*** | 1.951*** | 1.301*** | 1.634*** |
| Constant | 1.083*** | 0.758*** | 12.51*** | 15.92*** | 18.16*** | 17.01*** |
| Observations | 18,089 | 18,089 | 18,089 | 18,089 | 18,089 | 18,089 |
| R² | 0.215 | 0.257 | 0.273 | 0.329 | 0.261 | 0.337 |
| Birth cohort FE | Yes | Yes | Yes | Yes | Yes | Yes |
| District FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Controls | Yes | Yes | Yes | Yes | Yes | Yes |

Note. Standard errors clustered at the district level in parenthesis. Controls include district and birth-cohort fixed effects, age rank, years of schooling of both spouses, religion, caste, household income, household size, and an asset index.
| Dependent variable | Panel (a): Pre-2007 CMP Act | Panel (b): Only rural districts | Panel (c): Born in state of residence |
|-------------------|----------------------------|---------------------------------|-------------------------------------|
|                   | Child bride | Age at 1st marriage | Age at gauna | Child bride | Age at 1st marriage | Age at gauna | Child bride | Age at 1st marriage | Age at gauna |
| Married post Pradhan in districts with reservations | \(-0.157^{***}\) | \(2.038^{***}\) | \(1.277^{***}\) | \(-0.166^{***}\) | \(2.112^{***}\) | \(1.296^{***}\) | \(-0.174^{***}\) | \(2.061^{***}\) | \(1.461^{***}\) |
| \(\text{Post} \times \text{Election in 1997–1999}\) | \(-0.0568\) | \(0.154\) | \(0.459^{**}\) | \(-0.0674\) | \(-0.0213\) | \(0.307\) | \(-0.0053\) | \(-0.294\) | \(0.123\) |
| \(\text{Post} \times \text{Election in 2000}\) | \(-0.0345\) | \(0.973^{**}\) | \(0.387\) | \(-0.0172\) | \(0.541\) | \(-0.0644\) | \(-0.0290\) | \(1.260^{***}\) | \(0.828^{**}\) |
| \(\text{Post} \times \text{Election in 2001–2003}\) | \(-0.0907^{**}\) | \(0.475^{*}\) | \(0.710^{***}\) | \(-0.0242\) | \(-0.149\) | \(0.313\) | \(0.00930\) | \(-0.0861\) | \(0.178\) |
| \(\text{Post} \times \text{Election in 2005}\) | \(-0.192^{**}\) | \(2.000^{***}\) | \(1.406^{***}\) | \(-0.185^{***}\) | \(1.340^{***}\) | \(0.854^{***}\) | \(-0.0796\) | \(1.413^{*}\) | \(1.385^{*}\) |
| \(\text{Post} \times \text{Election in 2006–2007}\) | – | – | – | \(-0.0333\) | \(0.562^{**}\) | \(0.533^{*}\) | \(-0.0992\) | \(0.838^{**}\) | \(0.940^{***}\) |
| Constant | \(1.331^{***}\) | \(11.38^{***}\) | \(13.33^{***}\) | \(0.963^{***}\) | \(14.46^{***}\) | \(15.31^{***}\) | \(0.151^{**}\) | \(19.46^{***}\) | \(19.44^{***}\) |
| Birth cohort FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| District FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 14,448 | 14,448 | 14,448 | 11,117 | 11,117 | 11,117 | 5,648 | 5,648 | 5,648 |
| \(R^2\) | 0.299 | 0.390 | 0.381 | 0.289 | 0.366 | 0.361 | 0.303 | 0.404 | 0.407 |

Note. Standard errors clustered at the district level in parenthesis. Controls include age rank, caste, years of schooling of both spouses, household income, rural district indicator, household size, religion, and an assets index that varies from 0 to 33. \(^{*}* p < 0.1; \,**^{*} p < 0.05; \,**^{*} p < 0.01.\)
place where they currently reside. If this were the case, then by assigning them to treatment as if they had lived in their husband’s town their entire lives I would be underestimating their exposure to the treatment, which would bias my estimates downwards towards a zero effect. These women’s ages range from 15 to 49, with an average age of 31 and a uniform distribution across birth cohorts; thus it is not the case that the majority are younger and might have been more susceptible to change their views over marriage in response to longer exposure to women leaders. Further, in panel (c) of Table 7, I present results of Equation 3 for the sample of women who were born in their state of residence at the time of the survey. The effect of women Pradhan is very similar, qualitatively and in magnitude, to the results in Table 5; however, there is a considerable loss in precision in the estimation of the treatment effects. The results are quite robust, however, and thus selection based on preferences for gender norms does not seem to be confounding the effect of women Pradhans on the likelihood of child marriage, age at marriage, and gauna.

8 | CONCLUSIONS

Drawing data from IHDS-II collected between 2011 and 2012, I estimated the effect of the Panchayati Raj institutions on child marriage. While the 73rd and 74th Amendments to the Indian Constitution were approved in 1993, their effective implementation across states and districts varied considerably. States hold elections in different years, and they waited until the next election following the approval of the Amendments to reserve seats for women and minorities. Further, the Amendments stipulate that reserved seats for women Pradhans must be rotated randomly each election cycle across districts such that in any given cycle one-third of districts within a state reserve seats. For identification, I exploited plausible exogenous variation in the timing of the first election with reserved seats for women Pradhans across districts to identify the effect of women in leadership positions at the local level on age at first marriage, likelihood of child marriage, and age at gauna.

There were two groups of women whose age at marriage can plausibly be assumed independent of the gender quotas policy. The first consists of women in districts that have yet to hold an election with reserved seats, and the second corresponds to women who married before the first election with reserved seats. Results indicate that reserved seats for women in local governments reduce the likelihood of child marriage, increase the age at first marriage, and delay the gauna ceremony. The results are robust to restricting the sample to women in rural areas and women who grew up in their current state of residence. Further, by restricting the sample to women who married prior to 2007, I was able to attribute the changes in child marriage to the gender quotas policy and not to the Prohibition of Child Marriage Act.

As for potential mechanisms, the literature examining the effects of the reserved seats policy on individual outcomes has found results consistent with the role model effect, rather than by policy changes affecting education and labor market outcomes of women, or on educational infrastructure (Beaman et al., 2009, 2012; Kalsi, 2017). Beaman et al. (2009, 2012) found that prior to experiencing a woman Pradhan parents generally had higher aspirations for boys than for girls in West Bengal. After two election cycles, parental aspirations for boys were unchanged but for girls they improved, particularly aspirations related to the labor market and occupations. The changes in aspirations were observed at a variety of levels. Fathers’ perceptions of women’s leadership abilities improved more than women’s did after exposure to a woman Pradhan. Contrastingly, women’s educational aspirations for their daughters increased more than men’s did. Adolescent girls’ aspirations also increased after exposure to women Pradhans: they were less likely to want to be housewives, they were less likely to want to marry before 18 years of age, and they wanted a skilled
job. Marriages in India are still frequently arranged, thus a change in girls aspirations is not enough to cause a delay in timing of marriage. However, if the change in gender norms permeates to mothers, fathers, girls, and society in general, then there is the possibility for significant changes in women’s autonomy over marriage. The heterogeneity analysis in the paper indicates that women in scheduled and other backward castes and tribes, and less senior women in the household observe larger delays in marriage and gauna, though a thorough analysis of potential mechanisms is left for future research.

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CONFLICTS OF INTEREST

The author has no conflicts of interest.

ENDNOTES

1 Three new states—Chhattisgarh, Jharkhand, and Uttarakhand—were carved out in 2001 from Madhya Pradesh, Bihar, and Uttar Pradesh respectively. These split states carried over the Panchayati Raj legislation from their parent states, but the timing of the elections differed. For instance, Bihar conducted local elections in 2001 and 2006, but Jharkhand did not conduct a single Panchayati Raj election until 2007.

2 This data was obtained by Iyer et al. (2012) by contacting the State Election Commissions, the Ministry of Rural Development, and the Ministries of Panchayati Raj of individual states.

3 The 1993 wave of the survey does not have all the indicators considered in this paper, so evidence is presented only for the information available.

4 In Figure A1 in the Appendix I present the results for treated women too where the following three categories contain women who married after the first election with reserved seats for women Pradhan

ORCID

Carolina Castilla [http://orcid.org/0000-0002-8908-1091]

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APPENDIX

FIGURE A1 Pre-trends and post Pradhan treatment effects of reserved seats for women on child marriage

Note. The horizontal axis contains indicator variables of the years of marriage prior to the eventual policy implementation. The treated group includes women in districts who married prior to having a woman Pradhan for the first three categories, and women who married after the first election with reserved seats in the last four. The not treated group consists of women in districts that are yet to have an election with reserved seats. Standard errors clustered at the district level in brackets. Controls include district and birth-cohort fixed effects, age rank, years of schooling of both spouses, religion, caste, household income, household size, and an asset index. [Colour figure can be viewed at wileyonlinelibrary.com]

TABLE A1 Frequency distribution of women by treatment status and year of the first election with reserved seats

| Election category          | Not treated | Treated |
|----------------------------|-------------|---------|
| Never-reserved districts   | 7,537       | 0       |
| Election in 1995           | 1,665       | 1,632   |
| Election in 1997–1999      | 1,187       | 860     |
| Election in 2000           | 869         | 400     |
| Election in 2001–2003      | 843         | 254     |
| Election in 2005           | 1,371       | 237     |
| Election in 2006–2007      | 892         | 138     |
| Observations               | 14,364      | 3,521   |
**TABLE A2**  Treatment effects of reserved seats for women Pradhans on child marriage, across rural and urban districts

| Dependent variable | Panel (a): by rurality |  |  |
|--------------------|-----------------------|---|---|
|                    | Child bride           | Age at 1st marriage | Age at gauna |
|                    | (1)                   | (2)                | (3)          |
| Married post Pradhan Reserve, district with: | −0.202*** | 2.369*** | 1.519*** |
| Rural district     | −0.027                | 0.355*             | 0.407***     |
| Post Pradhan × Rural district | 0.031                | −0.200             | 0.247*       |
| Constant           | 0.556***              | 15.978***          | 16.702***    |
| Birth cohort FE    | Yes                   | Yes                | Yes          |
| State FE           | Yes                   | Yes                | Yes          |
| Controls           | Yes                   | Yes                | Yes          |
| Observations       | 16,928                | 16,928             | 16,928       |
| $R^2$              | 0.301                 | 0.384              | 0.389        |

*Note.* Standard errors clustered at the district level in parenthesis. Controls include age rank, caste, years of schooling of both spouses, household income, rural district, household size, religion, and an assets index that varies from 0 to 33. ***$p < 0.01$; **$p < 0.05$; *$p < 0.1$. 