



How do consumers respond to female electoral victories? Evidence from Indian state elections

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Abstract

Female political leadership is associated with increased investments in health and education, and lower corruption. However, social norms and stereotypes favor male leaders globally. This research examines the impact of the gender of leaders who won 1,319 state legislative assembly elections in India, on monthly post-election expenditures of 44,884 households. Identification relies on the occurrence of mixed-gender elections with narrow victory margins. Model estimates reveal that households in districts with more female leaders spend lesser. However, this negative effect is mitigated in rural districts with longstanding reservation for women in local governing bodies, and in districts where at least 10% of elected leaders are women. These results support a mechanism that consumer confidence in female leadership increases with increased exposure to female leaders, in ways that impact household expenditure. These results have implications for consumers faced with female leaders, female politicians, and for the recently passed Women's Reservation Bill in India.

Keywords Elections · Gender · Consumption · India · Rural · Exposure

1 Introduction

After thirteen years and six attempts at passage, India's parliament passed the Women's Reservation Bill in 2023. To be implemented from 2029, this legislation reserves one-third of seats in the lower house of parliament, and in state legislative assemblies, for female candidates. While this was welcomed as a big step in women's progress, the resistance to passage of this bill captures the barriers women still face in closing the gender gap in politics. Women are underrepresented in political

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office at all levels of government, around the world. Of all those elected or appointed member of parliament in 2023 globally, only 26.9% are women (Inter-Parliamentary Union, 2024). This is surprising since the behavior of female political leaders is often more welfare-enhancing than that of male leaders. Female political leaders are associated with less corruption and bribe-taking (Brollo & Troiano, 2016), increased attainment of education (Clots-Figueras, 2012), improved learning outcomes for children (Priyanka, 2022), increased investments in health and human rights (Clots-Figueras, 2011), and greater provision of public goods (Beaman et al., 2009).

A significant body of research demonstrates that voters hold stereotyped views about the abilities and personal traits of women and men who run for office (e.g., Dolan & Lynch, 2014). We take a novel approach to understanding voters' attitudes towards female leaders. We view voters as consumers and examine their consumption behavior following elections. We investigate the consumption behavior of households under female political leadership. Our approach rests on the idea that changes in expenditure patterns will reflect consumer confidence and households' expectations of leadership performance. Expectations of better governance and optimism about the economic future should result in greater household confidence and expenditure.

We first estimate the impact of the gender of leaders who won 1,319 state legislative assembly (Vidhan Sabha) elections in India in 2013–2014, on monthly expenditures of 44,884 households residing in administrative districts where these elections were held. These elected bodies carry out the administration of the government and allocate expenditure on various development policies including health, agriculture, education, transportation, and security. Unlike local government bodies in India, where some seats are reserved for women, there is currently no gender-based reservation in state legislative assemblies. Female politicians in our context face the same electoral constraints as their male counterparts.

Next, we explore how households react to different levels of female political leadership (i.e., districts where proportion of female leaders is *high* versus those where this proportion is *low*) in terms of their spending behavior. Although bias against female leaders is well documented, public perceptions against female leaders might improve under sustained exposure (Beaman et al., 2009), potentially manifesting in greater household expenditure. Third, we investigate how rural India (with a population of over 800 million) reacts differently to female political leadership than urban India. The juxtaposition of traditional values, low development, and low education, along with reservation of several political posts for women, provides an interesting context to assess if long-held gender biases can be mitigated by government reservation policies, in a way that impacts consumption.

Much of gender research in marketing has studied differences in the behaviors of consumers and managers of different genders (see Peñaloza et al., 2023 for a review). Male consumers perceive greater savings when prices are presented in red than when presented in black (Puccinelli et al., 2013). Compared to male consumers, female consumers have a stronger affective response to weather conditions, inducing an increase in their hedonic consumption (Govind et al., 2020). Across multiple marketing decisions, female chief marketing officers make less risky decisions than their male counterparts (Varma et al., 2023). Our research belongs to a smaller

stream which studies differences in consumption and expenditure decisions, not because of the gender of consumers, but because of the gender of economic agents they interact with. Consider parents making decisions not for themselves, but for their children. Lin et al. (2021) find that parents in China spend less on clothing for girls than for boys. Next consider consumers interacting with service providers. Lee et al. (2011) investigate how the gender of the service provider (e.g., financial planner) affects consumers' willingness to purchase. In our case, economic agents are elected leaders who are socially more distant from consumers than family members, or service providers. Our research shows that the role of others' gender in shaping consumption extends beyond socially proximate others. Despite longstanding interest among marketing scholars in elections (e.g., Chapman & Palda, 1983; Morwitz & Pluzinski, 1996), and a recent call to study political activity (Korschun et al., 2020), ours is perhaps the first paper in marketing to study any political process in a developing economy.

2 Theory and hypotheses

It is a priori unclear how, or even whether, the gender of a political leader should affect consumption behavior. Policies espoused by political parties do not vary across the genders of their candidates. Many adults do not vote; some of them might not even be aware of the gender of election winners. As such, the normative argument that consumer decisions should not be affected by the gender of political leaders, is worth considering.

Yet, voters use the gender (and other traits) of the candidate to infer their future performance (Pedersen et al., 2019). Well-documented performance differences among male and female political leaders provide strong rationales for why consumers might spend more under female leaders. Greater female political representation in Indian elections increases attainment of primary education among the electorate (Clots-Figueras, 2012). Better education could increase income, lower uncertainty of future income, and increase confidence and willingness to spend. Female political leaders are less prone to bribe-taking (Brollo & Troiano, 2016). Greater corruption in the form of bribe-taking increases the cost of access to government services, and reduces households' food budgets and calorie consumption (Anik et al., 2013). Households under female leaders might be able to allocate a greater share of income on necessities. Female political leaders are also more likely to invest in health infrastructure such as dispensaries and hospital beds (Clots-Figueras, 2011). Healthier consumers might feel more confident to spend. This discussion suggests a positive effect of female leadership on household expenditure and consumption.

Despite this, a large body of research confirms that voters look at women candidates and officeholders from a gendered perspective, ascribing stereotyped competencies and personality characteristics to them. Compared to women, men are viewed as more competent, decisive, stronger leaders, and possessing a greater ability to handle a crisis (e.g., Alexander & Andersen, 1993; Huddy & Terkildsen, 1993). Specifically, men are thought to be more competent at dealing with economic development and agriculture than women (Dolan & Lynch, 2014), both of which

are especially consequential in the context of a developing economy with an estimated 43% of the workforce engaged in agriculture.¹ Upon the election of a female candidate, we expect these negative perceptions to lower consumer confidence, especially since experience with female leadership is low. Consumer confidence is a well-established predictor of consumption spending (Dees & Brinca, 2013), since it affects household's expectations of future income. Lower confidence increases uncertainty of future income, spurring precautionary saving tendencies.

In summary, there are reasons to expect both a positive and negative effect of female leadership. Research on voter heuristics shows that the personality or demographic traits of candidates and leaders are more influential than their stand on specific issues, or their performance (Meng & Davidson, 2020). Based on this, we test the following hypothesis.

H₁: Households governed by female leaders spend less than households governed by male leaders.

Greater exposure to female leaders is known to reduce gender biases. Using data from gender quotas for female leaders in Indian village councils, Beaman et al. (2009) find that prior exposure to a female chief councilor improves public perceptions of female leader effectiveness and weakens stereotypes about gender roles. Those living in areas with no gender reservations, judged leaders as significantly more effective, when the leader's gender was experimentally manipulated to be male (rather than female). This evaluation gap disappears in areas with reservation for women. Extending this theory to the domain of consumption, we propose the following hypothesis.

H₂: The negative effect of female leadership on household expenditure, is less negative in districts with a greater proportion of female leaders.

Given the relative lack of development and educational opportunities, and more traditional culture in rural areas, one might expect more negative perceptions of female leadership in villages. Lin et al. (2021) find that Chinese households' bias towards male children (in terms of greater expenditure on clothing), is greater in rural China. However, rural India is one of the few underdeveloped areas in the world to have long reserved one-third of all political posts in local governing bodies for women. Although the focus of our empirical investigation is on election to membership of the state legislative assembly, and not on leadership in local governing bodies, rural Indians have been exposed to female political leadership at a village level for over two decades. We argue that decades of experience with female leadership in local bodies has a positive spillover on how villagers react to the election of female leaders in the state legislative assembly. Reduction in gender bias against elected female officeholders due to sustained exposure, should hold across offices. Consequently, we propose the following.

¹ Source: <https://data.worldbank.org/indicator/SL.AGR.EMPL.ZS?locations=IN>

H₃: The negative effect of female leadership on household expenditure, is less negative for rural households than for urban households.

3 Data

We assembled a unique dataset combining survey data from a large-scale panel on monthly household expenditure, and hand-collected constituency-level information on electoral outcomes.

3.1 Data on election outcomes

We collected data on all elections for members of the legislative assembly (MLA) held in India between September 2013 and November 2014. Each Indian state is administratively divided into several districts, leading to 736 districts across all states, with a mean population of 1.84 million per district. Each district is administratively divided into electoral constituencies, each of similar population size. Each constituency holds a first-past-the-post election typically once every five years to elect its MLA. In 2012–2014, elections were held in 1319 constituencies across 202 districts, to form legislative assemblies in 7 states,² with a combined population of over 400 million. For each election, the Election Commission of India provided data on each contesting candidate's characteristics (name, gender, age, party affiliation, caste, number of votes garnered), voter characteristics (number of female voters, number of male voters), and the identity of the winner. Of the 1,319 elections, 1,187 were won by male candidates. Constituencies with large populations from the Scheduled Castes³ (SC) or Scheduled Tribes (ST), are reserved for candidates from these communities. We know whether each constituency is so reserved. To control for incumbent effects, we also collected the name, gender and caste of the incumbent MLA from the election held prior to September 2013 for each constituency.

Households in our data are geo-coded, such that district identifiers are publicly available for each household. More granular geographical identifiers (such as village or electoral constituency) are unavailable due to privacy concerns. To match the election data with the household-level data, we aggregate the election data to a district level. Following previous research (Clots-Figueras, 2012), we use these data to construct our key independent variable of interest: the proportion of constituencies won by women, in each district. Summary statistics of constituency level data appear in Table 1.

² These states are Andhra Pradesh, Delhi, Chhattisgarh, Haryana, Orissa, Madhya Pradesh and Maharashtra.

³ Castes are known to determine economic and political opportunities in India, and are an important aspect of both personal identity and political identity. SC and ST constitute historically disadvantaged groups.

Table 1 Differences in election specific characteristics across constituencies with male and female winners (summary statistics)

	Elections with male winners		Elections with female winners		All elections			
	Mean	SD	Mean	SD	Mean	SD	Min	Max
Winners from major political parties (1 if yes, 0 otherwise)								
Winning Party: BJP	0.41	0.49	0.49	0.50	0.41	0.49	0	1
Winning Party: INC	0.14	0.34	0.14	0.34	0.14	0.34	0	1
Winning Party: BJD	0.09	0.29	0.08	0.27	0.09	0.28	0	1
Winning Party: TDP	0.09	0.29	0.08	0.27	0.09	0.28	0	1
Characteristics of the winning candidate								
Age of winner (in years)	51.13	10.07	45.97	10.02	50.61	10.18	25	87
Votes for winner (as % of all votes)	44.76	9.19	44.98	9.17	44.78	9.18	19.45	78.46
Winning margin (as % of all votes)	12.06	10.51	12.68	10.19	12.12	10.48	0.01	69.78
Proportion of winners from "general" castes	0.75	0.43	0.57	0.50	0.73	0.44	0	1
Characteristics of the incumbent								
Incumbent won (1 if yes; 0 otherwise)	0.40	0.49	0.38	0.49	0.39	0.49	0	1
Incumbent was female (1 if yes; 0 otherwise)	0.06	0.24	0.35	0.48	0.09	0.28	0	1
Incumbent was from BJP (1 if yes; 0 otherwise)	0.22	0.42	0.30	0.46	0.23	0.42	0	1
Incumbent was from INC (1 if yes; 0 otherwise)	0.39	0.49	0.41	0.49	0.39	0.49	0	1
Other election characteristics								
Number of contestants	12.42	5.01	11.75	4.41	12.35	4.96	2	39
Number of female voters	82,975	15,483	80,050	12,894	82,682	15,265	37,636	156,239
Number of male voters	74,451	14,678	71,532	12,707	74,158	14,515	27,651	143,991

The parties are as follows: *BJP*, Bharatiya Janata Party; *INC*, Indian National Congress; *BJD*, Biju Janata Dal; *TDP*, Telegu Desam Party. "General" castes are those which are neither classified as scheduled castes nor as scheduled tribes

3.2 Data on household expenditures

We obtained household level monthly expenditure data from the 2014 Consumer Pyramid Survey (Vyas, 2014), one of the largest annual longitudinal surveys of Indian households. The data is available through a partnership of the Centre for Monitoring the Indian Economy (CMIE), with the University of Michigan's

Inter-university Consortium for Political and Social Research (ICPSR). Each household can be sampled several times across multiple waves. The data is collected through a door-to-door offline household survey, based on strictly executed weekly plans. This dataset spans 60,132 households across the country. We restricted the dataset to households in those 202 districts where elections were held in the data period, or on the period following the elections.⁴ Our final dataset comprises 305,424 monthly observations from 44,884 households.⁵

Our dependent variable is the total stated monthly household expenditure incurred by all members of the household on the purchase of consumption goods and services. This comprises expenses on the following heads: food, intoxicants, “restaurants & recreation”, “clothing & cosmetics”, “toiletries & home care products”, bills, rent, monthly installments of debt repayment, appliances, power, fuel, “transport & communication”, education, health and “other miscellaneous items”. Summary statistics of the household data appear in Table 2.

4 Model and empirical strategy

We seek to estimate the effect of the genders of MLAs in a district (i.e. the proportion of female MLAs) on the expenditures of households residing in that district. It is plausible that unobserved factors (such as electoral preferences) correlate with both the incidence of female winners, and with household expenditures. This could potentially bias parameter estimates of the effect of female leadership on expenditure. We leverage the occurrence of close elections as a source of exogenous variation in election outcomes. Following Clots-Figueras (2012), we define close elections as those where the difference in votes between the winner and the runner-up is at most 3.5% of the total votes cast. This cutoff point enables sufficient close elections, while also being sufficiently close to zero. The commonly made identification assumption is that the winner in a close election is determined by chance events like turnout, weather, or other related circumstances on election day (Clots-Figueras, 2011, pp. 670–671).

If electoral data was at the constituency level, the empirical setup would be a typical “sharp” regression discontinuity (RD) design. Each household could be assigned to the treatment or control group based on whether the female candidate in their specific electoral constituency crossed the fifty percent threshold for victory against a man. That is, the probability of treatment would jump from 0 to 1 at this “cut point.” Assuming that households in constituencies right around this threshold

⁴ The timing of the elections during our sample period is as follows: November 2013 (Madhya Pradesh, Chhattisgarh), December 2013 (Delhi, Rajasthan), April 2014 (Odisha), May 2014 (Andhra Pradesh) and October 2014 (Haryana, Maharashtra).

⁵ MLA elections are held once in five years, so researching elections after 2013–2014 is feasible. However, our research requires careful matching of the timing of elections and the timing of expenditures reported in the household survey. We found a smaller sample size of households in the Consumer Pyramid Survey for which the timing of expenditure data matched with the timing of elections conducted after 2013–2014.

Table 2 Differences in household specific behavior and characteristics across households with low and high female leadership (summary statistics)

	All observations		Households with low female leadership		Households with high female leadership	
	Mean	SD	Mean	SD	Mean	SD
Number of observations	311,283		154,820		156,463	
Number of households	46,454		24,699		21,755	
Monthly household expenditure (in Rs.)	7969	7001	7897	5947	8041	7906
Monthly household income (in Rs.)	14,847	14,976	14,394	15,167	15,294	14,771
Proportion of constituencies won by a woman	0.121	0.131	0.012	0.027	0.228	0.103
Proportion of constituencies won by a woman in a close election	0.018	0.050	0.001	0.010	0.035	0.064
Household specific controls						
Gender of the head of household (1 if female, 0 otherwise)	0.086	0.280	0.091	0.288	0.080	0.242
Whether household is rural (1 if yes)	0.315	0.464	0.347	0.476	0.284	0.451
Household size	4.453	1.682	4.451	1.726	4.455	1.639
Whether head of household has no education (1 if no education, 0 otherwise)	0.274	0.446	0.293	0.455	0.257	0.437
Whether household has a business	0.107	0.309	0.100	0.300	0.114	0.318
Whether household has a bank account	0.752	0.432	0.732	0.443	0.771	0.420
Whether household belongs to "Other Backward Castes"	0.317	0.465	0.327	0.469	0.308	0.462
Whether household belongs to Scheduled Castes	0.156	0.363	0.147	0.354	0.165	0.371
Whether household belongs to Scheduled Tribes	0.084	0.278	0.100	0.300	0.069	0.253
Whether household belongs to "Upper Castes"	0.257	0.437	0.233	0.423	0.281	0.449

1. Households with low female leadership are those who live in districts where less than 10% of all constituencies were won by a woman; those with high female leadership are those who live in districts where at least 10% of all constituencies were won by a woman

2. Mean expenditure of households with "high female leadership" exceeds that of households with "low female leadership" by 1.8%; however, mean household income of the latter segment exceeds that of the former segment by 6.3%. This provides model free evidence of a negative effect of female leadership on expenditure, as a proportion of income

are very similar except for the chance occurrence on election day, we could compare them to identify how a female victory affects expenditures.

However, due the lack of a constituency identifier in the household data, our treatment variable (whether the elected MLA is female) is not at the constituency level, but aggregated to the district level; it is the “percentage of constituencies where a female candidate was elected (versus a male).” As a result, the treatment changes continuously, not discreetly, at the cutoff point. That is, a household is assigned a *probability* of being treated. This feature lends our regression discontinuity design to be “fuzzy” rather than “sharp.” Accordingly, we focus on obtaining intention-to-treat estimates or the average impact on those households in a district, whether or not they actually lived in a constituency with a close female victory. In other words, we estimate the local average treatment effect (LATE).

Analytically, the estimation of the LATE is carried out using two-stage least squares. The key endogenous variable is the fraction of constituencies in the focal district which were won by a woman. The instrument is the fraction of all constituencies in the focal district which were won by a woman *in a close election* against a man. This fraction is positively correlated with the fraction of all constituencies which were won by women, satisfying the relevance criterion. However, as discussed earlier, outcomes in close elections can be considered randomly determined — thus mitigating any potential correlation with household expenditure. The 2SLS model is:

$$Y_{idm} = \beta F_d + \gamma TC_d + \sum_{j=1}^{Nd} \sigma_{1j} f(M_{jd}) I_{jd} + \sum_{j=1}^{Nd} \sigma_{2j} I_{jd} + X_{idm} \vartheta + Z_d \varphi + \alpha_c + \delta_m + \varepsilon_{idm} \quad (1)$$

The first-stage is:

$$F_d = \theta + \vartheta FC_d + \mu TC_d + \sum_{j=1}^{Nd} f(M_{jd}) \varnothing_{1j} I_{jd} + \sum_{j=1}^{Nd} \varnothing_{2j} I_{jd} + X_{idm} \rho + Z_d \omega + u_d \quad (2)$$

In Eq. (1), Y_{idm} is the (natural log of) total household expenditure for household i who resides in district d , in month m . The main independent variable of interest (F_d) is the fraction of constituencies in the district that were won by a female politician. While the outcome of close elections can be considered random, the existence of these close elections may not be random, if say, close elections are more likely in areas where females are more likely to run in the first place, or other features that affect the probability of a female winning are systematically different. This would violate the exclusion restriction for identification. To alleviate this problem, we add TC_d , the fraction of constituencies in district d , in which there were close elections between women and men, as a control. X_{idm} represents the monthly household income, the household size (decomposed into the number of male adults, female adults, male children and female children), the gender of the household head, indicators for whether the household is rural, whether the head has any education, a business, or a bank account. Z_d is a vector of district electoral characteristics (aggregated from constituency-level data): proportion of elections won by incumbents, proportion of elections won by the BJP, proportion of elections won by the Indian

National Congress (the second largest party in the central government), proportion of elections with a SC/ST winner, and the proportion of elections won by incumbents who are female. We also control for month-fixed effects (δ_m), which account time-varying unobservables which do not vary across households (e.g., the advent of seasons, festivals, etc.) and caste-specific fixed effects (α_c), which account for how socioeconomic status beyond income might affect expenditure.

M_{jd} is the percentage margin of victory or defeat in an election in constituency j between a man and a woman ($j=1\dots N_d$) in the district d . On average, in our sample, districts had 1.2 male versus female elections.⁶ Following, Clots-Figueras (2012), we include the margin of victory (or defeat) for all man-woman elections in a district, and its squared term. $f(M_{jd})$ are these polynomial functions. The polynomials are interacted with the indicator I_{jd} (1 if there was a male versus female election in the constituency j in district d , else 0).

Our instrument FC_d is the fraction of constituencies in the district won by a woman in a close election against a man. We estimate the model on post-election data, which relies on comparison across households with varying levels of female leadership in the period following an election. In Web Appendix 1, we specify and present a model which incorporates pre- and post-election data, and relies on differences both within and across households, for identification. We present several additional analyses to support our identification strategy.

5 Results

We present results in Table 3. Column 1 is the OLS regression of log total expenditure on percentage of female winners in a district. We control for household characteristics and electoral characteristics. Column 2 instruments for female winners, includes additional controls for linear margins (as presented in Eq. (1)), and the squared terms of constituency margins as controls. Both models employ caste (of household) specific fixed effects and month specific fixed effects.

Across both models, we find that household expenditure is lower in districts with greater proportion of proportion of female winners in MLA elections, providing strong support for hypothesis 1. This suggests that despite increasing evidence in the literature and the media, of better performance of female leaders, stereotypically negative views of female leaders perhaps played an important role in spending decisions in the world's largest democracy.

Our result of a negative effect of female leadership is both statistically and economically significant. Based on the parameter estimates of the full model with instruments, we find that a 1% increase in the proportion of constituencies in a district that are won by women, is associated with a 15.4% reduction in monthly household expenditure. In the 2013–2014 elections, all winners in as many as 109 districts

⁶ We label an election which has at least one male contestant and one female contestant, as a “male versus female” election. The frequency of the occurrence of male versus female elections is as follows: 0 in 51 districts, 1 in 59 districts, 2 in 21 districts, 3 in 16 districts, 4 in 7 districts, and 5 in 2 districts.

Table 3 Effects of female leadership on log (household expenditure)

	OLS (no margins)	2SLS (linear and quadratic)	Low current female leadership	High current female leadership
Proportion of female winners	-0.042*** (0.014)	-1.078*** (0.116)	-3.644*** (0.202)	1.764*** (0.246)
Proportion of close elections	0.157*** (0.011)	0.359*** (0.014)	0.065*** (0.016)	0.450*** (0.023)
Household characteristics				
Monthly HH income (Rs.)	6.15e-06*** (0.000)	5.99e-06*** (0.000)	6.33e-06*** (0.000)	5.76e-06*** (0.000)
Number of female adults	0.065*** (0.002)	0.067*** (0.002)	0.066*** (0.003)	0.082*** (0.005)
Number of male adults	0.070*** (0.002)	0.063*** (0.002)	0.063*** (0.003)	0.068*** (0.004)
Number of female children	0.032*** (0.002)	0.028*** (0.002)	0.038*** (0.003)	0.029*** (0.003)
Number of male children	0.046*** (0.002)	0.037*** (0.002)	0.042*** (0.003)	0.041*** (0.003)
Whether head of HH has no education (1 if no education)	-0.171*** (0.004)	-0.155*** (0.004)	-0.158*** (0.006)	-0.184*** (0.007)
Gender of the head of HH (1 if female, 0 otherwise)	-0.029** (0.006)	-0.033** (0.006)	-0.029** (0.008)	-0.025** (0.010)
Whether HH is rural (1 if yes, 0 otherwise)	-0.227*** (0.004)	-0.235*** (0.004)	-0.085*** (0.006)	-0.170*** (0.007)
Whether HH has a business (1 if yes, 0 otherwise)	0.062*** (0.005)	0.071*** (0.005)	0.042*** (0.007)	0.084*** (0.007)

Table 3 (continued)

	OLS (no margins)	2SLS (linear and quadratic)	Low current female leadership	High current female leadership
Whether HH has a bank account (1 if yes, 0 otherwise)	0.016*** (0.002)	0.014*** (0.002)	0.013*** (0.003)	0.000 (0.004)
Characteristics of winners and incumbents				
Proportion of elections won by incumbent	-0.039*** (0.009)	-0.052** (0.009)	-0.038*** (0.010)	0.070*** (0.018)
Proportion of elections won by BJP	-0.028*** (0.007)	0.174*** (0.009)	0.103*** (0.009)	0.019 (0.020)
Proportion of elections won by Congress	0.021** (0.009)	-0.079*** (0.013)	0.123*** (0.014)	-0.246*** (0.020)
Proportion of elections won by candidates from SC/ST	-0.410*** (0.008)	-0.294*** (0.014)	-0.599*** (0.012)	-0.662*** (0.050)
Proportion of elections won by female incumbents	0.311*** (0.016)	0.429*** (0.033)	1.331*** (0.040)	-0.350*** (0.046)
N	304,397	305,424	151,176	153,221
Number of households	44,621	44,884	23,637	20,984
R ²	0.354	0.398	0.361	0.203

All models include month and caste fixed effects. Columns 2 controls for linear and second-order polynomial margins (these coefficients are not presented for brevity). Columns 3 and 4 divide households by whether their districts have below or above/equal to the median (10%) proportion of constituencies with a female winner. Columns 3 and 4 use a 2SLS specification with linear margins. Margins are omitted due to collinearity in these models. Robust standard errors are clustered at the HH level, and *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

in our data were men. With an average of 6.5 constituencies per district, moving from 0 to 1 female winner represents an increase in the proportion of female winners in such districts from 0 to 15.3%. Assuming linear effects across the entire distribution of the proportion of female winners, our estimates suggest a substantial difference in household consumption levels between districts with no female MLA, and those with 1 female MLA.

We also account for the gender of the *incumbent* MLA by controlling for the proportion of female incumbents (i.e., proportion of female MLAs prior to the 2013–2014 election). The magnitude of the positive effect of female incumbents is lower than that of the negative effect of female winners. So, despite the positive effect of female incumbency, districts with higher levels of current female leadership witness lower household expenditure.

We suggest that the reason behind the fall in expenditure is that households are biased against female leaders, and that they might feel less confident or more uncertain under female leadership. If they are uncertain about their future income growth, this uncertainty should also be reflected in an increase in “precautionary savings” (Carroll & Kimball, 2008). Further analysis of household savings confirmed this intuition; details are available from the authors.

5.1 Differences in effects of high and low female leadership

We split our dataset into two: low female leadership: districts with lower than the median proportion of female winners (10%), and the remaining districts. We separately estimate the model with the same instrumentation strategy on both datasets. We find a negative effect of female leadership among households in districts where less than 10% of election winners were women (Table 3). However, we find a positive effect of female leadership in districts where at least 10% of election winners were women,⁷ providing strong support for hypothesis 2.

5.2 Differences in female leadership effects across rural and urban households

We estimate the model (Eqs. (1) and (2)) separately on rural and urban households. We find that the effect of female leadership on expenditure by rural households is less negative than the effect on urban households (Table 4). Since we control for household income and occupation, this difference in effects of female leadership is unlikely to be driven by differential levels of development across rural and urban India. This result suggests that years of exposure to female leaders in local governance bodies in rural India has partially negated the stereotypically negative views of female leadership in the state assembly. Although urban consumers also might have been witnessed more female leaders in their own governance bodies over time,

⁷ In another operationalization of low and high female leadership, we classify districts with 0 or 1 female winner as “low” and others as “high.” The statistical significance and direction of the effects of low and high female leadership remain unchanged. We prefer operationalizing female leadership as a percentage since Indian reservation policies for female candidates are based on percentages.

Table 4 Difference in the effects of female leadership across rural and urban households

	Rural households	Urban households
Proportion of female winners	- 0.739*** (0.165)	- 1.399*** (0.196)
Proportion of close elections	0.124*** (0.025)	0.451*** (0.018)
Household characteristics		
Monthly HH income (Rs.)	2.10e-06*** (0.000)	1.22e-06*** (0.000)
Number of female adults	0.077*** (0.004)	0.050*** (0.003)
Number of male adults	0.094*** (0.004)	0.035*** (0.003)
Number of female children	0.045*** (0.003)	0.028*** (0.002)
Number of male children	0.062*** (0.003)	0.033*** (0.002)
Whether head of HH has no education (1 if no education)	- 0.106*** (0.006)	- 0.158*** (0.006)
Gender of the head of HH (1 if female, 0 otherwise)	- 0.021** (0.011)	- 0.031*** (0.006)
Whether HH has a business (1 if yes, 0 otherwise)	0.067*** (0.015)	0.052*** (0.005)
Whether HH has a bank account (1 if yes, 0 otherwise)	0.015*** (0.003)	0.007** (0.003)
Characteristics of winners and incumbents		
Proportion of elections won by incumbent	- 0.131*** (0.016)	0.050*** (0.011)
Proportion of elections won by BJP	0.228*** (0.013)	0.172*** (0.014)
Proportion of elections won by Congress	0.003 (0.023)	- 0.122*** (0.017)
Proportion of elections won by candidates from SC/ST	- 0.446*** (0.015)	- 0.147*** (0.031)
Proportion of elections won by female incumbents	0.541*** (0.047)	0.369*** (0.056)
N	95,919	208,478
Number of households	13,472	31,149
R ²	0.371	0.406

HH, household; *BJP*, Bharatiya Janata Party; All columns include month and caste fixed effects. Both models use a 2SLS specification with linear and quadratic margins. Robust standard errors are clustered at the HH level; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

socially close-knit rural communities are perhaps more likely to have been directly exposed to such leaders, and perhaps even interacted with them.

Our results are robust to several features of the data and model. Details appear in Web Appendix 2.

6 Implications and conclusion

6.1 Implications for legislation

We provide a demand side perspective to the debate on the effects of female reservation in political positions. On one hand, our result that households in districts with low levels of female leadership (typically 1 MLA in the entire district) spend less than those in households with no female leaders supports the view that gender stereotypes prevail in Indian states, and that the election of female MLAs by way of reservation or otherwise might lower consumer confidence. However, from 2029, the Women's Reservation Bill will reserve one-third seats for women. Our result that households at high levels (at least 10%) of female leadership spend more than households with no female leadership provides a unique demand side rationale in favor of this bill. One implication is that gender quotas should be set at sufficiently high levels, and that small quotas might have negative effects at least in the short term. Our result that high female leadership has lower negative effects on household expenditure among rural households than among urban households favors a policy of prioritizing gender-based reservations among MLA seats in rural areas over urban areas.

6.2 Implications for political parties and female politicians

All major political parties in India have stated their commitment to increasing female representation in elected governing bodies. Our results suggest two strategies for successfully increasing female representation in state legislative assemblies. First, from a demand side standpoint it might be more prudent to field female candidates from districts which already have at some female representation. Given a choice of constituencies, female candidates should perhaps choose to run from constituencies in districts with high female representation. Second, the effect of female incumbent MLAs (those elected prior to 2013–2014) on expenditure is positive. Political parties might do well to field female candidates for more than one term. A negative effect on consumer confidence in the short term should not dissuade parties or female candidates from running again for office.

6.3 Implications for consumers

With increasing female leadership across the world, and across different forms of government, millions of consumers will face female political leaders for the first

time in the next few decades. Our research finds that those consumers who have been exposed to moderately high levels of female leadership (it is notable that that we classify 10% as “high”), have signaled confidence in such leadership by increasing spending. Although a large and growing body of evidence has established that female leaders perform better than their male counterparts on at least some aspects of governance, our research provides a unique rationale based on the behavior of *consumers* for why stereotypically negative views about female leadership might perhaps be misplaced.

Although the primary duty of elected leaders is to serve their constituents, there is remarkably little evidence about how consumer behavior is affected by the identity of political leaders. Future research could investigate the mechanism of how female leadership affects consumption. From a purely marketing standpoint, it might be interesting to study whether the success of female political leaders affects marketing decisions such as brand positioning and consumer decisions such as user generated content.

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Data Availability All data used in this research are available from the corresponding author.

Declarations

Ethical approval This research did not involve human participants.

Consent to participate Not applicable.

Conflict of interest The authors declare no competing interests.

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