

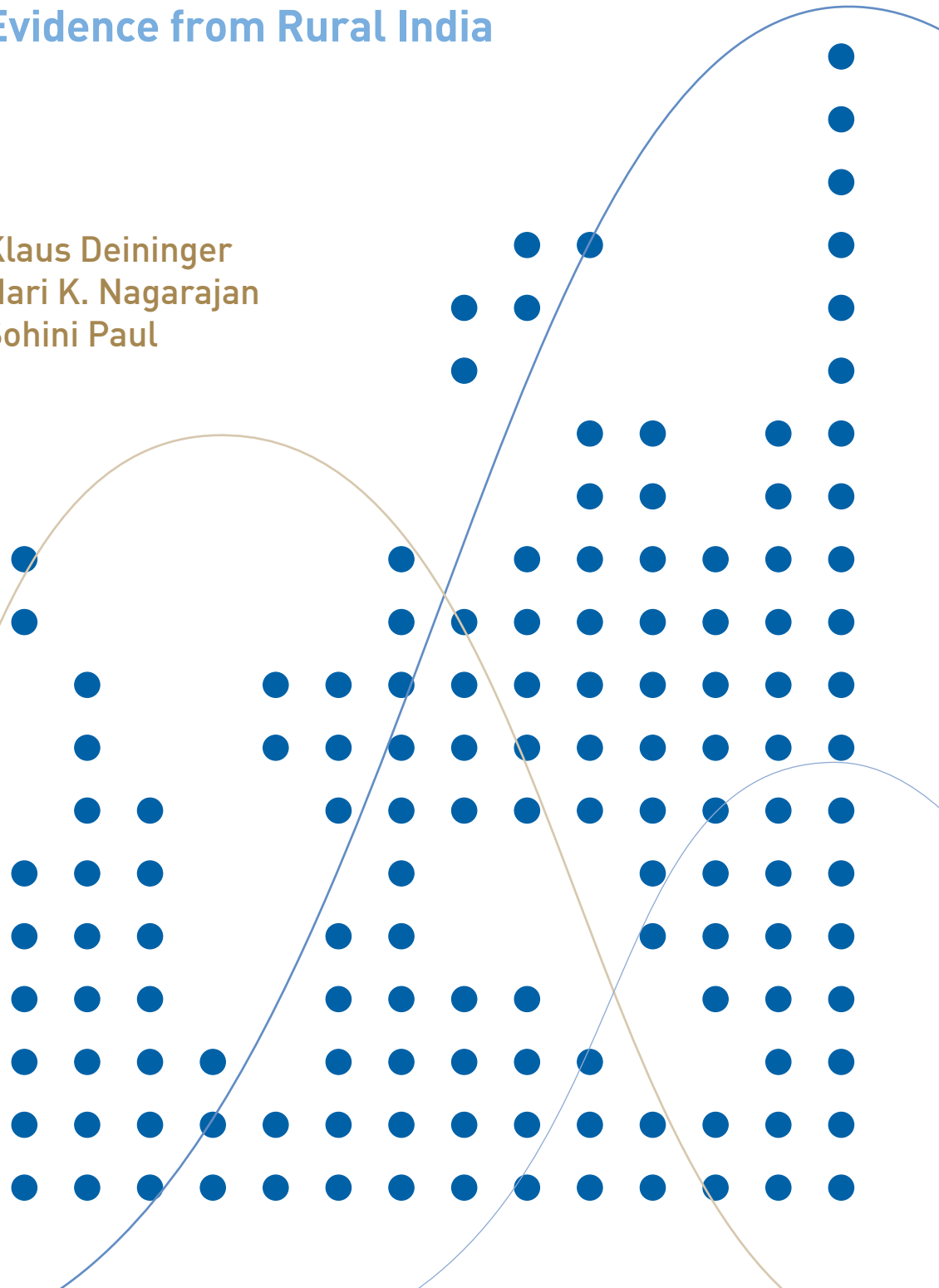
NCAER Working Papers on Decentralisation and Rural Governance in India

Can Political Reservations Empower Women and Affect Economic Outcomes? Evidence from Rural India

Klaus Deininger
Hari K. Nagarajan
Sohini Paul

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Klaus Deininger^{*}, Hari K. Nagarajan and Sohini Paul

Abstract

While many studies explored impacts of political quotas for females on public goods provision, knowledge on immediate and longer term economic impacts of such interventions remains limited which is undesirable in view of the widespread adoption of such policies. We use nation-wide data from India on current outcomes and a village's reservation status for the entire period for which reservations had been in place to assess recurrent and longer-term impacts of this policy. Beyond recurrent impacts on public good delivery, we find evidence on persistent effects of reservation on voicing of concerns to local authorities if there are problems, the amount of time females spend on domestic duties and in the labour market, as well as their bargaining power regarding reproductive choices and control of finances within the household.

Keywords: Public goods, Reservations, India, Discrimination, Political Economy

JEL Codes: O100, H110, H700

[#] The findings, interpretations and conclusions expressed here are those of the authors and do not necessarily reflect the views of NCAER or its Governing Body.

^{*}The corresponding author. E-mail: kdeininger@worldbank.org.



About the Working Papers

NCAER Working Papers on Decentralisation and Rural Governance in India

The NCAER Working Papers on Decentralisation and Rural Governance in India are the output of the research on decentralisation being done at the National Council of Applied Economic Research (NCAER) in New Delhi under the project theme on “Building Policy Research Capacity for Rural Governance and Growth in India.” These working papers are made available for early dissemination, discussion and comments, and are subject to revision before being published as final output.

About the Project

Building Policy Research Capacity for Rural Governance and Growth in India

NCAER, has been engaged since 2009 in a research capacity-building initiative on the central question of whether the extent of decentralisation in India, and the creation of associated institutions, has been effective for service delivery and achieving pro-poor growth. The belief that a ‘bottom-up’ approach to public goods provision is more likely to be effective and inclusive is the key motivation for the work. At least in theory, when public goods are provided in a decentralised setting, the inefficiencies of transfers from higher to lower tiers of governments could be greatly reduced, if not eliminated. With greater decentralisation, the target population’s satisfaction with service delivery could also be higher. Is this happening in India?

The project is funded by the Globalization, Growth, and Poverty initiative of the Canadian International Development Research Center (IDRC Grant Number 105223) and is scheduled to be completed in 2012. This project supports the building of policy research capacity at NCAER through training, recruitment and publications, and the dissemination of this work through workshops, round tables, policy briefs, working papers, and a website.

The project is led by Hari K. Nagarajan, Senior Fellow at NCAER, and is advised by a committee that includes Andrew Foster, Pranab Bardhan, Hans P. Binswanger-Mkhize, S. S. Meenakshisundaram, Klaus Deininger, Renana Jhabvala, and Alain de Janvry. From its inception, Shri Mani Shankar Aiyar (former Union Minister for Panchayati Raj and Youth Affairs and currently Member of Parliament) has been providing inputs related to policy outreach and effective dissemination. The research work is also substantially aided at NCAER by Shashanka Bhide and Devendra B. Gupta.

The Australia-South Asia Research Centre at the Australian National University (ASARC) and Raghbendra Jha, Rajiv Gandhi Professor of Economics and Executive Director of ASARC are significant partners in this project and, Professor Jha collaborates on several papers related to the project.



Grant support from IDRC Canada is gratefully acknowledged. Canada

Foreword

I am delighted to introduce this *NCAER Working Paper Series on Decentralisation and Rural Governance in India*. This series of working papers represents one of the outcomes of a multi-year research programme by a team led by NCAER Senior Fellow Dr Hari K. Nagarajan on “Building Policy Research Capacity for Rural Governance and Growth in India.” The work, funded by generous support from the Canadian International Development Research Center (IDRC), is aimed at enabling and building the capacity for sound policy research on decentralisation, work that is based on a mix of good theory and state-of-the-art empirical methods to analyse microeconomic, household-level data. NCAER has a long tradition of such independent, empirical economic research and is unique in India in its capacity to collect large-scale, household survey data. I am very grateful to IDRC for its support.

At NCAER, this research is being guided by an international advisory committee comprising Pranab Bardhan (Berkeley), Hans Binswanger-Mkhize (IERI, Tshwane University), Alain de Janvry (Berkeley), Klaus Deininger (World Bank), Andrew Foster (Brown), Renana Jhabvala (SEWA), and S. S. Meenakshisundaram (NIAS). The Australia-South Asia Research Centre (ASARC) in the Crawford School of Economics and Government at the Australian National University is an active partner in this work. Raghendra Jha, ASARC’s Executive Director, is a significant contributor and guide for this research programme.

These papers address a range of policy issues using the ARIS/REDS panel data sets at NCAER. These are unique data sets that cover a variety of agro-climatic conditions in rural India and allow for an exploration of a number of important policy questions. The topics addressed in the *NCAER Decentralisation Series* include programme capture, gender impacts of decentralisation and political reservations, service delivery and access to health, water supply, and education services, the quality of governance and its implications for household welfare, and the impact of devolution and improved local governance on reducing household vulnerability.

These working papers provide significant, fresh, evidence-based insights for understanding what is working and what is not in the devolution process in India. I am certain that the papers in the *NCAER Decentralisation Series* will promote deeper discussion of the design, implementation, and monitoring and evaluation of decentralisation and its role in poverty reduction and improving service delivery in India.

New Delhi
October 21, 2011

Shekhar Shah
Director-General
NCAER

About the Authors

Klaus Deininger:

Klaus Deininger is a Lead Economist in the rural development group of the Development Economics Group at the World Bank. His areas of research focus on income and asset inequality and its relationship to poverty reduction and growth; access to land, land markets and land reform and their impact on household welfare and agricultural productivity; land tenure and its impact on investment, including environmental sustainability; and capacity building (including the use of quantitative and qualitative methods) for policy analysis and evaluation, mainly in the Africa, Central America, and East Asia Regions. He has authored a number of scholarly articles in leading international journals, has contributed chapters in numerous books and presented his research at seminars at various leading universities and research institutes across the world.

Hari K. Nagarajan:

Hari K. Nagarajan is a Senior Fellow at NCAER. He holds a PhD in economics from the University of Oklahoma, Norman. He has taught at the Indian Institute of Management (IIM), Bangalore as well as at The University of Oklahoma, Norman. His research has primarily been in the area of rural development within which he has published papers on land markets, land reforms, mutual insurance, gender discrimination, and price formation.

Sohini Paul:

Sohini Paul is a Fellow at NCAER, New Delhi. She is a PhD from IGIDR, Mumbai. Before joining NCAER, she was a post-doctoral fellow at University of British Columbia, Canada. Her area of interest is gender, public health and decentralisation.

Can Political Reservations Empower Women and Affect Economic Outcomes? Evidence from Rural India

I. Introduction

Women, especially in developing countries, are often discriminated against in terms of asset ownership and access to public goods and services. Redressing such bias is important not only for ethical reasons but also has an economic rationale because social exclusion can reduce overall welfare and threaten social stability. Both women's ability to ensure their needs is taken into account in policy design and public service delivery as well as in household decisions making. Quotas (hence forth political reservation) for women can have large number of positive outcomes. Some of these include an empowerment, increase in the level of human capital, improvements in intra household dynamics, as well as possible improvements in the quality of governance. Political reservations if used in the context of decentralisation and devolution can bring about significant micro level outcomes that would have been otherwise not possible. With adequate devolution of powers, finances and functions, women leaders at the local level can help to overcome a large number of deficiencies affecting women, the girl child, as well as societies at large. Political reservation is perceived to be particularly important in poor countries. In such countries, the disparities in access to basic services, (in particular related to health and fertility option) are severely limited for women. Gender discrimination in poorer countries often happens at the time of accessing public goods, participating in labour markets, inheritance, fertility choice, schooling of the girl child etc. Hence, it is posited that women leaders and decision makers that emerge out of this system will help in providing a mechanism for redressing this divide.

It is important to determine whether political reservations are merely a redistributive power or whether it can actually enhance the level of economic activity and therefore in principle benefit the society at large. The latter would be the case if due to either structural limitations or females lacking voice have not been to access public goods that would allow them to fully exploit their productive potential and, a one-time intervention in the form of political reservation will therefore help to overcome this bias and have a long term impact. The empirical evidence to decide on this is ambiguous. Whether and to what extent such effects materialise is an empirical issue. However, while a large and increasing number of studies explore the topic, most look only at contemporaneous effects in the political sphere, often aggregated at household level. Expanding this to an individual level, considering possible longer-term effects will be important. It will also allow complementing the focus on public goods that has prevailed in the literature with an emphasis on intra-household bargaining, which will be particularly relevant for gendered outcomes. This paper addresses the following questions: 1) Are there gender differentiated impacts of problems associated with service delivery that continue even after political reservations? 2) Do political reservations empower women to approach the elected representatives for resolving problems? 3) Is there any measurable evidence of improved welfare for women as well as at the household level due to reservation? 4) Will intra household bargaining improve especially on matters related to fertility choice and can this then be attributed to empowerment in the political process?

Whether and to what extent these outcomes materialise and the degree to which these can be attributed to political reservations is an empirical issue. While the extant literature has mostly focused on

contemporaneous effects at the household level, the current paper provides empirical evidence of long term effects of political reservations at the household -member level. It would be able to draw attention to intra household bargaining in this way. In particular, we are interested in examining whether women are able to have any control on fertility choice and related health indicators such as AIDS awareness (indicative of women being able to explore and access sources of information from alternate sources). One of the important dimensions of empowerment is fertility choice. In societies that discriminate against women, the choice of contraception is significantly skewed towards women. For example, use of male contraception is significantly lower compared to the various birth control measures adopted by women of the family. Approximately 70% of the contraceptive couples depend on female methods in poor countries (UN Report 2007). The ratio of female to male sterilization was 3 to 1 in China and 4 to 1 in Latin America (UN Report 2004). The method of vasectomy was almost unknown in Africa till late 1980's [Sekadde-Kigundu et al (1991)]. The consequence of putting the onus of birth control on women has negative impact on her health. High level of fertility leads to adverse health outcomes for women. Similarly, repeated termination of unwanted pregnancy by abortion also produces negative health effects for women. It is therefore important to understand whether there can be mechanisms that can put in place within which women can a) become increasingly aware of problems related to fertility choice, b) awareness translate into actionable outcomes.

Apart from fertility choice, a significant indicator of member and household level indicator of welfare is the impact on household work and labour market participation. If quality of public service delivery improves, the results will manifest itself on the ability of households and its members to devote less time in accessing public goods as well as common property. This will result in reduced time for household work and an increase in allied wage earning activity. In particular we wish to examine whether a reduction in household work will lead to a) increased wage employment or b) self-employment in agriculture.

We use data from India where, in an effort to overcome long-standing discrimination by gender and caste, far-reaching political decentralisation in the early 1990s, has been combined with regulations mandating that a share of elected leadership positions be 'reserved' for women. Villages subject to reservation in any given period are chosen randomly, allowing differences between reserved and non-reserved locations to be interpreted in a causal sense. As information is collected for 15 years after the policy had been implemented, with about one- third of villages still never having been reserved, it allows us to explore whether - and if yes how - reservations affected long-term outcomes. We find that a) there are gender variegated impacts of service delivery; b) women are increasingly able to approach to the elected representatives to have their problems related to public service delivery resolved; c) the awareness about various forms of contraception increases for women and that the choice of contraceptives has been diversified and become less woman centric; d) awareness of epidemics like AIDS has improved; e) the magnitude of household work for women has declined and they have used the time to work more in own farms, and f) this leads to significant increases to household income. Therefore evidence suggests that political reservations for women not only affect women it also has benefits for the households as a whole.

The paper is structured as follows: Section two provides context by discussing the overall rationale for gender quotas in the Indian context, and the hypotheses guiding our investigation. Section three describes

the data and compares key outcome variables in terms of leader quality and accountability, quality of public services, political participation, and willingness to contribute to public goods, between reserved and unreserved Panchayats. Section four builds on this by econometrically exploring potential heterogeneous effects of reservations as well as their persistence over time. Section five concludes with a set of policy implications.

II. Female Reservations: Rationale and Existing Evidence

Persistent discrimination has often left women severely disadvantaged in terms of their ability to make their voice heard regarding the provision of public goods of relevance to their specific type of production process and investment.

II.1 Rationale

Many societies are characterised by under-representation of females in bodies for policy making at national or local level (Dahlerup 2006).¹ If such lack of representation is due to institutional barriers, cultural norms, or political discrimination and if policy-makers' attributes matter, actions to increase participation share could affect the nature of political equilibria, and by implication, long-term outcomes. This line of argument provided a justification for affirmative action, including quotas to reserve a share of political positions for females, to bring about greater equality in opportunity and outcomes. As a consequence, gendered quotas to increase women's share of elected positions have become very popular; in fact they are, in different forms, now practiced in more than 100 countries (Krook 2009). In some cases, such measures have led to perceptible shifts in the composition of legislatures. For example, in Rwanda, establishment of a gender quota (of 30%) in 2003 is widely credited with having contributed to the fact that female parliamentarians now make up the majority of the legislative assembly (Powley 2007). Quotas have also been introduced in many European countries although in some cases their impact may be diminished by them being applicable to candidates rather than seats.²

India is characterised by large gender gaps in key human development indicators such as child mortality and malnutrition as well as levels of antenatal coverage, contraceptive use, adolescent fertility, and maternal mortality that are much worse than what is found in countries with similar or even lower levels of per capita income.³ Discrimination against females originates in marriage practices and caste structures that show little sign of disappearing and may even be reinforced over time (Anderson 2003). Despite high overall growth since the mid-1990s, some studies suggest that gender gaps widened in southern states that enjoyed higher levels of income growth and higher initial levels of female empowerment (e.g. AP, KA, TN), suggesting that economic growth alone may not bring about gender equality (Raabe *et al.* 2009). Persistently high levels of gender inequality are often believed to be reinforced by deficient provision of public goods, e.g. maternal health and peri-natal care for girl children (Bhalotra and Rawlings 2011). To the extent that they can bring about better and more equitable

¹ Globally, less than 20% of members in national parliaments are female, although this varies from close to parity in Nordic and some African countries such as Rwanda to some 10 percent in Arab states (International Institute for Democracy and Electoral Assistance (IDEA) 2008).

² For example in France, although 50% of candidates are required to be women, only 18% make it to the national assembly (Frechette *et al.* 2008).

³ UNDP's gender inequality index based on 2008 data, ranks India 122 out of 138 countries, below Rwanda (83), Lao PDR (88), Egypt (108), Moldova (38), and China (40).

provision of such services, quotas to bring women into positions of power could help to address and eventually overcome such bias.

In 1992, India's 73rd Constitutional Amendment mandated far-reaching decentralisation by establishing a three-tier system of district, block and village-level councils. The *gram Panchayat* (GP) is the lowest tier of local government at village level. It comprises a president (*Pradhan* or *Sarpanch*) and council members who are elected from the panchayat's wards. Its responsibilities include (i) provision of major public services such as health, education, drinking water, and roads; (ii) setting rates and administering local taxes; (iii) administration, formulation and implementation of local development plans; and (iv) selection of beneficiaries and implementation of social and economic programmes established and paid for by central government. Regular assemblies (*gram sabhas*) by all voters in the GP are meant to monitor performance and increase democratic accountability. To prevent decentralisation from reinforcing rather than reducing the power wielded by traditional elites and to counter what was perceived as a legacy of disenfranchisement and under-representation by females and other disadvantaged groups, this was combined with reservation of a share of seats for women as well as scheduled castes and tribes.⁴

A number of influential studies have found that India's efforts to increase female participation in political processes and decision-making had significant impacts. An India-wide study notes that reservations create opportunities which many women are able to utilise (Ministry of Panchayati Raj 2008). In West Bengal and Rajasthan, female policy makers who have come to power through quotas provide more public goods that benefit and are valued by female voters such as water and roads (Chattopadhyay and Duflo 2004). Mandated changes in female leadership prompted by quotas were also found to increase the quality of political processes and prompt greater female participation in *gram sabha* meetings in South India (Besley *et al.* 2005). In terms of outcomes, reservations were associated with higher levels of child survival, an effect that could arise because female leaders, who are more attuned to the needs of child health, helped to improve access to and use of services such as antenatal care and public birth facilities. This in turn translates into significantly higher levels of breastfeeding and immunisation (Bhalotra and Clots-Figueras 2010). The impacts of reservations can be felt in other spheres as well; phased introduction of reservations at state level is used to argue that female reservations gave women greater voice, resulting in increased reporting of crimes against women and greater resistance to violence (Iyer *et al.* 2010). Reserved seats occupied by low-caste or tribal (but not high-caste) females are also argued to have resulted in higher levels of investment in health and early education and greater efforts to implement redistributive land reforms and inheritance legislation favourable to women (Clots-Figueras 2009).

II.2 Existing evidence

Across countries, studies suggest that female participation in legislative processes helped to overcome gender bias in access to specific services and that female legislators tended to allocate more funds to causes important to women (Paxton and Hughes 2007, Reingold 1992, Saint-Germain 1989). Effective

⁴ At village level, most states now reserve one third of council members and Pradhan positions for women. By comparison, the share of positions reserved to ST/SCs equals the population share of the ST/SC population (Bardhan *et al.* 2010). Although, many studies explored impacts of caste reservations (Krishnan 2007, Pande 2003), our focus is on those for females. At district level, it appears that reservation of positions in the legislature for scheduled castes but not tribes improves access to education facilities, mainly primary schools, for relevant constituencies.

provision of greater volumes of public goods could then help previously disadvantaged groups to more quickly eliminate such biases while greater political participation increases the pool of talent which the system can draw upon or allow greater deliberation and innovation to eliminate mistakes in the process (Page 2007). Studies suggest that higher levels of female representation in parliament are associated with lower levels of corruption (Dollar *et al.* 2001) as well as more spending per student, higher shares of female teachers, and greater secondary enrolment by girls. Greater female representation is also found to improve women's access to health via higher public spending that in turn is noted to increase the number of doctors and women's ability to receive pre-natal care (Knack and Sanyal 2000).

Studies exploiting differences in the timing of the introduction of female voting across US states suggest that expansion of the suffrage to women led to increased public spending and more liberal voting patterns, a phenomenon that persisted over time as females gradually took advantage of the franchise (Lott and Kenny 1999). Laws extending voting to females were followed by shifts in legislative behaviour and large increases in local health spending (Miller 2008). At the same time, the impact of gender reservations is context specific. Evidence of higher female participation increasing health spending (Rehavi 2008) contrasts to findings from mayoral elections during the 2000s where policy-makers' gender did not appear to have any on effect on the size of government, the composition of municipal spending and employment, or actual outcomes such as crime rates (Ferreira and Gyourko 2010). One possible explanation is that city governments come closer to the Downsian model.⁵ In Californian school boards where females already hold 45% of elected seats, an anti-incumbent bias was observed whereby adding an additional female (male) increased the likelihood of a male (female) winning the next election (Schwarz 2010).

In India, studies that find significant and positive impacts of reservation are in contrast to others arguing that reservation-induced effects may be more ambiguous or even negative. One possibility may be that, once other factors are controlled for or results are placed in a broader context, presumed advantages enjoyed by female Pradhans vanish or even turn negative so that their performance would be below that of Pradhans elected without restrictions (Ban and Rao 2008, Besley *et al.* 2004, Raabe *et al.* 2009). In some cases, aggregation may be an issue as effects may be limited to some sub-groups but fail to materialise in the aggregate (Dongre 2010). A study focusing on selection of beneficiaries from central government schemes in West Bengal suggests that, in this respect, reservation had few, if any, positive effects on women. It worsened within-village targeting of such transfers to lower caste groups and failed to improve other targeting dimensions. This implies that, for disadvantaged women, the net effect of reservations could, for a number of possible reasons, actually end up being negative (Bardhan *et al.* 2010).⁶ An approach based on individual data and clear hypotheses on how reservations may affect results can thus help better understand the underlying processes.

Specific studies have also been noted that reservations - especially for caste - could, in principle, result in selection of leaders with inferior characteristics, and consequently, lower levels or quality of public goods (Munshi and Rosenzweig 2008). While such effects should be less pronounced for gender

⁵ Females are found to have higher levels of unobserved political skill, possibly because they had to overcome gender bias to move up in politics.

⁶ The explanation favoured by the study under concern is that female reservation is inconsistent with traditional models of electoral competition. It concludes that a more complex approach of capture-cum-clientelism as more appropriate but may itself be susceptible to being weakened by election of inexperienced women to reserved positions (Bardhan *et al.* 2010).

reservations, in Tamil Nadu women Pradhan on reserved seats are reported to have fared very badly - much worse than SCs and STs - in a test designed to measure their understanding of relevant *gram Panchayat* procedures (Gajwani and Zhang 2008). Attributing outcomes solely to the leader's gender is also equivalent to assuming full Pradhan dominance of the *gram Panchayat*. This may be at variance with ground realities where women occupying reserved seats are often poorly educated and may be guided by traditional elites (often husbands or family members) who may pull the strings from behind the scenes (Rajaraman and Gupta 2008a). There is indeed evidence suggesting that female leaders depend on access to social and political networks through traditional leaders and that this reduce their ability to control events.⁷

Finally, as reservations will be in place for a limited time, their impact can be fully appreciated only by a looking beyond the immediately reserved period. If members from disadvantaged groups who entered office through reservations are not accountable and direct public goods or programmes towards cronies or a narrow constituency, effects observed during the reserved period may be reversed - or over - compensated - once reservations have expired. This hypothesis receives support from the ambiguous longer-term effects of reservations on access to and quality of public goods found in longer-term studies that consider outcomes for more than just one period (Bardhan *et al.* 2010, Raabe *et al.* 2009). On the other hand, long-term effects of reservation can be more positive than what appears on the short term if this measure helps to change either the way in which public goods are provided or the pattern of political participation and the associated political equilibrium. If the experience of female leaders prompts voters to revise long-standing prejudices that affect future voting behaviour (Beaman *et al.* 2009), long-term effects of quotas could be more positive than what emerges in the short-term. The same would hold if reservations allow those who were excluded or lacked voice to more effectively participate in political decision-making and, through such a shift in political participation, alter the nature of the median voter. In fact, the desire to prevent local capture in this way was one of the factors motivating adoption of this policy (Singh 2007).

Beyond the immediately reserved period, the literature identified three channels through which reservations could affect long-term outcomes. First, they might prompt those who previously had not participated in political process to change their behaviour permanently. Evidence for persistent effects via greater participation along these lines is available from rural West Bengal (Beaman *et al.* 2010) and South India (Besley *et al.* 2005) as well as urban Mumbai (Bhavnani 2009). This is plausible as previously ignorant voters may require time to learn about how to access and use information to most effectively hold leaders accountable. Second, they may trigger a process of learning and revision of prejudices as in cases where exposure to female leaders led to and revision of stereotypes regarding females' leadership qualities (Beaman *et al.* 2009). A third option less documented in the literature is that, if it increases voice or shifts the composition of public goods in a direction that benefits certain groups, reservation may lead to increased contributions to public goods. These will be relevant because, even if key infrastructure such as roads or schools has been established (e.g. through central funds), its lifespan and effectiveness will be significantly enhanced by efforts towards local maintenance or monitoring to prevent service providers (e.g. school teachers) from shirking. The underlying mechanisms have been studied in a range of contexts (Bagnoli and Lipman 1989, Bagnoli and Lipman 1992, Messer

⁷ In Tamil Nadu study quoted earlier, some 80% indicated that their official decisions were to be influenced by their husbands, potentially pointing towards limited autonomy in decision-making (Gajwani and Zhang 2008).

and Zarghamee 2007), though few studies explore the willingness to contribute to better service quality in India (Chandrashekhar 2008).

By providing evidence on some of the trade-offs involved, the focus on long-term effects of reservation at individual level that we are able to take can help clarify some of the issues in the literature. It allows us, in particular, to test whether a possible short-term reduction in quality of public good provision induced by reservation may be offset by the fact that this intervention exposes individuals, especially females, to new ideas and enhancing their participation in local political decisions with beneficial effects in the long term.

II.3 Econometric approach

Methodologically, as reservations are assigned randomly, OLS regressions of outcome variables on a reservation dummy and controls will yield unbiased and consistent estimates of policy impact. Letting outcome variables be superscripted by j , and, $i v$ and t individuals, villages, and time, the estimating equation is

$$Y_{iv}^j = \beta_v^j + \beta_1^j R_{iv} + \beta_2^j R_{iv-1} + \beta_3^j R_{iv-2} + \beta_4^j X_{iv} + \beta_5^j D_t + \varepsilon_{iv}^j$$

Where, Y_{iv}^j is the outcome variable of interest, β_v^j is a state fixed effect⁸ R_{iv} , R_{iv-1} and R_{iv-2} are indicator variables for reservation in the current, the previous, or the previous to previous Panchayat period that is equal to one if the Pradhan's position in village v at t , $t-1$, or $t-2$ was reserved for females and zero otherwise, X_{iv} is a vector of household and individual controls such as wealth and land ownership status, age, sex, caste, and broad occupation, and the β 's are parameters to be estimated. The coefficients β_1 , β_2 and β_3 can be interpreted as the effect of reservation in the current, previous and previous to previous Panchayat periods previous period on Y_{iv}^j respectively which allows us to test for persistence of any reservation-induced effects⁹ Interacting R_{iv} with a female dummy allows us to explore gender-differentiated effects.

III. Data and Descriptive Statistics

In order to assess whether female reservations helped to empower women in public and private spheres, we use member level information at the on whether or not a problem with the delivery of specific types of public goods existed, whether concerns about this had been articulated to relevant local authorities, and whether it was actually resolved. We also focus on indicators of female empowerment in the reproductive sphere and time use.

III.1 Data structure and variable description

We use data from a nationally-representative panel survey of 233 villages in rural India conducted in 2008 by the National Council of Applied Economic Research (NCAER). In addition to its national coverage, this

⁸ To avoid that results be driven by recall bias, all of the regressions are based on outcome variables for the current Panchayat period only even in cases where similar information (based on recall) was provided for earlier periods. In all cases, regressions are clustered at household level.

⁹ As explained earlier, the second lag of reservation is not defined in Bihar, Orissa, Punjab, Tamil Nadu and West Bengal. We thus estimate all equations consistently for two lags with the reduced sample and for only one lag with entire sample.

dataset, which is based on a long-running panel, provides information on the reservation status of all local elections after the 73rd amendment had been adopted in a state¹⁰. Table 1, which provides a breakdown of reservation by region, illustrates that out of the 233 villages in the sample (176 with 3 elections that could in principle have been reserved), 36% had never been reserved while 52%, 11%, and 1% had been reserved once, twice, or thrice, respectively. Although some outcome variables have been collected retrospectively, the desire to avoid potential biases associated with such long recall leads us to focus on current evidence only. The fact that, at the time when the survey was conducted, governments elected under the reserved regime had been in place for 3–4 years implies that we can use the data to test for long-term impact of reservations in a setting of decentralised decision-making.

Table 1: Distribution of sample villages across states and reservation status

Region	No. of villages	No. of times reserved				Period when reserved		
		Never	Once	Twice	Thrice	Now	Previous	Past prev.
North	55	11	29	14	1	23	14	23
East	37	20	15	2	0	10	8	1
West	75	17	55	3	0	22	19	20
South	66	35	21	8	2	16	20	7
Total	233	83	120	27	3	71	61	51

Note: The North includes the states of Haryana, Himachal Pradesh, Punjab and Uttar Pradesh; the West includes Gujarat, Maharashtra, Madhya Pradesh and Rajasthan; the East includes Bihar, Chhattisgarh, Orissa and West Bengal; and the South includes Andhra Pradesh, Karnataka, Kerala and Tamil Nadu.

A precondition for our empirical strategy to be valid, i.e. for OLS estimates to be interpreted as a causal effect, is that allocation of reserved seats across villages is indeed random, as demanded by relevant rules and implementation manuals. A testable implication of random selection is that, before reservation was introduced, villages that ended up being reserved in different periods should not be different from each other in any observable attributes. We can test this by using the fact that our survey forms part of a long-running, though unequally spaced, panel. Table 2 displays data from the 1982 round of NCAER’s survey to compare observable attributes between villages that had been reserved in 2007/8, in 2000, and around 1995 when reservations demanded by the 73rd amendment were first introduced in most states. We distinguish three groups of data, namely (i) within-village distribution of key assets and income based on a listing of the entire village; (ii) community-level provision of public goods; and (iii) key characteristics of sample households. State level effects are controlled to account for the fact that villages are chosen randomly within each state and to adjust for differences in both the evolution of states’ economies and the time when they first implemented reservations.

While quality of service delivery is not the primary variable of interest for our analysis, its inclusion is warranted by the fact that it can - directly or indirectly - affect economic decisions through a variety of channels. Also, a reduction in the share of those who experienced problems, especially females, could indicate better performance by officials elected under reservations, e.g. because they are more proactive and try to anticipate problems or because they focus on aspects of the good that are more valued by this specific target group. Instead of using general ratings or assessments of the quality with which public officials provide services, the indicator used here is whether individual household members perceived problems with supply of specific public goods, based on 12 categories that are defined using survey

¹⁰ While this includes three elections for most of the states, Bihar, Orissa, Punjab, Tamil Nadu and West Bengal held the earliest elections in 1992, before the amendment was adopted.

data¹¹. In case they had identified problems, we asked whether individuals approached competent authority at local level to get these issues rectified¹², a variable that can measure voice and political empowerment.

Table 2: Balancing test using 1982 data

Village Characteristics	Village reserved now			Village reserved in past		
	Yes	No	Test	Yes	No	Test
Population	7178.538	3928.919		4766.576	7957.610	
Area sown (acres)	619.858	540.554		573.877	620.960	
Share of area irrigated	69.668	35.513		45.997	75.815	
Bank in village	0.580	0.575		0.609	0.539	
Mandi in village	0.055	0.041		0.037	0.068	
No Mandi available	0.840	0.838		0.866	0.806	
Retail market in village	0.031	0.027		0.030	0.029	
No retail market available	0.865	0.865		0.888	0.835	
Distance to nearest Town (km)	148.472	166.689		149.621	160.087	
Distance to pucca road (km)	67.296	75.203		73.534	64.922	
Street lights	0.543	0.397	**	0.519	0.471	
Doctor available	0.855	0.878		0.879	0.842	
Drinking water scheme	0.086	0.110		0.098	0.087	
Road building scheme	0.209	0.274		0.271	0.175	*
Food for work programme	0.429	0.233	***	0.421	0.301	*
Male agricultural wage (Rs./day)	559.194	539.333		525.355	588.926	
Female agricultural wage (Rs./day)	306.972	332.326		293.470	342.559	
No. of observations	163.000	74.000		134.000	103.000	

To make inferences on how reservation might have affected individuals' economic activity, we rely on data from a detailed time use module that asked for the amount of time spent in own enterprises (crop and livestock production, and non-agricultural self-employment), wage employment (agricultural and non-agricultural casual labour, migration, public works), house work, and other local activities, especially ones related to common property resources for each of the three past agricultural seasons (rabi, kharif and summer). As individuals reported both the number of days and the average number of hours spent on a given activity per day, we are able to convert this into standard 8-hour days. Finally, we draw on the demographic module that was administered to all females between the age of 14 and 50 in each household, to construct a number of indicators related to female empowerment and intra-household bargaining, in particular their ability to access resources through an own bank account and reproductive choice.

III.2 Community-level Outcomes

Table 3 provides descriptive data for perception of problems by males and females and - in cases where problems existed - whether a proper complaint was articulated for the 12 key areas defined above from almost 25,000 individuals in the sample. Overall, about 38% of all respondent faced problems in any of the categories and this figure is slightly lower at 37% for women in reserved villages. The data point

¹¹ We do not consider a complaint to be proper if, rather than to a relevant local government authority, it was directed to an informal or religious group or to a higher level (e.g. the MLA). Relevant descriptive and regression results are reported in the appendix.

¹² To avoid that results be driven by recall bias, all of the regressions are based on outcome variables for the current Panchayat period only even in cases where similar information (based on recall) was provided for earlier periods. In all cases, regressions are clustered at household level.

towards significant differences in occurrence of problems across categories, with water access, road repairs, sewage, and street lighting in the top category where problems were experienced by more than half and up to two thirds of respondents, irrespectively of their gender. This is followed by a second category, comprising ration shops and cards, women's issues, health where about one third of respondents encountered problems. Finally, a third category comprises irrigation, government schemes, school admission, and credit which were noted as problematic by between 10% and 20% of respondents. Taking these rankings as an indication of relative importance, we note that, at a descriptive level, reservation was associated with significant reduction in the share of reported problems in the areas of road repairs, water access, and sewage (by women only), street lighting (by men only) and women's issues, beneficiary selection, government schemes, and irrigation. This can be interpreted as supporting the notion that, in light of limited power by the pradhan to influence decisions, simple reduced form regressions may be difficult to interpret (Rajaraman and Gupta 2008b).

Table 3: Comparison of key outcomes between currently reserved and unreserved villages

	Entire sample			Females			Males		
	Currently reserved?			Currently reserved?			Currently reserved?		
	No	Yes		No	Yes		No	Yes	
Presence of problems									
Water access	0.697	0.690		0.674	0.656	*	0.719	0.722	
Health	0.352	0.312	***	0.334	0.304	***	0.369	0.319	***
Road repairs	0.678	0.695	***	0.635	0.657	**	0.719	0.730	
Women's issues	0.312	0.282	***	0.319	0.291	***	0.306	0.275	***
Street lighting	0.614	0.596	***	0.576	0.570		0.650	0.621	***
Irrigation	0.236	0.202	***	0.211	0.167	***	0.260	0.235	***
Sewage	0.610	0.594	***	0.588	0.568	**	0.631	0.617	
Credit access	0.115	0.105	**	0.087	0.082		0.143	0.127	**
School admission	0.137	0.137		0.125	0.113	*	0.150	0.161	
Government schemes	0.239	0.199	***	0.204	0.154	***	0.272	0.241	***
Beneficiary selection	0.389	0.395		0.350	0.333	*	0.426	0.453	***
Ration shop/card	0.458	0.452		0.431	0.418		0.484	0.484	
No. of observations	17,199	7,621		8,443	3,674		8,756	3,947	
Complaint (if problem)									
Water access	0.773	0.780		0.687	0.698		0.851	0.848	
Health	0.508	0.496		0.458	0.480		0.553	0.511	**
Road repairs	0.618	0.637	**	0.534	0.559	**	0.690	0.702	
Women's issues	0.485	0.505	*	0.433	0.460		0.538	0.549	
Street lighting	0.657	0.648		0.594	0.593		0.712	0.694	*
Irrigation	0.504	0.534	**	0.415	0.455	*	0.573	0.585	
Sewage	0.683	0.708	***	0.601	0.627	**	0.758	0.776	*
Credit access	0.352	0.423	***	0.290	0.315		0.390	0.483	***
School admission	0.316	0.286	*	0.291	0.291		0.337	0.281	**
Government schemes	0.644	0.675	**	0.580	0.591		0.690	0.726	*
Beneficiary selection	0.617	0.626		0.551	0.566		0.670	0.667	
Ration shop/card	0.624	0.597	***	0.546	0.529		0.692	0.650	***
No. of observations (max.)	11,854	5,400		5,633	2,470		6,221	2,930	

With almost 50% of those experiencing problems having approached local authorities, local democracy in our sample seems to have been active. Water, sewage, street lighting, beneficiary selection, government schemes, and ratio shops top the list, all with more than 50% of those experiencing problems voicing complaints. Reservations appear to have been associated with an increase in such voicing of concerns in a number of areas, most notably ration shops, road repairs, sewage, irrigation, and credit access. With few exceptions, though, reservation is associated with greater changes in the voicing of complaints by men than by women. Moreover, past reservations seem to have a larger effect than current ones raising the possibility of learning playing a role.

III.3 Females' economic empowerment

If they empower women to better articulate their concerns and voice them in the public sphere, political reservation that increases female empowerment should also have an impact on economic activity and within-household bargaining. Table 4 points not only to the presence of significant differences in time use; women spend most of their time (an average of 60 days in each of the 120-day seasons) on housework as compared to males who focus on 'productive work'. In villages currently reserved both the levels of participation and the number of hours worked (in own-account and wage employment) as well as men's total wage income (but neither females' nor total income from agricultural wage work) tend to be higher. Econometric analysis will be needed to assess which of these, if any, can be attributed to political reservations. The bottom part of the table does, however, point towards clear differences in the extent to which females are empowered in terms of taking control of their own resources and ensuring reproductive choices (whether female sterilization rather than less biased and intrusive methods was considered to be the most appropriate form of birth control and if a condom was used as a means of birth control) that are less gender-biased than prevailing practice.

Table 4: Descriptive evidence on labour market participation

	Entire sample			Female respondents			Male respondents		
	Currently reserved			Currently reserved			Currently reserved		
	No	Yes		No	Yes		No	Yes	
Participation in									
Housework	0.789	0.797	***	0.926	0.930		0.653	0.670	***
Productive work	0.651	0.669	***	0.552	0.568	***	0.750	0.766	***
Agric. wage labour	0.137	0.132	**	0.098	0.096		0.176	0.166	**
Non-agricultural. wage labour	0.086	0.101	***	0.015	0.014		0.157	0.183	***
Own cropping	0.240	0.260	***	0.150	0.169	***	0.330	0.347	***
Own livestock	0.376	0.410	***	0.366	0.401	***	0.386	0.418	***
Self-employment	0.045	0.050	***	0.010	0.015	***	0.080	0.084	
No. of hours spent									
Housework	38.070	37.190	***	61.058	60.615		15.104	14.827	*
Productive work	34.412	36.770	***	19.310	20.674	***	49.495	52.149	***
Agric. wage labour	7.119	6.715	***	4.582	4.189	**	9.640	9.155	**
Non-agricultural. wage labour	5.518	6.540	***	0.780	0.694		10.267	12.091	***
Own crops	8.210	8.290		4.032	4.336	**	12.370	12.095	
Own livestock	8.819	9.840	***	8.672	9.796	***	8.959	9.897	***
Self-employment	4.052	4.480	***	0.761	1.213	***	7.350	7.578	
Total wage earnings									
Agricultural labour	473.493	418.971	***	252.423	202.965	***	692.381	629.365	***
Total wage labour	977.197	1043.546	***	307.430	250.971	***	1644.453	1804.662	***
No. of observations	58,513	26,770		29,212	13,105		29,301	13,665	

	Entire sample			Female respondents			Male respondents		
	Reserved in past			Reserved in past			Reserved in past		
	No	Yes		No	Yes		No	Yes	
Participation in									
Housework	0.790	0.794		0.927	0.928		0.656	0.661	
Productive work	0.660	0.653	**	0.566	0.546	***	0.753	0.757	
Agric. wage labour	0.142	0.128	***	0.103	0.090	***	0.180	0.165	***
Non-agricultural. wage labour	0.088	0.093	**	0.012	0.019	***	0.164	0.166	
Own cropping	0.257	0.235	***	0.165	0.146	***	0.348	0.322	***
Own livestock	0.396	0.374	***	0.388	0.362	***	0.405	0.386	***

	Entire sample			Female respondents			Male respondents		
	Reserved in past			Reserved in past			Reserved in past		
	No	Yes		No	Yes		No	Yes	
No. of hours spent									
Housework	38.153	37.371	***	61.431	60.323	***	15.102	14.914	
Productive work	35.058	35.263		20.107	19.293	***	49.813	50.961	**
Agric. wage labour	7.306	6.623	***	4.805	4.056	***	9.761	9.160	**
Non-agricultural wage labour	5.486	6.254	***	0.532	1.013	***	10.376	11.404	***
Own crops	8.625	7.776	***	4.442	3.755	***	12.766	11.710	***
Own livestock	9.029	9.270	**	9.053	8.981		9.001	9.560	***
Self-employment	3.728	4.727	***	0.752	1.075	***	6.666	8.318	***
Total wage earnings									
Agricultural labour	464.908	446.330	*	244.609	228.305	*	681.393	661.627	
Total wage labour	985.132	1013.212		282.305	298.909		1676.089	1718.260	
No. of observations	46,129	39,154		22,844	19,473		23,285	19,681	

IV. Results

Regressions allow us to identify gender-differentiated impacts of reservation as well as their persistence. For public goods, there are two main findings. On the one hand, female reservation results in a significant contemporaneous reduction of the incidence of problems with delivery of a wide range of public goods, both by males and females, though with some differences in relative emphasis. Also, we find a greater ability to articulate problems to relevant elected officials if problems are discovered (though appearing with a lag), consistent with the hypothesis that the ability to voice concerns in the political process takes time to develop. For economic outcomes we find that reservation results in a significant and persistent reduction in the amount of time spent by females on house work which, during the reserved period, translates into higher participation in wage labour markets and wage income. The hypothesis that this reflects not only higher economic returns due to better provision of public goods but can also at least in part be attributed to a reservation-induced shift in intra-household bargaining power is supported by a significant and persistent increase in the time spent on housework by males and the extent to which females take charge of reproductive choices within the household.

IV.1 Empowerment in the public sphere

Table 5 report results from the linear probability model along the lines of equation (1). The dependent variable being an indicator that equals one if an individual perceived a problem and zero otherwise. We report only coefficients for the variables of interest (current and past reservation and its interaction with a female dummy and use clustering at the household level). Results for what are often considered ‘household specific’ issues are in the top and for ‘public’ issues in the bottom panel. We note that reserved leadership leads to significantly lower levels of problems during the reserved period which, in light of clear differences between male and female respondents is unlikely to be due to reporting bias. But, that there is little persistence of such improvements.

Overall, reservations seem to have a highly positive impact with coefficients on the ‘currently reserved’ indicator for three of 6 each in the ‘household specific’ (health, women’s issues, ration shops/cards) and ‘public’ (irrigation, street lights, government schemes) categories, respectively, being negative (i.e. indicating a lower level of problems) and significant. All of the other coefficients are insignificant with the exception of beneficiary selection where we find an interesting pattern of divergence between males - who perceive problems to have increased significantly - and females who indicate the opposite. The fact

that coefficients are highly significant in both cases could point towards reserved female leaders favouring women's access to such programmes at the cost of males.

The assessment of problems having been reduced is not confined to males; in fact there are a number of areas, including water access, ration shops, sewage, irrigation, and government schemes where reserved leaders' performance is perceived more positively by females than males. However, the fact that their assessment differs significantly from males' positive views on road repairs and street lights suggest that the information in our survey is not due to females' endorsing female leaders without considering their actual performance but instead reflects a more careful assessment of outcomes (as well as a reflection of own preferences). Results based on this survey helps us to establish male-female differences might be attributable to subtle variation in aspects of service delivery, quality, or preferences that are difficult to observe even at the household level.

While the data in table 5 provides a strong support of the hypothesis that, with reserved leadership, the incidence of problems is reduced (perhaps because the elected representatives are proactive or information is transmitted more quickly, e.g. due to greater frequency of meetings), they also imply that associated effects do not extend beyond the period during which leadership is reserved. For the majority of categories considered here, the situation reverts to normal once reservations expire and in some cases, e.g. for roads repairs, street lights, credit access, administration of government schemes, and school admission, past reservation is estimated to increase the incidence of perceived problems, either overall or for females.

Table 5: Gender-differentiated impact of female reservation on problems with delivery of key public (and private) goods

Household Specific Issues	Water access	Health center	Women's issues	School admission	Beneficiary selection	Ration shop/card
Reserved now (β_1)	0.00568 (0.488)	-0.0412*** (-3.284)	-0.0293*** (-2.622)	0.0142 (1.507)	0.0264** (2.076)	-0.0228* (-1.793)
Reserved now * female (β_2)	-0.0259*** (-2.781)	0.00751 (0.851)	-0.00118 (-0.137)	-0.0224*** (-3.174)	-0.0456*** (-4.589)	-0.0175* (-1.863)
Reserved in past (γ_1)	0.0138 (1.181)	0.00822 (0.646)	-0.000330 (-0.0300)	0.0124 (1.413)	0.0135 (1.101)	-0.0657*** (-5.266)
Reserved in past * female (γ_2)	0.00614 (0.730)	-0.0135 (-1.640)	0.00871 (1.073)	0.00644 (1.018)	-0.00383 (-0.425)	0.0105 (1.224)
No. of observations	24,594	24,594	24,614	24,537	24,560	24,586
R ² -	0.073	0.073	0.089	0.058	0.052	0.079
Tests:						
$\beta_1 + \beta_2 = 0$	2.92*	8.05***	7.56***	1.03	2.58*	10.54***
$\gamma_1 + \gamma_2 = 0$	2.97*	0.19	0.59	5.56**	0.72	20.67***
$\gamma_1 + \beta_1 = 0$	1.10	2.64**	3.05*	3.92**	4.35**	20.51***
$\beta_1 + \beta_2 + \gamma_1 + \gamma_2 = 0$	0.01	4.16**	1.75	0.79	0.29	25.49***

Public Issues	Road repairs	Street lighting	Irrigation	Sewage	Credit access	Govt schemes
Reserved now (β_1)	-0.00365 (-0.319)	-0.0290** (-2.299)	-0.0318*** (-2.832)	-0.0141 (-1.175)	-0.00881 (-1.014)	-0.028** (-2.508)
Reserved now * female (β_2)	0.0229** (2.414)	0.0294*** (3.179)	-0.0149* (-1.752)	-0.0170* (-1.840)	0.00583 (0.848)	-0.021** (-2.468)
Reserved in past (γ_1)	-0.0116 (-1.013)	0.0219* (1.866)	-0.00716 (-0.648)	-0.00532 (-0.450)	0.0282*** (3.080)	0.0248** (2.345)
Reserved in past * female (γ_2)	0.0314*** (3.537)	0.00889 (1.043)	0.00821 (1.059)	0.00187 (0.227)	-0.00754 (-1.165)	-0.00189 (-0.240)
No. of observations	24,561	24,582	24,624	24,544	24,581	24,532
R ² -	0.068	0.126	0.134	0.071	0.174	0.048

Public Issues	Road repairs	Street lighting	Irrigation	Sewage	Credit access	Govt schemes
Tests:						
$\beta_1 + \beta_2 = 0$	2.61*	0.02	22.48***	6.73***	0.16	24.84***
$\gamma_1 + \gamma_2 = 0$	2.86*	6.64**	0.01	0.09	7.09***	5.95**
$\gamma_1 + \beta_1 = 0$	0.71	0.14	5.19**	1.08	1.82	0.04
$\beta_1 + \beta_2 + \gamma_1 + \gamma_2 = 0$	4.45**	2.78*	9.28***	3.63*	2.05	3.20*

Note: Dependent variable is a zero-one indicator whether a problem existed in a specific area during the current Panchayat period.

Regressions are clustered at household level and information on education, age, gender, marriage status, household size as well as dummies for caste, religion, land ownership, and overall wealth are included in all regressions but not reported.

Although our survey refers to actual problems rather than just a subjective perception, a possible concern with using such data is that the assessment could still be affected by systematic bias. Complementing the above analysis with an assessment of households' likelihood to complain to elected representatives about them provides not only a way to address such concerns but - insofar as bring issues to the attention of relevant authorities is a measure of respondents' voice and a precondition for any remedial action - also to draw substantive conclusions. Results from conditional regressions that include only those who perceived problems in table 6 suggest that reservation leads to a limited increase in the level of relevant complaints, and that this effect increases over time but in general stronger for men compared to women.

Table 6: Impact of female reservation on the likelihood of complaint to public authorities if problems identified

Household Specific issues	Water access	Health center	Women's issues	School admission	Beneficiary selection	Ration shop/card
Reserved now (β_1)	0.0321*** (3.386)	-0.0186 (-0.869)	0.0453** (2.272)	-0.0442 (-1.503)	0.0172 (1.004)	-0.00580 (-0.382)
Reserved now * female (β_2)	-0.0374*** (-2.861)	0.0349 (1.590)	-0.0172 (-0.817)	0.0508* (1.676)	-0.00713 (-0.355)	-0.0325* (-1.869)
Reserved in past (γ_1)	0.0349*** (3.811)	0.0649*** (3.205)	0.0855*** (4.258)	0.0229 (0.778)	0.0366** (2.136)	0.0282** (1.987)
Reserved in past * female (γ_2)	-0.0468*** (-3.818)	-0.0361* (-1.834)	-0.0603*** (-3.094)	-0.00991 (-0.339)	-0.0640*** (-3.372)	-0.0507*** (-3.112)
No. of observations	17,112	8,353	7,446	3,385	9,613	11,194
R ² -	0.119	0.052	0.078	0.045	0.086	0.135
Tests:						
$\beta_1 + \beta_2 = 0$	0.19	0.60	2.09	0.04	0.24	4.78**
$\gamma_1 + \gamma_2 = 0$	1.04	2.13	1.67	0.18	1.92	1.90
$\gamma_1 + \beta_1 = 0$	21.53***	2.00	17.41***	0.19	3.50*	0.84
$\beta_1 + \beta_2 + \gamma_1 + \gamma_2 = 0$	0.91	2.12	3.15*	0.15	0.27	4.87**

Public Issues	Road repairs	Street lighting	Irrigation	Sewage	Credit access	Govt schemes
Reserved now (β_1)	0.0536*** (4.154)	0.00577 (0.461)	0.0316 (1.432)	0.0579*** (4.782)	0.104*** (3.644)	0.0520** (2.426)
Reserved now * female (β_2)	-0.0348** (-2.438)	-0.000511 (-0.0370)	0.0342 (1.346)	-0.0464*** (-3.114)	-0.0576 (-1.632)	-0.056** (-1.973)
Reserved in past (γ_1)	0.0597*** (4.747)	0.0673*** (5.406)	0.0957*** (4.391)	0.0565*** (4.707)	0.0188 (0.692)	0.0384* (1.777)
Reserved in past * female (γ_2)	-0.0369*** (-2.727)	-0.0238* (-1.823)	-0.0796*** (-3.265)	-0.0580*** (-4.158)	0.0289 (0.853)	-0.0390 (-1.585)
No. of observations	16,821	14,985	5,552	14,888	2,732	5,584
R ² -	0.060	0.199	0.091	0.099	0.146	0.104
Tests:						

Public Issues	Road repairs	Street lighting	Irrigation	Sewage	Credit access	Govt schemes
$\beta_1 + \beta_2 = 0$	1.67	0.18	6.07**	0.68	2.19	0.02
$\gamma_1 + \gamma_2 = 0$	2.57*	12.05***	0.41	0.01	2.44	0.00
$\gamma_1 + \beta_1 = 0$	31.13***	15.52***	13.78***	37.70***	9.45***	6.43**
$\beta_1 + \beta_2 + \gamma_1 + \gamma_2 = 0$	3.38*	7.24***	4.02**	0.23	4.36**	0.01

Note: Dependent variable is a zero-one indicator whether, if a problem was perceived, it was reported to relevant local authorities.

Regressions are clustered at household level and information on education, age, gender, marriage status, household size as well as dummies for caste, religion, land ownership, and overall wealth are included in all regressions but not reported.

Regarding complaints, we notice an increase in the likelihood of complaints in response to problems with water, roads, sewage, credit, schemes, and women's issues during the reserved period. However, the effect is more pronounced for males; in fact there are only two cases where the coefficient for women raising concerns is significantly different from zero and these points in opposite directions; the likelihood of voicing concerns decreases for ration cards and increases for irrigation. In the longer term, reservations are estimated to lead to a significant increase in the likelihood of concerns about problems being voiced. Even then, it appears that it is mainly men rather than women who approach local authorities. Assessing the extent to which reservations are translated into the economic sphere is thus important.

IV.2 Economic empowerment

Better service provision can possibly affect economic outcomes through three channels, namely (i) a time-saving effect, whereby higher quality of certain public goods (e.g. access to drinking water or preventive health services) reduces the time individuals, especially women, need to spend on household chores (e.g. accessing public goods like water); (ii) by increasing the payoff from productive pursuits that use some public good input (e.g. via more predictable availability of irrigation water or lower transport cost if roads are well maintained); and (iii) through a general empowerment effect.

We note that reservation have led to a significant reduction in the amount of time spent on household work such as fetching water, fuel collection for family use, cooking, washing etc. (table 7 col. 1). With some 2.7 days per season, the estimated change amounts to some 4.5% of total female house work. Interestingly, the estimated impact increases to 3.2 days past reservation, pointing towards persistence of reservation-induced effects. Moreover, the fact that reduced female labour being appears to be at least partly compensated for by an increase in male participation in house work - by an estimated 0.73 days or about 5% of male participation - suggests that this effect is unlikely to be due to only improved supply of public goods and can at least in part be attributed to a change in intra-household bargaining power that is triggered by female reservation.

Table 7: Impact of female reservation on individuals' time use and labour market participation

	Household work	Total labour supply	Own cultivation	Total wage income
Reserved now (β_1)	0.478 (1.264)	3.258*** (4.346)	-1.210*** (-3.581)	184.9*** (2.988)
Reserved now * female (β_2)	-2.667*** (-4.216)	-0.632 (-0.777)	1.247*** (3.496)	-82.79 (-1.273)
Reserved in past (γ_1)	0.734** (1.989)	0.758 (1.037)	-1.217*** (-3.571)	-6.449 (-0.106)
Reserved in past * female (γ_2)	-3.187*** (-5.313)	0.0186 (0.0239)	1.443*** (4.042)	48.50 (0.780)
No. of observations	84,410	84,410	84,410	84,410
R ²	0.574	0.309	0.264	0.202
Tests:				
$\beta_1 + \beta_2 = 0$	11.92***	29.44***	0.03	15.19***
$\gamma_1 + \gamma_2 = 0$	15.99***	2.51	0.86	2.11
$\gamma_1 + \beta_1 = 0$	4.15**	12.77***	20.41***	3.59*
$\beta_1 + \beta_2 + \gamma_1 + \gamma_2 = 0$	22.31***	19.94***	0.47	9.74***

Note: Sample includes all individuals aged between 14 and 65.

Regressions are clustered at household level and information on education, age, gender, marriage status, household size as well as dummies for caste, religion, land ownership, and overall wealth are included in all regressions but not reported.

Although lack of disaggregated data on earnings from household enterprises prevents us from quantifying the impact on different household members' access to resources, total wage income is available from the survey on an individual basis and can serve as a proxy. The corresponding regression in column 4 of table 7 points towards a significant increase in wage income for both males and females. The point estimate of Rs. 185, points towards an increase of total wage income at the household level of almost 20% and although the estimated magnitude is lower in the case of females (slightly above Rs. 100), their level of wage income increases relatively more than that of males. Thus, evidence clearly suggests that female reservation increases improves economic outcomes during the reserved period thereby increasing the magnitude of available resources rather than just resulting in a possibly harmful redistribution. However, reservation-induced increases in labour supply, for both males and females, do not appear to persist beyond the immediately reserved period.

To explore whether reservations specifically affect females' bargaining power within the household and access to resources, table 8 reports results from regressions for reproductive choice and the female having a bank account in her own name. In all cases we find significant effects that persist beyond the period during which reservation is in place. Reservation results in a significant increase in the use of condoms by 4 - 5 percentage points and a reduction of similar magnitude in the opinion that female sterilization is the most appropriate form of birth control. Although the absolute magnitude of coefficients is small (1.8% for current reservation and 1.3% for reservation in the past) they imply a large relative change in view of the low shares of females who have their own bank account overall.

Table 8: Impact of female reservation on female empowerment

	Use condom	Sterilization best form of birth control	Female has bank account in own name
Reserved now	0.0460***	-0.0574***	0.0182***
(β_1)	(3.486)	(-4.685)	(3.120)
Reserved in past	0.0547***	-0.0440***	0.0126**
(γ_1)	(4.156)	(-3.685)	(2.370)
Observations	8,384	8,384	8,384
R-squared	0.155	0.193	0.082
Test			
$\gamma_1 - \beta_1 = 0$	23.61***	28.91***	11.41***

Note: Sample includes all women aged between 14 and 50 who are resident in a household.

Regressions are clustered at household level and information on education, age, gender, marriage status, household size as well as dummies for caste, religion, land ownership, and overall wealth are included in all regressions but not reported.

V. Conclusions

Our analysis was motivated by the question whether political quotas at the local level can be shown to have not only distributional effects but also affect the level of economic activity and investment. Related to this, we want to know whether the impact of such policies is transitory (i.e. holds for the reserved period) or whether it persists even if the gender of leadership at the political level has changed. In Appendices 1 and 2, we provide a significant reinforcement to the empirical results already stated. There is evidence that women rely less on informal sources for critical information on health (including contraception). We also find that women are able to mobilise (though the magnitude is small it is nevertheless significant and increases over time) through *gram sabhas*. Several conclusions are in order

Contrary the expectations of the skeptics of political reservations, we find that having women in charge does not reduce the quality of public service delivery. In fact it results in a significant reduction in the extent to which individuals perceive problems with delivery of public services and more importantly in cases where there are problems the ability of those affected to bring their concerns to the attention of the relevant elected representative increases.

Improved service delivery seems to have an effect on the time spent in household work due to less time being spent on accessing public goods. In line with the notion that effective delivery of public goods is critical for private economic activities to be carried out effectively, political reservation increases the amount of time males and females spend in wage or self-employment. It also has a significant empowerment-effect whereby at least part of the reduction in time females spend on home work is compensated for by men contributing more and by increasing the extent to which females affect reproductive choices and control their own resources as proxied by them having a bank account of their own.

Interestingly, while many of the economic impacts are only of a transitory nature (possibly related to improvements in the quality of public goods), the reservation-induced empowerment effects - which in turn may have far-reaching economic impacts on the next generation- exhibit strong persistence over time.

One significant implication for policy is the result on women's participation in own farm work. Since political reservation release women time to engage in productive activities and, we find that this time is being spent in self-employment in agriculture, it is important that land policies are more gender sensitive. It also has implications for inheritance. It has been pointed out elsewhere (Deininger et al. (2011a and 2011b)) women's ability to inherit will improve both women's and household's welfare in addition to having impacts on future generations. Women's ownership of land also reduces the gender wage gap in labour markets. Hence policies on political reservation inheritance and land titling must be synchronized with the knowledge that they have significant spill over effects.

References

- Anderson, S. 2003. "Why Dowry Payments Declined with Modernization in Europe but Are Rising in India." *Journal of Political Economy* 111 (2): 269-310.
- Bagnoli, M. and B. L. Lipman. 1989. "Provision of Public-Goods - Fully Implementing the Core Through Private Contributions." *Review of Economic Studies* 56 (4): 583-601.
- Bagnoli, M. and B. L. Lipman. 1992. "Private Provision of Public-Goods Can be Efficient." *Public Choice* 74 (1): 59-78.
- Ban, R. and V. Rao. 2008. "Tokenism or Agency? The Impact of Women's Reservations on Village Democracies in South India." *Economic Development and Cultural Change* 56 501-30.
- Bardhan, P., D. Mookherjee and M. Parra Torrado. 2010. "Impact of Political Reservations in West Bengal Local Governments on Anti-Poverty Targeting." *Journal of Globalization and Development* 1 (1): 1-34.
- Beaman, L., R. Chattopadhyay, E. Duflo, R. Pande and P. Topalova. 2009. "Powerful Women: Does Exposure Reduce Bias?" *Quarterly Journal of Economics* 124 (4): 1497-540.
- Beaman, L., E. Duflo, R. Pande, and P. Topalova. 2010. "Political reservation and substantive representation: Evidence from Indian village councils." Paper presented at the 2010 India Policy Forum. New Delhi: National Council of Applied Economic Research.
- Besley, T., R. Pande, L. Rahman and V. Rao. 2004. "The Politics of Public Good Provision: Evidence from India Local Governments." *Journal of European Economic Association* 2 (2-3): 416-26.
- Besley, T., R. Pande, and V. Rao. 2005. "Political Selection and the Quality of Government: Evidence from South India." Center Discussion Paper No.921 Economic Growth Center, Yale University.
- Bhalotra, S. and I. Clots-Figueras. 2010. "Health and the political agency of women." . Bristol and Madrid: University of Bristol and Carlos Madrid III Working Paper.
- Bhalotra, S. and S. Rawlings. 2011. "Intergenerational persistence in health in developing countries: The penalty of gender inequality." *Journal of Public Economics* forthcoming.
- Bhavnani, R. R. 2009. "Do Electoral Quotas Work after They Are Withdrawn? Evidence from a Natural Experiment in India." *American Political Science Review* 103 (1): 23-35.
- Chandrashekar, S. 2008. "Willingness to contribute to public projects - evidence from India." Working Paper. Mumbai: Indira Gandhi Institute of Development Research.
- Chattopadhyay, R. and E. Duflo. 2004. "Women as Policy Makers: Evidence from a Randomized Policy Experiment in India." *Econometrica* 72 (5): 1409-43.
- Clots-Figueras, I. 2009. "Are female leaders good for education? Evidence from India." . Madrid: University Carlos III Working Paper.
- Dahlerup, D. 2006. "Women. Quotas and Politics." Routledge London and New York.
- Deininger, K., Aparajita Goel and Hari K. Nagrajan 2011a. "Do change in inheritance legislation improve Women's Access to Physical and Human Capital? Evidence from India's Hindu Succession Act" *Journal of Human Resources* (forthcoming) issue

- Deininger, K., Songquin, J., and Hari K. Nagrajan 2012. "Can Political reservation improve female empowerment? Evidence from Local Panchayat Elections in Rural India" NCAER-IDRC Working Paper No.1
- Dollar, D., R. Fisman and R. Gatti. 2001. "Are Women Really the "Fairer" Sex? Corruption and Women in Government." *Journal of Economic Behavior and Organization* 46 (4): 423-9.
- Dongre, A. 2010. "Female political leadership and the prevalence of water borne diseases: Evidence from a natural experiment in India." . Santa Cruz, CA: University of California Santa Cruz.
- Ferreira, F. and J. Gyourko. 2010. "Does gender matter for political leadership: The case of U.S. mayors." . Philadelphia, PA: Wharton School, University of Pennsylvania.
- Frechette, G. R., F. Maniquet and M. Morelli. 2008. "Incumbents' interests and gender quotas." *American Journal of Political Science* 52 (4): 891-909.
- Gajwani, K. and X. Zhang. 2008. "Gender, caste, and public goods provision in Indian village governments." Discussion paper 00807. Washington DE: IFPRI, Development strategy and governance division.
- International Institute for Democracy and Electoral Assistance (IDEA). 2008. "Global database of quotas for women." www.quotaproject.org.
- Iyer, L., A. Mani, P. Mishra, and P. Topalova. 2010. "Political representation and crime: Evidence from India." Draft paper. Washington DC: International Monetary Fund.
- Knack, S. and P. Sanyal. 2000. "Making a Difference: Do Women in Government Affect Health and Education Outcomes." Mimeo, World Bank.
- Krishnan, N. 2007. "Political Reservation and Rural Public Good Provision in India." Discussion Paper Series No.175 Department of Economics, Boston University.
- Krook, M. L. 2009. *Quotas for women in politics: Gender and candidate selection worldwide*. New York and London: Oxford University Press.
- Lott, J. R. and L. W. Kenny. 1999. "Did Women's Suffrage Change the Size and Scope of Government?" *Journal of Political Economy* 107 (6): 1163-98.
- Messer, K. D. and H. Zarghamee. 2007. "New hope for the voluntary contributions mechanism: The effects of context." *Journal of Public Economics* 91 (9): 1783-99.
- Miller, G. 2008. "Women's suffrage, political responsiveness, and child survival in American history." *Quarterly Journal of Economics* 123 (3): 1287-327.
- Ministry of Panchayati Raj. 2008. *Study on elected women representatives in Panchayati Raj institutions*. New Delhi: Government Printer.
- Munshi, K. and M. R. Rosenzweig. 2008. "The efficiency of parochial politics: Caste, commitment, and competence in Indian local governments." Center Discussion Paper 964. New Haven, CT: Economic Growth Center Yale University.
- Page, S. E. 2007. *The Difference: How the Power of Diversity Creates Better Groups, Firms, Schools, and Societies*. Princeton: Princeton University Press.

- Pande, R. 2003. "Can Mandated Political Representation Increase Policy Influence for Disadvantaged Minorities? Theory and Evidence from India." *The American Economic Review* 93 (4): 1132-51.
- Paxton, P. and M. M. Hughes. 2007. *Women, Politics, and Power: A Global Perspective*. Los Angeles: Pine Forge Press.
- Powley, E. 2007. "Rwanda: The impact of women legislators on policy outcomes affecting children and families." *The state of the world's children 2007: Background paper*. Geneva: UNICEF.
- Raabe, K., M. Sekher, and R. Birner. 2009. "The Effects of Political Reservations for Women on Local Governance and Rural Service Provision." IFPRI Discussion Paper 00878. Washington D.C.: International Food Policy Research Institute.
- Rajaraman, I. and M. Gupta. 2008a. "Further evidence on the policy impact of randomised political reservation." . New Delhi: National Institute of Public Finance and Policy.
- Rajaraman, I. and M. Gupta. 2008b. "Further evidence on the policy impact of randomised political reservation." . New Delhi: National Institute of Public Finance and Policy.
- Rehavi, M. M. 2008. "Sex and politics: Do female legislators affect state spending?" . Berkely: University of Berkeley working paper.
- Reingold, B. 1992. "Concepts of Representation among Female and Male State Legislators." *Legislative Studies Quarterly* 17 (4): 509-37.
- Saint-Germain, M. A. 1989. "Does Their Difference Make a Difference? The Impact of Women on Public Policy in Arizona Legislature." Conference Papers No.150. Atlanta: 85th Annual Meeting of the American Political Science Association.
- Schwarz, J. A. 2010. "Election behavior with high-female representation: A regression discontinuity analysis." . Pittsburgh: University of Pittsburgh, Department of Economics.
- Singh, N. 2007. "Fiscal federalism and decentralisation in Inida." Working Paper. Santa Cruz, CA: University of California.

Appendix I

Political Reservations and Reliance on Informal Networks

A significant outcome that we wish to observe and which can be attributed to political reservations is the ability of women to move away from informal sources of information. Women in rural societies tend to rely on social networks for arrange of information. The Survey data indicates that 70% of the female respondents rely on members of their own Jati for information related to health care, education, employment government programmes, social issues and even on political matters. This behaviour is consistent with the explanation found in Munshi and Rosenzweig (2006 and 2008) where it has been shown that social networks play a significant role is school choice, migration, and ensuring commitment form elected representatives.

A critical indicator of women's empowerment is her ability to diversify her source of information. We have seen that, if problems affected them then they are increasingly approaching the elected representatives for problem solving-an outcome attributable to empowerment that is arising out of political reservations. Here we conclusively show that over time women are increasingly less reliant on informal sources of information for issues that affect them. In particular women are increasingly switching away from informal sources where the issue in question is health. Even on all other matters the sign on the interaction term is correct though insignificant thereby providing and added proof that such empowerment takes place over time.

Variables ¹³	Health issues ¹⁴	Other issues
Reserved now	0.00365 (0.567)	0.00226 (0.430)
Reserved now * female	-0.073* (-1.908)	-0.0123 (-1.640)
Reserved lag1	0.0196*** (3.034)	0.0151*** (2.862)
Reserved lag1 * female	0.0161* (1.740)	0.0548 (7.195)
Reserved lag 2	0.0469*** (6.736)	0.00351 (0.629)
Reserved lag 2 * female	0.0356*** (-3.787)	0.0108 (1.411)
Constant	0.119*** (14.92)	0.248*** (21.60)
Observations	79,406	132,215
R-squared	0.269	0.299

¹³ The dependent variable is binary indicating whether the responded relied on information form members of own Jati for information pertaining to health and other issues.

¹⁴ Robust t-statistics in parentheses *** p<0.01, ** p<0.05, * p<0.1

Appendix II

Political Reservations and Evidence of Mobilisation by Women

Will political reservation empower women to vote in alignment with their preferences such that it could actually deprive competing groups off of certain public goods and services? To test this the REDS survey asked the following question of both male and female members of the voting age: *“Imagine this - the government decides to contribute Rs 1 lakh (approximately \$ 2000) to solve one problem but only if a majority of the members in the village contributed Rs 100 each (approximately \$2). Almost enough have contributed and your decision to contribute will decide the outcome-conditioned on your preferences would you consider contributing Rs 100 if the issue was?”*¹⁵ In Deininger et al (2011) it has been shown that political reservation will increase women’s participation in the process of governance. In the following regression we show that women will vote out certain public goods if given the opportunity. This is a significant evidence of empowerment caused by political reservations.

Variables ¹⁶	Health Issues ¹⁷	Other Issues
Reserved now	0.00848* (1.657)	0.00128 (0.153)
Reserved now * female	0.0117* (1.691)	0.0123 (1.099)
Reserved lag1	-0.00986* (-1.959)	-0.0179** (-2.195)
Reserved lag1 * female	0.00486** (0.714)	0.0182 (1.619)
Reserved lag 2	-0.00350 (-0.663)	-0.0302*** (-3.628)
Reserved lag 2 * female	-0.00501** (-0.730)	0.0172 (1.602)
Constant	0.127*** (11.60)	0.230*** (12.62)
Observations	34,682	17,344

¹⁵ The issues include drinking water, health, roads and transportation, irrigation, electricity, street lighting, credit, communication, school, management of common property, government schemes, employment schemes, and social issues.

¹⁶ The dependent variable is binary and takes on a values one if the answer to the tie breaking question is yes.

¹⁷ Robust t-statistics in parentheses *** p<0.01, ** p<0.05, * p<0.1

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NATIONAL COUNCIL OF APPLIED ECONOMIC RESEARCH
Parisila Bhawan 11 Indraprastha Estate New Delhi 110 002 India
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