

Women Political Leaders, Corruption and Learning: Evidence from a Large Public Program in India*

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Abstract

We use the national policy of randomly allocating village council headships to women to identify the impact of female political leadership on the governance of projects under the National Rural Employment Guarantee Act in India. Using primary survey data, we find more program inefficiencies and leakages in village councils reserved for women heads: political and administrative inexperience make such councils more vulnerable to bureaucratic capture. When using a panel of audit reports, governance improves as female leaders accumulate experience. Women political leaders not only catch-up in the delivery of public programs but generate governance dividends once initial, gendered disadvantages recede.

Keywords: political reservations, gender, NREGA, India

JEL codes: P26, I38

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1. Introduction

Political reservations for women create a ‘potential of presence’ (Agarwal, 2010) and offer prospects of diversity and other governance dividends (e.g. Page, 2007; Ioannides, 2010; Swamy et al., 2001).¹ Yet, in settings where gender discrimination may affect the attributes and the attitudes of candidates for political office, female representatives are less likely to be politically or administratively experienced. Thus, even if female political leaders were intrinsically more development-oriented than their male counterparts, extant disparities might initially blur and significantly delay the onset of governance gains. This paper presents rigorous and in-depth analysis of the impact of women political leaders on corruption and on the quality of delivery of a large scale, rural poverty alleviation program in India. By exploiting both cross-sectional and panel data we are the first to be able to shed light on how governance outcomes evolve as female leaders accumulate knowledge and experience.²

In two parallel and highly influential studies, Dollar et al. (2001) and Swamy et al. (2001) found greater female political representation to be associated with lower corruption suggesting that if more women entered politics, corruption would diminish.³ This reported relationship may be spurious and driven by omitted, underlying variables that correlate positively with corruption and negatively with female political representation.⁴ We endeavor,

¹ Agarwal’s (2010) focus is on a ‘critical mass’ of women, ours is on female leadership.

² We ignore any normative and social justice arguments for quotas and restrict attention to the impacts of female political reservations on governance outcomes.

³ Swamy et al. (2001) report a similar relationship when more women hold senior positions in the government bureaucracy.

⁴ Exploring this omitted variable possibility using panel data from the United States, Cheung and Hernández-Julian (2006) find no significant relationship between female representation

instead, to identify the causal impact of female leadership on corruption by studying the interaction between the nation-wide policy of randomly reserving one-third of village council headships for women and the implementation of India's most ambitious poverty alleviation program to date - the National Rural Employment Guarantee Act (NREGA).

Using data from primary surveys and official audits of projects implemented under NREGA in the state of Andhra Pradesh, we analyze whether the quality of public service delivery differs by the reservation status of village council headship in the cross-section and over time. Official audit reports covering a five year period enable us to build a village-level panel dataset with in-depth information on corruption and the quality of program delivery. We are thus able to explore whether early setbacks that may be triggered by the inexperience of women political leaders recede and public service delivery improves through learning-by-doing and the accumulation of experience. In the cross-section, we pin down the quality of program delivery using survey information on the experience of beneficiary households when registering with the program and in the receipt of program benefits. Our measures of corruption include bribes, impersonation in receipt of program benefits and ghost projects, among others.

Existing and much publicized research in the states of West Bengal and Rajasthan in India suggests that political reservations for women significantly impact the policy priorities

and government corruption (as measured by the fraction of officials convicted for corruption). Branisa and Ziegler (2010) use a sub-index of civil liberties from the OECD Gender, Institutions and Development Database as proxy for the omitted variable and argue that both corruption and the fraction of female representatives may be explained by this indicator which accounts for the effects of social institutions that deprive women of the freedom to participate in social and political life.

of village councils. Chattopadhyay and Duflo (2004) found that in village councils with a female head, public investments reflected the preferences of female voters, exemplified by drinking water and roads, more strongly. Controlling for female representatives having less political experience, lower education and perceiving themselves as less likely to be re-elected than men, this gender impact of headship prevailed. Beaman et al. (2009) report that residents in female reserved village councils were less likely to have paid a bribe to be deemed officially eligible (i.e. obtain a 'below poverty line' card) to receive various public program benefits or to obtain a water connection.

Others have questioned such differences in male and female leadership behavior (Rajaraman and Gupta, 2012) and its consequences for governance and corruption in low-income countries. Ban and Rao's (2008) study of four South Indian states found that *"(village councils) led by women are no worse or better in their performance than those with male leaders, and women politicians do not make decisions in line with the needs of women."* Bardhan et al. (2010) find female reservations of village council headships in West Bengal to be associated with a significant worsening of within-village targeting to socio-economically disadvantaged households, and no improvement on any other targeting dimension. These findings are interpreted as consistent with a more complex hypothesis of 'capture-cum clientelism' which may be weakened by the election of politically inexperienced women into reserved posts.⁵

While the evidence on the quality of public service delivery in village councils headed by women is ambiguous, research on the impact of women's leadership on corruption in public programs is practically absent. This neglect is of immediate policy relevance given the

⁵ See Mansuri and Rao (2012), chapter 6, for a review of research on the effects of political reservations for women in India.

renewed global commitment to increasing women's presence in political life (World Development Report, World Bank, 2012) and the intense debate within India about whether to reserve state and national legislature seats for women or not.⁶

At the outset, governance outcomes may diverge because of systematic differences in the preferences of male and female political leaders. While some experimental evidence attests to women's greater honesty and commitment to ethical conduct (Dollar et al., 2001), Swamy et al. (2001) use survey-data from several countries to show that women, on average, are less tolerant of corruption than men.⁷ Experimental studies (laboratory and non-laboratory) also suggest that women are more likely to be risk-averse and thus less likely to engage in risky behavior than men (Eckel and Grossman, 2008; Fletschner et al., 2010). Juxtaposing these findings to political life would make women less willing to accept bribes or to indulge in corrupt practices provided that such acts are perceived as illegal.⁸ In instances

⁶ Women's political representation in the national legislature was only 8 per cent in 2004 (Election Commission of India: http://eci.nic.in/eci_main1/index.aspx). A 2009 constitutional amendment increased reservation of village council headships for women to 50 per cent. This amendment has been implemented in recent village council elections in a few states, most notably Bihar and Madhya Pradesh.

⁷ The extensive empirical literature on intra-household resource allocation suggests that the preferences of men and women differ (Alderman et al., 1995). These studies conclude that women are more likely to be 'socially-oriented' while men are more likely to be 'individually-oriented' (Eckel and Grossman, 2008).

⁸ In Alolo's (2006) 'experiment' with female and male participants in Ghana, while apparently less susceptible to using public office for individual gain, women were more likely to 'misuse' public office if this promoted family interests. See Booth and Nolen (2012) and

where political power is captured from the de-facto leader, which may be more likely under female headship (Bardhan et al., 2010), risk aversion could make female leaders more inclined to let public funds leak and avoid confronting and punishing those responsible for pilfering. Thus whether, and the precise ‘channels’ through which female leadership impacts on corruption and governance in real world settings has yet to be convincingly unpacked.

Our analyses of household survey data, in village councils within a sub-district, suggest that households in village councils reserved for women are more likely to have experienced corruption and sub-standard administration of NREGA since its inception. Although this result does not hold for every program process, all significant coefficients point in the same direction. These conclusions hold both for processes for which the village council is primarily responsible and for those for which it shares responsibilities with other program functionaries.

Once we take advantage of the panel structure of our data from audit reports and allow for variation in the performance of female reserved village councils over time, we find that although the number of irregularities in NREGA implementation were significantly higher in female reserved village councils at the onset of the program, these decline with the duration of the tenure of the female sarpanch. Crucially, this progress goes beyond remedial and catching up: we find that women political leaders generate governance dividends. These results are robust to unobserved mandal characteristics, overall time trends and district specific time trends.

We do not find evidence supportive of reporting biases, gender stereotypes or differences in the probability of re-election of male and female leaders as possible

Alatas et al. (2009) for laboratory experiments which also suggest that women’s risk-aversion may be context specific.

explanations for these results. However, the audit data, which also contain information about functionaries on whom malfeasance in program implementation was pinned, indicate that sub-district level bureaucrats are more likely to be held accountable for NREGA discrepancies in female reserved village councils. The latter suggests greater vulnerability to bureaucratic capture in village councils reserved for a woman head, a vulnerability that is likely to be exacerbated by the lack of prior political and administrative experience of female sarpanchs. Indeed, in instances where female sarpanchs have prior political experience and are less likely to require assistance in executing their day to day duties, the governance of the program is significantly better. Finally, given the relatively higher levels of gender parity in Andhra Pradesh, our estimates are likely to represent lower bounds on the effect of women leaders on public program implementation.

Resonating with other studies, we also find that the probability that a program related grievance is made by a woman and the number of complaints registered during an official audit by women is higher in female reserved village councils. This suggests that exposure to and the presence of a female leader strengthens women's voice (Beaman et al., 2009; Iyer et al., 2012).

The findings reported in this paper are of immediate policy relevance - political and administrative experience can not only lower corruption in public program delivery but also prevent the delay in the onset of governance gains in constituencies headed by women. This highlights the need for capacity building and institutional support to make women's political participation and affirmative action policies more effective.

The remainder of the paper is organized as follows. Section 2 provides a description of the NREGA program. Section 3 discusses the data and our estimation methodology. Our results are discussed in section 4 while section 5 concludes.

2. Background

A. The National Rural Employment Guarantee Act

The National Rural Employment Guarantee Act (NREGA, 2005) provides a right based, legal guarantee of 100 days of annual work to rural households willing to volunteer adult labor to rural public works.⁹ The Act was initially implemented in the country's poorest 200 districts in February 2006, with 130 additional districts added in the next stage (2007) and national coverage thereafter (2008). In 2011-12, the Act had provided employment to almost 40 million households at an annual expenditure of nearly Rs. 40,000 crores (or more than \$8 billion), 70 per cent of which was accounted for by expenditure on wages.¹⁰

Several steps need to be followed for a household to obtain NREGA work. The first is to apply to the village-council or the Gram Panchayat (GP) for 'registration', in writing or orally.¹¹ Once registered, the GP is required to issue a free of cost 'Job Card' with photographs of all adult household members and regular updates on days worked and wages earned by each household member on all NREGA projects. After receiving the job card, a household in need of work is expected to submit a written application to the GP, stating the time and duration for which employment is sought. Following such a request, employment on a public works project is to be provided within 15 days of the application. If this statutory 15 day deadline is exceeded, the household is entitled to a daily unemployment allowance.

⁹ <http://nrega.nic.in/rajaswa.pdf>

¹⁰ Afridi (2008) finds that there may have been an up to three-fold increase in public funds allocated to rural workfare programs between 2004-05 and 2008-09 with the introduction of the NREGA. For more details on NREGA expenditures see:

http://nrega.nic.in/circular/Report%20to%20the%20people_english%20web.pdf

¹¹ Households register once, usually during the early years of the program.

Wages should be paid weekly and not beyond a fortnight.¹² Under the Act, the cost of material components of projects (including the wages of skilled and semi-skilled workers) should not exceed 40 per cent of total project costs. Hence, the bulk of the expenses incurred are earmarked for casual labor wages.

Panchayat Raj institutions (i.e. village, sub-district and district level panchayats) have a leading role in the planning and implementation of NREGA works. The directly elected GP is responsible for planning and the subsequent execution of at least 50 per cent of all NREGA works in villages (between one and three) within its purview. Further, the portfolio of projects should be prepared and follow the priority expressed by the Gram Sabha (a meeting of the GP residents). The sarpanch, the village council leader, is directly elected by GP residents and overall responsible for decisions made by the GP. The list of projects recommended by the Gram Sabha is then forwarded to the sub-district program officer and from there to the district program officer for final technical and financial approval.

A novel feature of the NREGA, distinct from previous workfare programs in India, is the mandatory ‘social’ audits of projects implemented under the program. The Act envisages, somewhat naively, that competent audits will be organized by the Gram Sabha or the beneficiary households at regular intervals. The guidelines thus make audits and stakeholder participation therein, the main mechanism to ensure transparency and the accountability of those in charge of program implementation.

B. The administration of NREGA projects in Andhra Pradesh

¹² Works permitted under the NREGA are – water conservation, drought proofing, flood protection, development of land for agriculture, irrigation and rural connectivity.

Andhra Pradesh (AP) is India's fifth largest state in terms of population (Census, 2011) and among the leading states in NREGA implementation for two main reasons. First, AP has consistently generated high NREGA employment with more than 4 million households on the payrolls in 2011-12.¹³ Second, the state has introduced a unique solution to the challenge of credible auditing of NREGA projects by vesting the responsibility for conducting regular and systematic audits of NREGA projects (unlike in other states of India where audits, for the reason mentioned above, are either not conducted or conducted in an ad-hoc and unsystematic manner) within an autonomous arm of the Department of Rural Development (the Society for Social Audits, Accountability and Transparency (SSAAT)). The state, therefore, claims to maintain high levels of accountability and transparency in program implementation.¹⁴

As for other public programs in the state, there are three tiers of administration of NREGA projects – district, sub-district and village. At the district level the District Collector, Program Director and the Additional Program Director (in hierarchical order) oversee project implementation. At the sub-district or mandal level, the Mandal Parishad Development Officer (MPDO) is assisted by the Assistant Program Officer (APO) in administering the program and in monitoring and sanctioning of all financial payments (labor as well as material components) for projects undertaken in the mandal (see Figure A1 in the appendix for details).

¹³ Only two other states, Uttar Pradesh (6 million households) and Tamil Nadu (5 million households) generated more employment under NREGA than Andhra Pradesh during the same period (<http://nrega.nic.in/>)

¹⁴ For a fuller account of the genesis and evolution of the AP 'social audit model', see Aiyar et al. (2013).

While village councils in AP are typically less mature and less powerful than in states like Kerala and Rajasthan (Ban and Rao, 2008), they maintain a crucial role in managing and executing NREGA projects.¹⁵ First, the Gram Rozgar Sevak or the Field Assistant (FA), a resident of the GP who assists the village council in NREGA implementation, is appointed on the recommendation of the sarpanch. The FA represents the direct interface of beneficiary households with the program. Thus the village council has the main say in the selection of this vital program functionary.¹⁶ Second, the sarpanch selects suppliers of the material inputs to projects implemented under the program and is therefore well positioned to fudge material expenditures in connivance with the technical staff (viz., Assistant Engineers, Technical Assistants and/or the suppliers) as brought out by anecdotal evidence from the field. Hence,

¹⁵ Through a Government of Andhra Pradesh order in December 2007, the administrative functions relating to the implementation of all projects under the NREGA were devolved to Panchayati Raj institutions (G.O. Ms. No. 571) (www.rd.ap.gov.in).

¹⁶ Data on the process of FA appointments from our GP survey suggests that in the appointment of both the first FA and the most recent one, the village council had the main say in at least 80 per cent of the GPs. In about 40 per cent of appointments, village councils controlled the entire selection process with no involvement of the mandal level bureaucracy. The FA assists the GP in the following processes: registration of households for job cards, verification of registration applications, distribution of job cards to ‘registered’ households, receipt of applications for employment and reporting the demand to the MPDO, informing applicants to report for work, maintenance of attendance records at work sites, verification and closure of labor records every week for weekly wage payments. See Figure A2 in the appendix for details on the role of various program functionaries and disbursement of program funds.

the village council and its leader are accountable for not only ensuring that program benefits are delivered efficiently to the intended households but also for the labor and material expenditures on NREGA projects.

GP elections in AP were last held in July 2006 after which new sarpanchs and other elected members assumed office for a five-year term. The timing of this election overlaps almost exactly with the phasing-in of the NREGA in February, 2006 in AP and presents us with the opportunity to study the short and long term implementation of the program (up to 2010) with the characteristics of the village council (including the sarpanch) unchanged.

AP also presents the opportunity to use data from official social audit reports of NREGA projects. Since late 2006 auditors have been trained at the state, district and village level in how to conduct audits of NREGA public works (Aakella and Kidambi, 2007). All GPs within a mandal are audited by a single audit team over a period of approximately a week. In conjunction with Right to Information legislation, information about expenditures on any NREGA work in a mandal is accessed by the audit team (residents of the audited GP are barred from membership in the team) and verified first through visits to laborers listed in the worksite logs ('muster-rolls') and subsequently through worksite inspections to verify materials expenditures.¹⁷ Complaints by individuals, groups of individuals and by the audit team itself are recorded and attested in audit reports that are prepared for each GP. The audits are followed by a "public hearing" where findings are discussed, accused officials are given an opportunity to defend themselves and the responsibility for each upheld violation is pinned

¹⁷ Since the verification of material expenditures requires technical expertise, only qualified members of the audit team (i.e. state or district level auditors) undertake this task.

on one specific or multiple program functionalities.¹⁸ The scope for frivolous complaints is therefore minimal, if at all. Systematic and standardized audits have been carried out in all 23 districts of the state with an average of over two rounds of audits completed per mandal/GP between 2006 and 2010.

3. Data and methodology

A. Data

We use two sources of data in our empirical analysis. The first data source are the primary surveys conducted at three levels - households, gram panchayats and mandals - in eight of the 23 districts in rural AP during April-June 2011.¹⁹ 100 mandals were randomly selected across these districts (either 12 or 14 mandals in each district). In each randomly chosen mandal, three gram panchayats were selected in the following manner –

1. the GP which was the administrative headquarter of the mandal.²⁰
2. one randomly selected GP from the list of all GPs reserved for a female sarpanch in that

¹⁸ The timing of the audits is determined by the SSAAT. The SSAAT has put in place meticulous checks and balances to prevent NREGA functionalities from corrupting the members of the social audit team (see Figure A3 in the appendix for a diagrammatic presentation of the audit process).

¹⁹ These eight districts were Mahbubnagar, Medak, Nizamabad, Warangal and Khammam (north or Telangana region), Anantpur and Kurnool (south or Rayalseema region) and Guntur (west or coastal region). NREGA was implemented in February, 2006 in all these districts, except Kurnool and Guntur, which implemented the program from April, 2007 onwards.

²⁰ In case the headquarter GP was not designated as ‘rural’ we randomly selected one GP that was not reserved for a woman village council head in 2006.

mandal in 2006 and

3. one randomly selected GP from the list of all GPs NOT reserved for a female sarpanch in that mandal in 2006.

In each GP, we randomly sampled five beneficiary households in the main village. This gives a total sample of 1,500 beneficiary households across 300 GPs. Note that beneficiary households were selected on the basis of ‘ever’ having worked in the program since its inception in the GP.

The mandal questionnaire was administered to the MPDO and the APO. Data on the composition of the village council, sarpanch characteristics and program implementation were gathered in each sampled GP. The survey asked for details on the members of the gram panchayat, their political affiliations, the history of political leadership in the sarpanch’s family, details of the sarpanch elections (list of contestants, votes obtained) and other questions including assistance received in the day-to-day execution of sarpanch duties.²¹ The household survey gathered information on households’ socio-economic characteristics, their awareness of NREGA entitlements and extensive details of their experience with the process of obtaining work and wages under the program since its implementation in their GP.

Our second source is data extracted and codified from the original, social audit reports for each GP.²² These GP audit reports have two sections: a standardized audit report card

²¹ Data on the sarpanch elections were cross-checked from multiple sources in each GP – elected sarpanch, rival contestant whose political party affiliation differed from that of the winner, political party workers (other than the winner’s), GP secretary.

²² In instances where the original audit reports were missing we used information from the abridged versions of the audit reports which are available on the SSAAT website:

which records the date of the audit along with the demographic characteristics of the GP, and more importantly, the impressions of the audit team about process performance since the time of the last. These impressions are informed by the second section of the audit report – the list of all registered complaints and discrepancies which were uncovered during the door to door verification process and project site visits. We use data only from the latter section of the reports.²³

Each of these two sources of data is linked to the village census abstracts for 2001 and the State Election Commission (SEC) data on reservation of sarpanch seats in 2006.²⁴ We,

<http://125.17.121.162/SocialAudit/>. 11 GP-audit reports are missing – both in hard copy and online.

²³ The audit findings were extracted and coded in the following manner: each complaint was first classified as labor, material or worksite facilities related. The former two were then disaggregated by the nature of the complaint type. For each complaint we recorded whether any misappropriated amount was mentioned and if yes, this amount was recorded; the functionaries held responsible for the complaint; and the nature of the complainant – individual, group or audit team along with data on gender composition of the former two.

²⁴ Using administrative data from the National Panchayat Directory, National Informatics Centre (<http://panchayatdirectory.gov.in/>) for AP we created a single dataset with information on both the GP name and all villages within that GP in our sample. The villages in the administrative dataset were then matched to the census villages by name. The data shown here are only for the main village of the GP. Almost 80 per cent of GPs in the sample have only one village. Our conclusions from Table 1 are unaffected if we take a population weighted average of all villages in the GP.

therefore, utilize two data sets in our analyses – cross-sectional household level data and panel data on audits of NREGA projects at the GP level.

B. Summary statistics

Table 1 shows the village level characteristics of the sampled Gram Panchayats by sarpanch reservation status using village level census data for 2001. We find no statistically significant difference in the provision of public goods by reservation status except in the number of primary schools. The population density, availability of irrigated land, the distance to an urban center and the level of public goods provision are comparable between these GPs. The statistics, thus, suggest that the reservation of the post of sarpanch for women was indeed random in AP.²⁵

The insignificant differences in village characteristics are accompanied by significant differences in the characteristics of the elected sarpanchs as shown in the top panel in Table 2. Reserved village council heads are likely to be younger, less educated, have no prior political experience and more likely to receive assistance with their day to day work as a sarpanch.²⁶ Interestingly, there is no difference between the reserved and unreserved GPs in

²⁵ Female sarpanchs typically held office almost exclusively due to the reservation policy. Only 6.5 per cent of sarpanchs in unreserved GPs in our sample were women.

²⁶ ‘Prior political experience’ is defined as a dummy variable which takes the value 1 if the current sarpanch had previously held an elected position in a gram, mandal or district panchayat or had experience of leadership of a political party. The variable ‘receives assistance with day to day work’ is coded as 1 if the elected sarpanch’s response to the survey question “Does any family member or any other relative/friend assist you in your day to day work as sarpanch?” was “Yes”. We find no difference in age or education of assisted reserved

the proportion of village council heads who had been previously elected as sarpanch.

The bottom panel of Table 2 describes the audit data for the period 2006 to 2010. We find no difference in the number of audits or the total number of complaints filed per audit in reserved and unreserved GPs. More than 80 per cent of all complaints were labor related and this share was significantly higher in reserved GPs. While irregularities related to non-payment or delays and bribes in wage payments differed insignificantly, reserved GPs exhibited significantly more impersonation and benami related irregularities. Complaints of irregularities related to bribes in materials expenditures were significantly higher for unreserved GPs.

The household summary statistics suggest that while the sampled households are comparable on observables between the two types of GPs,²⁷ households in female reserved GPs were more likely to have experienced leakages or misappropriation of program funds than in unreserved GPs (Table A1 in the Appendix). These include, greater likelihood of being asked to pay to register with the program (or receive the free job card); to have been paid less than due wage; delayed wage payments; wage payments in cash (instead of being directly deposited in beneficiary's post office or bank account) and discrepancies in wage

and unreserved sarpanchs. The latter, however, are more likely to belong to GPs reserved for SC and ST heads.

²⁷ Differences in all average household attributes, including awareness about program entitlements, are insignificant, except the proportion of scheduled tribe (ST) households which is significantly higher in unreserved GPs. These statistics suggest that any conclusions we draw regarding average differences in the process of program implementation in the two types of GPs should not be driven by differences in the average characteristics of sampled households.

payments conditional on official verification of labor records.²⁸ These, and the statistics in Table 2 above, suggest that more labor related irregularities were filed in reserved GPs.

C. Estimation methodology

To establish causal links between female reservations and corruption in NREGA, we conduct two separate analyses. The first at the level of the household using our cross-sectional survey data, and the second at the level of the GP using panel data extracted from the social audit reports.

The main estimating equation for the household level analysis is given by:

$$NREGA_outcome_{ijk} = \beta_0 + \beta_1 R_{jk} + \beta_2 \mathbf{X}_{jk} + \beta_3 \mathbf{Z}_{ijk} + \beta_4 D_k + \varepsilon_{ijk} \quad (1)$$

where the outcome for household i in GP j in mandal k is a function of whether GP j in mandal k is reserved (R) for a female sarpanch, a vector of characteristics \mathbf{X}_{jk} of the GP including the attributes of the GP sarpanch. The latter includes the age, the square of age, caste (a dummy variable each for SC, ST, OBC or upper caste), level of education (dummy variables for illiterate, less than primary, primary, middle, secondary, higher secondary, graduate, diploma) and a dummy for own prior political experience. To account for the impact of any village level characteristics on our outcomes of interest, vector \mathbf{X}_{jk} also includes a dummy variable for whether the GP is the mandal headquarter and village census

²⁸ In Table A1, we first describe households' experience with registering for work in 2006-10 (obtaining a job card), the first step to obtaining employment, and a process for which the GP is fully responsible. The second panel in Table A1 describes the experience of households with receiving wage payments for NREGA work during 2009-10. The last panel shows households' experience with verification of labor records in 2006-10.

attributes (number of primary schools, presence of paved road, number of post offices and proportion of irrigated land). \mathbf{Z}_{ijk} is a vector of characteristics of the household (dummy variables for SC, ST, OBC, Hindu, female-headed, age and age-square of household head, levels of head's education as for sarpanch above and landed household).

The mandal parishad development office plays a major role in the implementation of NREGA projects in AP (see Figures A1 and A2 in the appendix for details). We, therefore, abstract from the impact of mandal characteristics on our outcomes of interest by confining ourselves to variation in program implementation across GPs within a mandal by including the dummy variable D_k which equals 1 if the mandal is k and 0 otherwise. Our main coefficient of interest is β_1 - the average effect of having a female GP head on the outcome variable under scrutiny. ε_{ijk} is the idiosyncratic error term.

The dependent variable $NREGA_outcome_{ijk}$ spans the gamut of experience of the household with the program - from registering for work, to obtaining and finally, receiving payments for work. Our dependent variables, therefore, represent the private responses of households to the survey questions discussed above.

Our second line of inquiry makes use of the panel data extracted from the social audit reports. We pool data on all the verifiable complaints filed during each audit in each GP between 2006 and 2010 to run the following specification:

$$Audit_{jkl} = \alpha_0 + \alpha_1 R_{jkl} + \sum_t \alpha_t (R_{jkl} * Year_t) + \alpha_2 \mathbf{X}_{jkl} + \alpha_3 D_k + \alpha_4 Year_t + \alpha_5 (D_l * Year_t) + \mu_{jkl} \quad (2)$$

The findings of the audit for GP j in mandal k in district l in audit year t , $Audit_{jkl}$, is a function of whether the GP is reserved for a female sarpanch, R_{jkl} ; a vector of GP characteristics, \mathbf{X}_{jkl} (as in equation 1); mandal fixed effects and time trends for each year of the audit. We define each audit year in terms of the financial year in which funds are allocated to NREGA projects – from April of a calendar year to March of the next calendar year. Thus our specification includes dummy variables for audits in 2006-07, 2007-08, 2008-

09, 2009-10 and 2010-11. For the last financial year the data include audits until December, 2010.

Our dependent variable is the number of a complaint type filed in GP j in mandal k in district l in audit year t . It is, therefore, the total number of complaints of a specific type registered during an audit in a GP. These complaint types are as elucidated in the second panel of Table 2 above.

A possible confounding factor is the presence of region specific trends in the implementation and performance of NREGA which are correlated with GP reservation status. For instance, biometric identification of beneficiaries was introduced in some districts before others. To account for this possibility we also include linear, district specific trends ($D_l * Year_t$) in equation 2 above. Note that there is no variation in the timing of audits within mandals since all GPs within a mandal are audited within the same week by a single audit team.

To explore the effects of women leaders gaining experience and learning by doing, we interact each audit year with the dummy for female reservation, as shown below. The first audit year, 2006-07, represents our benchmark year. The coefficients on the interaction terms of R_{jkl} with $Year_t$ represent the marginal effect of reservation in each audit year while the total effect of female reservation is the sum of the coefficients $\alpha_l + \sum_t \alpha_t$ where t takes values from 2007-08 to 2010. Thus the coefficient on R_{jkl} indicates the effect of female reservation on program performance in 2006-07.

4. Results

A. Cross-sectional analysis - household survey

In Table 3 we report results from estimating equation (1). We report the coefficient on the dummy for female reserved headship for two alternative specifications with household and

sarpanch attribute controls (column 1) and with household, sarpanch and village attributes available from the census data (column 2). Both specifications account for unobservable mandal characteristics. Our attention is focused on the process outcomes which were significantly different between the two types of GPs in the summary statistics.

As seen in row 1, the likelihood that a beneficiary household was asked to pay to receive a job card is strongly significant in female reserved GPs although the amount paid (conditional on payment) is unaffected by GP reservation status. In female reserved GPs, the probability of being asked for a bribe for a job card was more than 6 percentage points higher than in unreserved GPs in column 1 and almost 8 percentage points higher when we control for village level characteristics in column 2. These are large effects –between 44 and 51 per cent higher than the average probability of being asked to pay a bribe in non-reserved GPs. We do not find any significant differences in dissemination of information about work availability or the process of obtaining NREGA work between the two types of GPs (results not reported here).

We next consider households' experience with the process of receiving program benefits or wage payments. The coefficient on female headship is positive but insignificant on whether the household was asked to pay a bribe to receive due wages or whether wages received were below the wages due in (rows 3 and 4, respectively).²⁹ However, delays in wage payments, a strong hint of administrative inefficiency, are more common in female headed GPs and significant for both specifications (row 5). This is almost 4 per cent higher than the average number of weeks for receipt of wage payments in unreserved GPs. The

²⁹ In more than 80 per cent of the cases where households report being asked to pay a bribe to receive due wages, the bribe was asked for at the bank or post office, with no difference between reserved and unreserved GPs.

coefficient on wage payments through cash-in-hand is positive but insignificant once we control for mandal level unobservables and household, sarpanch and GP characteristics (row 6).

Recall that the awareness levels of the average households in the two types of GPs were not significantly different (see Table A1). However, we find that a beneficiary household in a female reserved GP had more than 8 percentage point higher probability of being asked to verify its labor record in an audit, as shown in row 7 in both specifications. Since it is the audit team that typically approaches beneficiary households for record verification and audits often do not cover all beneficiary households, this difference may reflect greater concern on part of the auditors about irregularities in program benefits received by households. Alternatively, higher labor record verifications could suggest better quality of social audits in these GPs. However, conditional on being asked to verify records, households are almost 6 percentage points more likely to find discrepancies between actual and official records of wage payments as indicated by the coefficients in row 8, although the coefficient is insignificant in column 2. Furthermore, since the audits are neither carried out nor controlled by the village council it is unlikely that this can be attributed to the benign influence of sarpanchs in reserved GPs.

Overall, the analysis, so far, suggests that households in female reserved GPs are more likely to have experienced corruption and/or sub-standard administration of the public program, particularly during their initial program interaction, such as registration. Households register with the program only once. While the survey recall period for households' experience with registration was the time since the inception of the NREGA until the previous year (i.e. from 2006 to 2010), most households will have registered during the first year of the program. This conclusion is also most robust for processes for which the GP is almost entirely responsible, i.e. registration of households in panel 1. We do not find

any evidence to suggest that unreserved GPs perform significantly worse on any program process relative to female reserved GPs.

Next, to disentangle the determinants of the average effects in Table 3, we explore the effects of having a sarpanch who has prior political experience on our outcomes of interest. Note that the election of a sarpanch with prior political experience is unlikely to be exogenously determined. However, we find no significant difference in the observable characteristics (except for the proportion of cultivated area which is irrigated – Table A2 in the appendix) of GPs with and without an experienced sarpanch. If at all, GPs which have an experienced sarpanch have lower development indicators relative to GPs with inexperienced sarpanchs (Table A2). If corruption is expected to be greater in less developed regions (REF) then better program implementation in these GPs can be attributed to having an experienced sarpanch.

To address any potential differences in GP level unobservables, we restrict our sample to those GPs in which the sarpanch election was closely contested. We define a close election as one in which the winning candidate received 0.1 to 8 per cent more votes than her/his closest rival. Using the specification from column (2) in Table 3, we report the coefficient on female reserved sarpanch, prior political experience of sarpanch and the coefficient on the interaction of the two for each outcome variable in Table 4.

Although the coefficient on ‘GP reserved for female’ across columns 1 to 7 is in line with the results in Table 3, the coefficients on the interaction of reservation status with experience suggest that reserved GPs with experienced sarpanchs perform better on corruption (column 1) and on the quality of governance (columns 2 and 3). To elaborate, the negative coefficient on the interaction term in column 1 suggests that in reserved GPs with experienced sarpanchs the probability of being asked for a bribe for a job card is almost 31 percentage points lower than in a reserved GP with an inexperienced sarpanch. Note that

political experience does not necessarily improve governance (contrast the coefficients on prior political experience in columns 3 and 7).³⁰

If we sum up the total effect of being in a GP reserved for females then the results in Table 4 (rows 1 + 3) suggest that women sarpanchs perform no worse than males while experienced women sarpanchs may actually perform better. For instance, in column 3 the point estimate for total effect of a reserved GP on being asked to pay for a job card is now significantly negative ($0.099 - 0.330 = -0.232$), suggesting that once we account for experience, households in GPs with reserved female sarpanchs are not more likely to be asked for a bribe for a job card relative to unreserved GPs.

We next turn to the audit panel data analysis and the prospects for more incisively uncovering the role of learning and experience suggested by the household level analysis.

B. Panel data analysis - social audit reports

The results of the audit data analysis are reported in Table 4. The data have been restricted to GPs which had at least two rounds of NREGA audits between 2006 and 2010. The analysis is reported for a panel of two audits per GP.³¹

Concerns with reporting bias in registration of complaints are likely when households know that their grievances will be made public, as is the case with the audit process. For instance, if households perceive women sarpanchs to be less able or less likely to retaliate if audit complaints are filed, there could be more such complaints in female reserved GPs even

³⁰ We do not show the result for row 2 in Table 3 due to very small sample in the restricted data. Results are qualitatively the same for the full sample (Table A3 in appendix).

³¹ Our results are qualitatively unchanged in the panel for all audits between 2006 and 2010 in our sampled GPs.

if the actual incidence of program irregularities is not higher in these GPs. To address possible reporting bias in the audit data, we analyze the number of discrepancies and complaints registered by the audit team. Since audit teams are made up of non-residents of the audited GP, their complaints are unlikely to suffer from such biases.

The dependent variable(s), thus, is the number of each type of complaint filed by the audit team in that GP in an audit. Each column in Table 7 refers to the type of audit irregularity. These are classified into those related to labor (columns 1 to 3) and materials (columns 4 and 5) components of NREGA projects. All specifications include mandal level unobservables, sarpanch and village level characteristics, linear time trends and district specific linear trends.

Classifying all irregularities into whether or not they were related to the labor component of the program, we find that the coefficient on female reservation in column 1, row 1 is positive but insignificant. However, the incidence of labor complaints in female reserved GPs declines over time, as indicated by the negative coefficients on the interaction of female reservation with audit year (2007-08 and 2009-10). Column 2 refers to complaints related to non-payment or delays in wage payments. The coefficient in row 1 is positive and significant. Given that the average number of such complaints per audit during 2006-10 was 1.67 in female reserved GPs, these irregularities were more than 22 per cent higher ($0.38/1.67$) in these GPs in 2006-07 than the average for this period. These complaints decline significantly in subsequent years as indicated by the negative coefficients on the interaction terms in column 2, rows 2 to 5.

There is also a significant effect of female reservation on the number of complaints related to impersonation or benami wage payments in 2006-07, as shown in column 3 and a similar decline in these irregularities over time as indicated by the interaction terms in rows 2 to 4. These irregularities were over 28 per cent higher (i.e., $0.36/1.28$) in 2006-07 in female

reserved GPs than the average of such complaints per audit during 2006-10 in these GPs. Note that recording wage payments in excess of wages actually received by a worker is a means of exaggerating records in the measurement books for materials used in the project. This, in turn, artificially raises the costs of materials expenditure in the project.

We do not find a significant effect of women's reservation on the number of complaints filed related to excess wage payments and bribes in wage payments in female reserved GPs in 2006-07 as indicated in column 4. But the point estimates, including those of the interaction terms, are of the expected sign. This is consistent with the hypothesis that as female leaders accumulate experience, governance improves.³²

The next column classifies the nature of the complaint by the material component of the NREGA projects. The coefficients on female reservation and the interaction terms in columns 5 and 6 are insignificant indicating that this characteristic of the GP did not have a bearing on the nature of misappropriation of expenditures related to materials in the program in 2006-07 or thereafter. However, the direction of the interaction terms in column 6 indicate that excess payments and bribes in material component of the program declined over time in reserved GPs, albeit insignificantly.³³

³² Non-payment or delay in wage payments could be symptomatic of both corruption and administrative laxity in program implementation.

³³ We do not find any systematic relationship between village characteristics and the number of irregularities in the program. However, program implementation is likely to be significantly worse, particularly for the labor component, if the sarpanch is SC, ST or OBC as opposed to upper caste. There are no systematic effects of the level of sarpanch's education on the number of discrepancies reported in an audit.

In row 11 of Table 5, we estimate the total effect of reserving a GP for a woman sarpanch on the number of irregularities filed in an audit. The significantly negative coefficient in columns 1, 2 and 3 suggests that as women sarpanchs gain experience, the initial disadvantages manifested in their poor program delivery (in row 1) disappears. The progress in the reserved GPs is not just remedial or limited to catching up, but exhibits gains in governance and performance better than in unreserved GPs on these outcomes. Although the overall effects in row 11 are insignificant for the last three columns, they point in the same direction, except for non-existent projects (column 5). At this point, it may be useful to note that labor related leakages are easier to detect relative to those in materials expenditures.

To check the robustness of the results above we conduct the same analysis with the entire dataset, i.e. complaints filed by individuals, groups and the audit team, in Table 6. We find similar results of high number of complaints of impersonations and benami wage payments in 2006-07 in female reserved GPs and a decline in these complaints in 2007-08 and 2008-09, relative to 2006-07. This finding lines up with our results in Table 5 for the number of complaints registered by the audit team only.

To summarize our findings, the results from both the household survey and the audit data are consistent with the interpretation that labor related misappropriations are likely to be higher in GPs reserved for women, but significantly so in the early years of program inception. While households responded to questions on whether they had “ever” experienced a particular irregularity since the inception of NREGA (with the exception of questions on wage payments which were with reference to 2009-10), the most robust result from Table 3 indicates corruption in obtaining a job card, which typically occurs at the onset of the program. The panel audit data suggest that program leakages may reduce over time, indicating that the accumulation of experience matters exclusively for sarpanchs elected to reserved GPs and does not affect program performance elsewhere. In the audit data we also

find evidence of greater reporting of NREGA malfeasance by women, either individually or in groups, in female reserved GPs (see Table A4 in the appendix). Our results, thus, suggest that contrary to the pessimism that often surrounds political commentary, greater experience does not necessarily make politicians more corrupt and conniving – women political leaders’ experience translates into less corruption and better governance.

Next, to explore whether our results indicate that there is capture of power by other program functionaries in reserved GPs we investigate which NREGA functionaries are more likely to be held responsible for exposed irregularities in the program using the audit data. In particular, if there is capture, the data should indicate that culpability for malfeasance is higher on certain program functionaries in female reserved GPs relative to unreserved GPs. Our results are reported in Table 7. We restrict the analysis to irregularities in the labor component of the program since they comprise more than 80 per cent of all irregularities in our audit data.³⁴ The dependent variable is dummy variable that takes a value 1 if the MPDO (APO) was held responsible for the labor related irregularity and 0 otherwise. In columns 1 and 2, the coefficient on ‘GP reserved for female’ suggests that bureaucrats (APO and MPDO) are indeed more likely to be held responsible for malfeasance in the labor component of NREGA projects. These results are held up when we restrict the data to only those complaints which were filed by the social audit team in columns 4 to 6. Consistent with our earlier results, the probability of bureaucratic capture declines, albeit insignificantly, with prior political experience of the reserved female sarpanch as indicated by the negative

³⁴ Our results hold when we analyze the data for all irregularities as well. However, we do not find any significant effects of female reservation status on officials held responsible for irregularities in materials expenditure only. This could be because of the small sample of materials related complaints in the audit data.

coefficient on the interaction of experience with female reservation in columns 3 and 6. We do not find any significant differences in the probability of malfeasance responsibility being pinned on other NREGA functionaries, such as the Technical Assistant (TA), Assistant Engineer (AE) or Branch Post Master (BPM), by reservation status (results not reported here).

C. Discussion of results

There are three possible confounding explanations of the observed average differences in governance between reserved and unreserved GPs. Starting with the household survey data, the foremost concern is the possibility that villagers report poor governance if they perceive the GP leader to be politically weak and less likely to retaliate. If female reserved sarpanchs are more likely to be perceived as weak then the systematic differences we observe between reserved and unreserved GPs could reflect reporting biases rather than real differences in governance. This may be particularly so when the sarpanch lacks prior leadership experience. We do not find evidence in support of this hypothesis.

Reporting bias is more likely to be a concern when information is publicly provided. Our survey of households was conducted in the privacy of their homes and consistent with good social science practice, respondents were assured of anonymity and that their responses, including on sensitive issues like corruption, would be treated as strictly confidential. Furthermore, in the survey we asked households to rank their perceived ‘effectiveness’ of the elected sarpanch.³⁵ There is no statistically significant difference in the response of

³⁵ Respondents in the household survey were asked whether they ‘strongly agree’, ‘agree’, ‘disagree’ or ‘strongly disagree’ with the statement “The elected sarpanch is an effective leader of this GP.”

households in reserved and unreserved GPs. This suggests that, on average, households in both types of GPs did not differ in their perception of the political and administrative strengths of the council head. Thus any perceived retaliation threats were unlikely to differ between the two types of GPs.

A second and related confounder is the presence of gender stereotypes - villagers may perceive women to be more incompetent than men which may be reflected in both the household survey and the audit data. As pointed out above, we do not find any differences in households' perceptions of 'effectiveness' of the elected sarpanch between reserved and unreserved GPs. This is plausible given the higher levels of gender parity in AP when compared to the national average. Furthermore, the discrepancies filed by audit teams, which are more likely to be objective and bias-free point in the same direction. In addition, if gender stereotypes were responsible for the observed differences in NREGA governance, we should not observe better governance outcomes for female sarpanchs with prior political experience or better administrative 'ability' relative to unreserved sarpanchs with similar characteristics as discussed above.

Finally, our summary statistics suggest that, on average, sarpanchs in female reserved GPs are less likely to have prior political experience, more likely to need assistance with day to day work and less likely to be educated. These observable characteristics, in addition to cultural stereotypes (Beaman et al., 2009), could imply that voters perceive women sarpanchs as less able. They may, therefore, be less likely to vote for them once the village council headship reservation ceases. Thus, a woman sarpanch in a reserved GP is more likely to perceive her chances of re-election, when the position of sarpanch is no longer reserved for females, to be low irrespective of her performance while in office. Research suggests that a political leader who is less likely to be re-elected is more likely to be corrupt than one with more promising re-election prospects (Ferraz and Finan, 2011). Thus the NREGA

governance differences we observe between the two types of GPs could be attributable to the differences in the probability of re-election and thereby the ‘incentives’ of the elected sarpanch.

We conjecture that the probability of re-election of a sarpanch is positively correlated with her or his prior political experience and education. Female sarpanchs who have prior political experience and are more administratively able should be expected to have a higher chance of re-election even when the sarpanch position is not reserved for women. Thus, the incentives of sarpanchs with comparable re-election prospects should be more aligned across reserved and unreserved GPs. In all the reported analyses we have controlled for the re-election probability of the current sarpanchs by including these proxies for re-election prospects which may be better indicators of sarpanchs’ perception of the chances of assuming office in the next election than self-reported probabilities. Our results suggests that even when we control for the probability of re-election of the current sarpanch, the average governance of the program in the reserved GPs is significantly worse, in many instances, relative to unreserved GPs particularly in the early years of program implementation. Moreover, the proportion of first-time sarpanchs, or its converse – those who have previously served as a sarpanch - is the same in both reserved and unreserved GPs.

Thus, our results, across both the household survey data and the audit data, suggest that female reserved sarpanchs accumulate experience through learning by doing which in turn, translates into governance improvements. Female sarpanchs apparently perform better with the duration of their tenure and if they have held leadership positions before. These conclusions resonate with but also substantially nuance Ban and Rao (2008) and Bardhan et al. (2010) who have drawn attention to the potential negative implications of the political and administrative inexperience of female reserved sarpanchs. Our findings also resonate with, but once more nuance the findings of Chattopadhyay and Duflo (2004), among others. By

highlighting the crucial role of the time it takes for women political leaders to become effective we point to the higher possibility and risk of capture of power in GPs governed by reserved female heads in the early days of their tenure and to the governance gains that we find female reserved headship to be associated with once experience builds up.

5. Conclusions

In this paper we focus on whether and how political reservations for women in village councils impact on the governance of India's most ambitious anti-poverty program to date – the National Rural Employment Guarantee Scheme - using data from the state of Andhra Pradesh. Drawing on cross-sectional primary surveys and panel audit reports we are able to identify the impact of reserved female headship on a variety of important dimensions of public program delivery, including measures of corruption.

Our results suggest that households in female reserved GPs are more likely to have experienced and suffered from corruption and sub-standard administration in the early stages of program implementation. This conclusion holds both for implementation of those aspects of the program for which the GP is entirely responsible and for those where it shares responsibilities with other program functionaries. The findings from the audit data confirm that irregularities are more likely to be prevalent in the initial years of program implementation in GPs reserved for women.

We attribute these results to the lack of prior political and administrative experience of women sarpanchs. We find that female sarpanchs perform better, even relative to unreserved sarpanchs on some program processes, if they have prior political experience. Substantive backing for this explanation is obtained from the audit data analysis which shows that as experience accumulates, governance improves. Our study is, we believe, the first to

rigorously demonstrate that the progress made by women political leaders is not limited to being remedial or catching up but translates into governance gains.

The explanation is also supported by results which suggest that mandal level officers (MPDOs and APOs) are more likely to be held responsible for malfeasance in the program in GPs reserved for a woman sarpanch. While there is no effect of experience on reducing bureaucratic capture of power per se, it is somewhat ameliorated in GPs where reserved sarpanchs have had prior political experience.

Our unpacking of the time dimension of governance gains and setbacks associated with female political reservations also helps to reconcile the two opposing stands in the literature highlighted in the introduction: both stands are valid but should allow for a crucial time dimension nuance. Moreover, given the relatively higher levels of gender parity and female literacy in Andhra Pradesh as opposed to other parts of India, our estimates of the effect of female leadership on governance and corruption are likely to be lower bounds.

Our findings, therefore, do not suggest that female leaders are more likely to be intrinsically corrupt or to misgovern public programs, but point instead to the need for capacity building and training of women leaders. Lack of adequate administrative support for grass roots institutions may undermine the effectiveness of public programs and of affirmative action policies in developing countries.

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Table 1: Village level characteristics by reservation status of gram panchayat

	Unreserved GP	Reserved GP	Difference
	(1)	(2)	(1) – (2)
<i>Village characteristics</i> ⁺	N=172	N=124	
Persons per hectare of village area	3.55 (0.289)	3.26 (0.327)	0.30 (0.439)
Number of primary schools	4.58 (0.300)	3.66 (0.301)	0.92** (0.436)
Number of middle schools	1.54 (0.154)	1.41 (0.175)	0.13 (0.235)
Number of senior secondary schools	0.95 (0.107)	0.77 (0.114)	0.18 (0.159)
Number of primary health centers	0.28 (0.034)	0.23 (0.038)	0.05 (0.052)
Drinking water	0.99 (0.006)	0.99 (0.008)	0.00 (0.010)
Tap water ¹	1.20 (0.034)	1.20 (0.040)	0.00 (0.052)
Tube well ²	1.43 (0.051)	1.38 (0.063)	0.05 (0.081)
Hand pump ³	1.03 (0.016)	1.01 (0.018)	0.03 (0.025)
Number of post offices	0.88 (0.028)	0.82 (0.036)	0.06 (0.045)
Approach road is paved ⁴	1.10 (0.025)	1.16 (0.035)	-0.06 (0.042)
Proportion of cultivated area which is irrigated	0.28 (0.020)	0.24 (0.022)	0.04 (0.030)
Distance to nearest town (kms.)	29.69 (1.512)	31.31 (1.855)	-1.62 (2.377)

Note: Standard errors in parentheses. ***significant at 1% ** 5% and *10%.

1, 2, 3 and 4: 1= facility available, 2=facility not available; + census data missing for 4 GPs which we were unable to match with the census.

Table 2: GP level characteristics by reservation status

	Unreserved GP (1)	Reserved GP (2)	Difference (1) – (2)
<i>I. Sarpanch characteristics^a</i>			
	N=169	N=128	
Age	44.72 (0.726)	42.31 (.940)	2.40** (1.168)
Scheduled caste	0.15 (0.027)	0.20 (0.036)	-0.06 (0.044)
Scheduled tribe	0.20 (0.031)	0.13 (0.030)	0.06 (0.043)
Other backward caste	0.46 (0.038)	0.47 (0.044)	-0.01 (0.059)
Illiterate	0.00 (0.00)	0.09 (0.025)	-0.09*** (0.022)
Higher secondary or more education	0.54 (0.038)	0.15 (0.032)	0.40*** (0.052)
<i>Political experience and background</i>			
Own prior political experience	0.22 (0.032)	0.11 (0.028)	0.11** (0.044)
Held sarpanch position previously	0.07 (0.019)	0.06 (0.020)	0.01 (0.028)
Family member with prior political experience	0.39 (0.038)	0.45 (0.044)	-0.05 (0.058)
Relative of another GP member	0.07 (0.020)	0.14 (0.031)	-0.07** (0.035)
<i>Assistance with day to day official work</i>			
Receives assistance	0.13 (0.026)	0.73 (0.040)	-0.60*** (0.045)
Is accompanied to panchayat meetings	0.07 (0.019)	0.50 (0.044)	-0.43*** (0.044)
<i>II. GP level audit characteristics, 2006-10^b</i>			
	N=171	N=125	
Number of social audits	2.47 (0.058)	2.57 (0.062)	-0.09 (0.086)
Number of complaints per audit	5.61 (0.303)	5.55 (0.381)	0.06 (0.481)
<i>Type of complaint as a proportion of total registered complaints, 2006-10</i>			
	N=163	N=122	
Labor related	0.87 (0.012)	0.89 (0.011)	-0.03* (0.016)
Non-payment/delay in wage payment	0.29 (0.016)	0.28 (0.020)	0.01 (0.025)
Impersonation/benami wage payments	0.19 (0.014)	0.23 (0.021)	-0.04* (0.024)
Excess payments/bribes in labor expenditures	0.15 (0.012)	0.16 (0.014)	-0.01 (0.018)
Non-existent works	0.03 (0.005)	0.02 (0.007)	0.00 (0.008)
Excess payments/bribes in material expenditures	0.05 (0.008)	0.03 (0.006)	0.02* (0.010)

Note: Standard errors in parentheses. ***significant at 1% ** 5% and *10%. ^aMissing sarpanch data for 3 GPs. ^bNo audit reports available for 4 GPs. Excluded category 'other labor/materials' complaints.

Table 3: Effect of reservation status of GP on governance and corruption (household survey)

<i>Program process</i>	<i>Coefficient on GP reserved for female</i>		
	(1)	(2)	N
<i>Registering with the program</i>			
(1) Asked to make payment for job card	0.066** (0.030)	0.077** (0.032)	1484
(2) Bribe amount conditional on payment	-2.987 (6.627)	-7.255 (7.041)	243
<i>Receiving program benefits</i>			
(3) Asked to make payment to receive due wages	0.012 (0.023)	0.014 (0.024)	1484
(4) Wages received lower than wages due	0.026 (0.021)	0.029 (0.022)	1453
(5) Weeks for wage payment receipt	0.089* (0.051)	0.095* (0.051)	1484
(6) Wage payment through cash-in-hand	0.002 (0.023)	0.002 (0.024)	1484
<i>Verification of program funds</i>			
(7) Asked to verify labor records	0.083** (0.039)	0.086** (0.037)	1473
(8) Discrepancy in labor records, conditional on on (7)	0.055* (0.032)	0.053 (0.034)	775
mandal fixed effects	√	√	
household characteristics	√	√	
sarpanch characteristics	√	√	
village census characteristics	x	√	

Note: Separate regressions for each reported coefficient. All regressions are OLS. Each regression includes separate dummies for SC, ST, OBC household; Hindu household head; female headed household; age of household head and age of household head squared; dummy variables for household head illiterate, having less than primary schooling, completed primary schooling, completed secondary school, completed high school, graduate; whether the household owns land; separate dummy variables for SC,ST,OBC or upper caste sarpanch; age of sarpanch and age of sarpanch squared; dummy variables for sarpanch illiterate, having less than primary schooling, completed primary schooling, completed middle school, completed secondary school, completed higher secondary, graduate, holds a diploma; dummy for politically experienced sarpanch; dummy for whether GP is the headquarter of the mandal. Village census characteristics include village has paved road, number of primary schools, proportion of cultivated land which is irrigated and the number of post offices. N reported for specification (1), missing village census data for 2 GPs in specification (2).

Standard errors clustered at the GP level reported in parentheses. ***significant at 1% ** 5% and *10%.

Table 4: Effect of reservation status of GP on governance and corruption (household survey)

Coefficient	<i>Registering with the program</i>	<i>Receiving program benefits</i>		<i>Verification of program funds</i>			
	Asked to make payment for registration card	Asked to make payment to receive due wages	Wages received lower than wages due	Weeks for wage payment receipt	Wage payment through cash-in-hand	Asked to verify labor records	Discrepancy in wage payments, conditional on (6)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
(1) GP reserved for female	0.366*** (0.076)	0.203*** (0.053)	0.098* (0.050)	0.482*** (0.148)	0.039 (0.033)	0.318*** (0.113)	0.323*** (0.028)
(2) Prior political experience	0.122 (0.107)	-0.004 (0.066)	0.187* (0.098)	-0.178 (0.159)	-0.060 (0.082)	-0.007 (0.118)	1.010*** (0.106)
(3) Prior political experience x GP reserved for female	-0.307* (0.178)	-0.361*** (0.108)	-0.330*** (0.124)	-0.062 (0.272)	0.092 (0.084)	-0.104 (0.168)	-1.574*** (0.105)
(4) Constant	0.013 (0.630)	-0.156 (0.284)	1.393*** (0.388)	1.739*** (0.635)	0.005 (0.297)	-1.543* (0.794)	3.197*** (0.471)
Test of overall significance: GP reserved for female (1+3)	0.059 (0.178)	-0.158 (0.101)	-0.232** (0.117)	0.421 (0.281)	0.131 (0.085)	0.215 (0.187)	-1.251*** (0.108)
N	599	599	582	599	599	595	330
R ²	0.42	0.29	0.33	0.36	0.60	0.69	0.42

Note: The sample has been restricted to those GPs in which the election for the position of sarpanch was closely contested – the margin of victory was in the range of 0.1 to 8 per cent. All regressions are OLS. Each column is a separate regression. Each regression includes mandal fixed effects, controls for household, sarpanch and village census characteristics as elucidated in previous table.

Standard errors clustered at the GP level reported in parentheses. ***significant at 1% ** 5% and *10%

Table 5: Effect of reservation status of GP on governance and corruption (audit data, number of irregularities filed by the audit team)

Coefficient	<i>Number of labor related irregularities</i>				<i>Number of materials related irregularities</i>	
	Total labor related complaints	Non-payment/delay in wage payments	Impersonations or benami wages	Excess payments/bribes	Work does not exist	Excess payments/bribes
	(1)	(2)	(3)	(4)	(5)	(6)
(1) GP reserved for female	0.910 (0.577)	0.383** (0.162)	0.356* (0.205)	0.056 (0.153)	-0.175 (0.215)	0.046 (0.062)
(2) GP reserved for female x 2007-08	-1.231** (0.616)	-0.409** (0.170)	-0.405* (0.224)	-0.104 (0.165)	0.180 (0.221)	-0.042 (0.079)
(3) GP reserved for female x 2008-09	-0.788 (0.606)	-0.348** (0.169)	-0.371* (0.220)	-0.035 (0.184)	0.142 (0.215)	-0.095 (0.081)
(4) GP reserved for female x 2009-10	-1.143* (0.609)	-0.437*** (0.163)	-0.400* (0.231)	-0.116 (0.17)	0.014 (0.239)	-0.111 (0.119)
(5) GP reserved for female x 2010	-0.863 (0.640)	-0.378** (0.166)	-0.345 (0.214)	-0.128 (0.24)	0.312 (0.231)	0.159 (0.158)
(6) 2007-08	-0.052 (1.293)	0.678 (0.457)	0.382 (0.452)	0.500 (0.692)	-0.062 (0.388)	0.262 (0.383)
(7) 2008-09	-0.025 (0.565)	-0.010 (0.020)	0.009 (0.043)	0.636 (0.642)	0.057 (0.052)	0.084 (0.08)
(8) 2009-10	-0.027 (1.094)	-0.054 (0.183)	-0.086 (0.332)	0.531 (0.711)	-0.168 (0.331)	0.604 (0.383)
(9) 2010	0.000 (0.552)	0.000 (0.000)	0.000 (0.000)	0.667 (0.637)	0.000 (0.000)	0.000 (0.000)
(10) Constant	-0.602 (1.488)	-0.405* (0.238)	0.130 (0.605)	-0.404 (0.734)	-0.540 (0.549)	-0.219 (0.531)
(11) Test of overall significance: GP reserved for female (1+2+3+4+5)	-3.115* (1.785)	-1.189** (0.493)	-1.164* (0.641)	-0.327 (0.509)	0.474 (0.657)	-0.043 (0.235)

N (Number of observations)	484	483	484	484	484	484
R ²	0.36	0.32	0.30	0.33	0.28	0.31

Note: The sample is restricted to audit rounds 1 and 2 in those GPs where at least two audits were conducted during 2006-10. Each year dummy refers to the financial year (April – March). For 2010 financial year data are until December, 2010. Each dependent variable is the number of the type of complaint in a GP in an audit. Separate regressions for each reported coefficient. All regressions are OLS. Controls as elucidated in Table 4 and district specific linear trends. The number of GPs in the analysis is 245.

Standard errors clustered at the GP level reported in parentheses. ***significant at 1% ** 5% and *10%.

Table 6: Effect of reservation status of GP on governance and corruption (audit data, number of irregularities filed by all)

Coefficient	<i>Number of labor related irregularities</i>			<i>Number of materials related irregularities</i>		
	Total labor related complaints	Non-payment/delay in wage payments	Impersonations or benami wages	Excess payments/bribes	Work does not exist	Excess payments/bribes
	(1)	(2)	(3)	(4)	(5)	(6)
(1) GP reserved for female	0.533 (1.356)	-0.554 (0.606)	1.082** (0.475)	0.132 (0.387)	-0.139 (0.211)	-0.116 (0.141)
(2) GP reserved for female x 2007-08	-0.581 (1.462)	0.867 (0.692)	-0.982* (0.507)	-0.276 (0.474)	0.163 (0.225)	0.179 (0.166)
(3) GP reserved for female x 2008-09	-0.178 (1.471)	0.319 (0.71)	-1.043* (0.554)	-0.084 (0.458)	0.137 (0.216)	0.222 (0.174)
(4) GP reserved for female x 2009-10	0.463 (1.646)	1.057 (0.824)	-0.815 (0.623)	0.062 (0.454)	0.038 (0.250)	0.146 (0.156)
(5) GP reserved for female x 2010	0.812 (1.800)	0.589 (0.782)	0.009 (1.084)	-0.057 (0.507)	0.255 (0.230)	0.005 (0.183)
(6) 2007-08	1.522 (4.407)	0.890 (2.229)	-0.693 (1.853)	1.613 (1.726)	-0.382 (0.416)	-0.023 (0.406)
(7) 2008-09	2.830* (1.547)	1.923* (1.072)	0.517 (0.489)	0.842 (0.513)	0.039 (0.049)	0.031 (0.064)
(8) 2009-10	5.834 (4.057)	0.697 (2.027)	3.595* (2.163)	2.591** (1.143)	1.267** (0.562)	0.558 (0.385)
(9) 2010	2.333*** (0.843)	2.667*** (0.637)	0.000 (0.000)	0.333 (0.319)	0.000 (0.000)	0.000 (0.000)
(10) Constant	-1.828 (5.638)	-0.026 (2.958)	-1.917 (2.497)	-0.870 (1.854)	-0.638 (0.58)	-0.021 (0.547)
(11) Test of overall significance: GP reserved for female (1+2+3+4+5)	1.048 (4.489)	2.278 (2.130)	-1.750 (1.888)	-0.222 (1.222)	0.453 (0.656)	-0.230 (0.272)

N (Number of observations)	484	484	484	484	484	484
R ²	0.51	0.56	0.43	0.35	0.34	0.34

Note: The sample is restricted to audit rounds 1 and 2 in those GPs where at least two audits were conducted during 2006-10. The dependent variable is the number of the classified complaint in a GP in an audit. Separate regressions for each reported coefficient. All regressions are OLS. Controls as elucidated in Table 7. The number of GPs in the analysis is 245.

Standard errors clustered at the GP level reported in parentheses. ***significant at 1% ** 5% and *10%.

Table 7: Responsibility for irregularities in labor expenditures (audit data)

Coefficient	<i>All labor related irregularities</i>			<i>Labor related irregularities filed by audit team</i>		
	APO	MPDO		APO	MPDO	
	(1)	(2)	(3)	(4)	(5)	(6)
GP reserved for female	0.012 (0.011)	0.022** (0.010)	0.026** (0.010)	0.155** (0.049)	0.102** (0.041)	0.108** (0.044)
Prior political experience	-0.012 (0.012)	-0.003 (0.008)	0.005 (0.010)	-0.024 (0.043)	-0.032 (0.038)	-0.021 (0.043)
Prior political experience x GP reserved for female			-0.026 (0.017)			-0.047 (0.099)
Constant	0.310* (0.169)	-0.041 (0.089)	-0.054 (0.088)	-0.010 (0.403)	0.717* (0.419)	0.692* (0.416)
N	2601	2601	2601	426	426	426
R ²	0.10	0.10	0.10	0.44	0.46	0.46

Note: The sample is restricted to complaints related to labor in audit rounds 1 and 2 in those GPs where at least two audits were conducted during 2006-10. Audit-GP with no complaints are dropped from the analysis (9 GPs with only one audit and 9 GPs with at least 2 audits in 2006-10 reported no complaints). All regressions are OLS. The dependent variable is a dummy variable for whether the official was held responsible for the labor irregularity. Controls as elucidated in Table 7.

Standard errors clustered at the GP level reported in parentheses. ***significant at 1% ** 5% and *10%.

Appendix

Table A1: Household level characteristics by reservation status of gram panchayat

	Unreserved GP	Reserved GP	Difference
	(1)	(2)	(1) – (2)
	N=860	N=640	
<i>I. Household characteristics</i>			
Owens land	0.55 (0.017)	0.56 (0.020)	-0.01 (0.026)
Literate household head	0.55 (0.017)	0.54 (0.020)	0.01 (0.026)
Below poverty line (BPL)	0.99 (0.004)	0.99 (0.004)	0.00 (0.006)
SC household head	0.59 (0.017)	0.59 (0.019)	-0.01 (0.026)
ST household head	0.26 (0.015)	0.21 (0.016)	0.04** (0.022)
Female household head	0.14 (0.012)	0.13 (0.013)	0.01 (0.018)
Hindu household head	0.92 (0.009)	0.94 (0.009)	-0.02 (0.013)
Household head casual laborer	0.82 (0.013)	0.85 (0.014)	-0.03 (0.02)
Awareness of NREGA entitlements (maximum score 5)	3.58 (0.023)	3.52 (0.028)	0.06 (0.036)
<i>II. Household's experience with the program: Registering with program</i>			
Asked to make payment for job card	0.15 (0.012)	0.19 (0.016)	-0.05** (0.019)
Bribe amount conditional on payment (Rs.)	31.24 (2.432) [125]	38.88 (3.613) [121]	-7.64* (4.330)
Number of weeks for obtaining job card	2.64 (0.135)	2.50 (0.060)	0.14 (0.164)
Proportion of households with job card	0.94 (0.008)	0.96 (0.008)	-0.02* (0.012)
<i>Receiving program benefits</i>			
Asked to make payment to receive due wages	0.10 (0.010)	0.11 (0.013)	-0.01 (0.016)
Bribe amount, conditional on above (Rs.)	136.96 (28.065)	158.55 (33.304)	-21.59 (43.249)
Wages received lower than wages due	0.11 (0.011) [853]	0.14 (0.014) [616]	-0.03* (0.017)
Frequency of wage payment receipt (weeks)	2.17 (0.037)	2.27 (0.044)	-0.10* (0.057)
Wage payment made by cash in hand	0.09 (0.010)	0.12 (0.013)	-0.03* (0.016)
<i>Verification of program funds</i>			
Asked to verify labor records in audit	0.50 (0.017) [858]	0.56 (0.020) [631]	-0.07*** (0.026)
Discrepancy in labor records, conditional on above	0.10 (0.015) [426]	0.14 (0.018) [355]	-0.04* (0.040)

Note: Standard errors in parentheses. ***significant at 1% ** 5% and *10%. Deviation from overall sample size noted in square brackets.

Table A2: Village characteristics by prior political experience of elected sarpanch

<i>Village characteristics</i>	Sarpanch does NOT have previous political experience	Sarpanch has previous political experience	Difference
	(1) N=242	(2) N=51	(1) – (2)
Persons per hectare of village area	3.52 (0.255)	3.08 (0.333)	0.43 (0.577)
Number of primary schools	4.34 (0.240)	3.47 (0.504)	0.87 (0.571)
Number of middle schools	1.51 (0.131)	1.37 (0.254)	0.14 (0.307)
Number of senior secondary schools	0.88 (0.088)	0.82 (0.185)	0.06 (0.209)
Number of primary health centers	0.27 (0.029)	0.22 (0.058)	0.06 (0.068)
Drinking water	1.00 (0.004)	0.98 (0.020)	0.02 (0.013)
Tap water ¹	1.20 (0.028)	1.22 (0.070)	-0.02 (0.068)
Tube well ²	1.43 (0.043)	1.29 (0.102)	0.13 (0.105)
Hand pump ³	1.03 (0.014)	1.00 (0.028)	0.03 (0.032)
Number of post offices	0.87 (0.023)	0.82 (0.067)	0.04 (0.059)
Approach road is paved ⁴	1.13 (0.023)	1.10 (0.051)	0.03 (0.054)
Proportion of cultivated area which is irrigated	0.27 (0.017)	0.21 (0.026)	0.07* (0.039)
Distance to nearest town (kms.)	30.31 (1.313)	31.12 (2.728)	-0.81 (3.123)

Note: Standard errors in parentheses. ***significant at 1% ** 5% and *10%.

1, 2, 3 and 4: 1= facility available, 2=facility not available; + census data missing for 4 GPs which we were unable to match with the census.

Table A3: Effect of reservation status of GP on governance and corruption (full sample)

Coefficient	<i>Registering with the program</i>		<i>Receiving program benefits</i>		<i>Verification of program funds</i>		
	Asked to make payment for registration card	Asked to make payment to receive due wages	Wages received lower than wages due	Weeks for wage payment receipt	Wage payment through cash-in-hand	Asked to verify labor records	Discrepancy in wage payments, conditional on (6)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
(1) GP reserved for female	0.095*** (0.033)	0.022 (0.025)	0.033 (0.024)	0.131** (0.057)	0.008 (0.025)	0.090** (0.039)	0.067* (0.036)
(2) Prior political experience	0.010 (0.046)	-0.047 (0.033)	0.032 (0.036)	0.132* (0.077)	-0.000 (0.035)	0.002 (0.051)	-0.001 (0.046)
(3) Prior political experience x GP reserved for female	-0.157* (0.084)	-0.073 (0.070)	-0.036 (0.088)	-0.314** (0.149)	-0.049 (0.070)	-0.030 (0.111)	-0.160 (0.140)
(4) Constant	-0.727** (0.335)	-0.237 (0.230)	-0.086 (0.232)	1.541*** (0.514)	-0.468** (0.232)	0.058 (0.360)	-0.555 (0.354)
Test of overall significance: GP reserved for female (1+3)	-0.063 (0.085)	-0.051 (0.067)	-0.003 (0.082)	-0.183 (0.131)	-0.041 (0.068)	0.060 (0.105)	-0.093 (0.139)
N	1454	1454	1423	1454	1454	1443	758
R ²	0.275	0.194	0.211	0.284	0.460	0.575	0.288

Table A4: Effect of reservation status of GP on women’s voice (audit data)

<i>Gender of complainant</i>	<i>Coefficient on GP reserved for female</i>			N
	(1)	(2)	(3)	
(i) Female	0.096*** (0.037)	0.095** (0.037)	0.106*** (0.036)	1291
(ii) Number of complaints filed by females	0.512*** (0.189)	0.488** (0.188)	0.486** (0.189)	661
controls	√	√	√	
mandal fixed effects	√	√	√	
linear time trends	x	√	√	
district specific linear trends	x	x	√	

Note: (i) each observation is a complaint filed in an audit in a GP; sample restricted to complaints filed by individuals for all audit rounds for 2006-10.

(ii) sum of all complaints at GP-audit level for 2006-10.

Separate regressions for each coefficient. All regressions are OLS. Controls include three dummy variables for SC, ST, OBC sarpanch; age of sarpanch and age of sarpanch squared; dummy variables for sarpanch having less than primary schooling, completed primary schooling, completed middle school, completed secondary school, completed higher secondary, graduate, holds a diploma; dummy for politically experienced sarpanch; dummy for a GP which is the headquarter of the mandal; village census characteristics.

Standard errors clustered at the GP level reported in parentheses. ***significant at 1% ** 5% and *10%.

Figure A1: Administration of NREGA projects in Andhra Pradesh

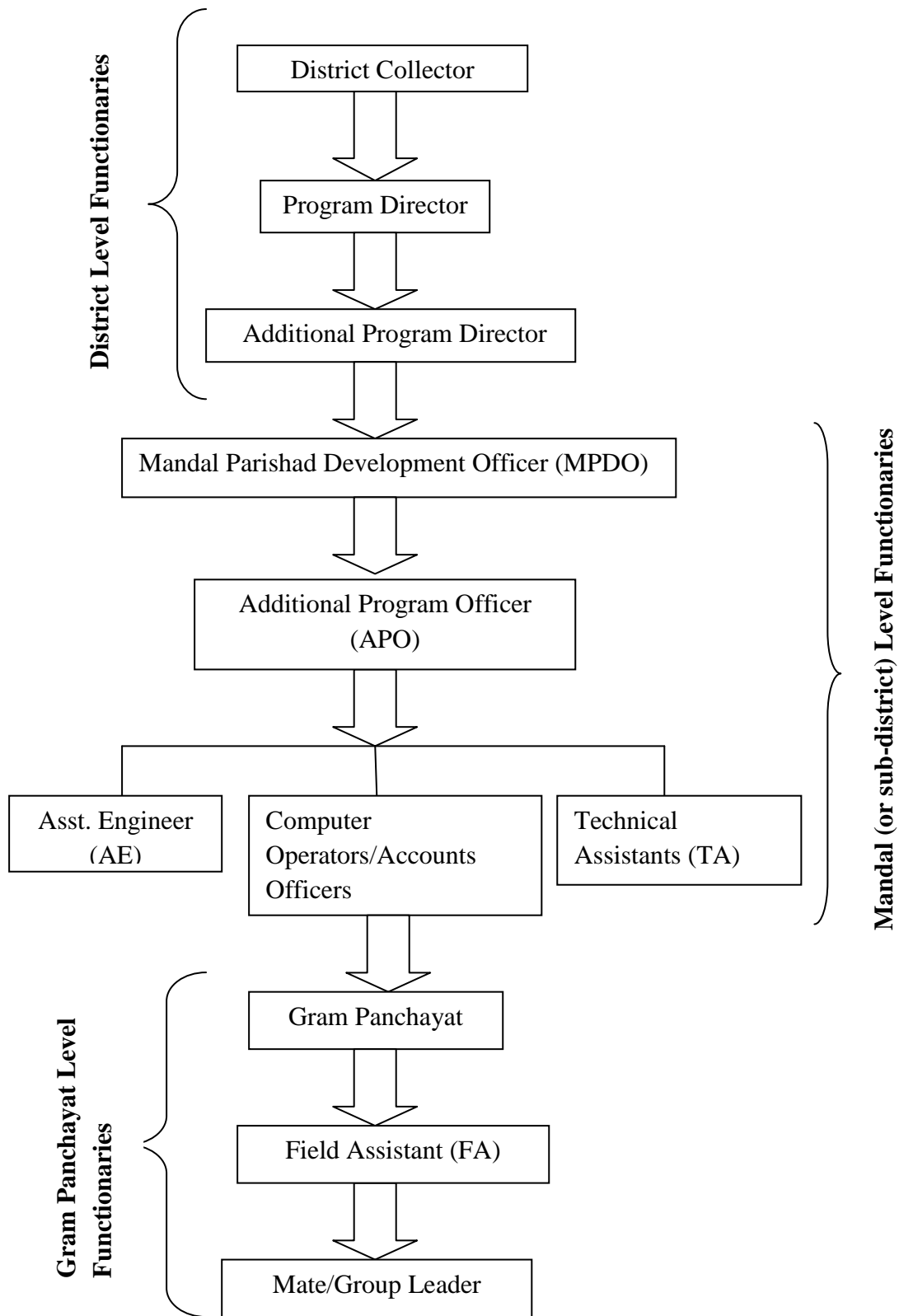


Figure A2: Flow of NREGA funds in Andhra Pradesh

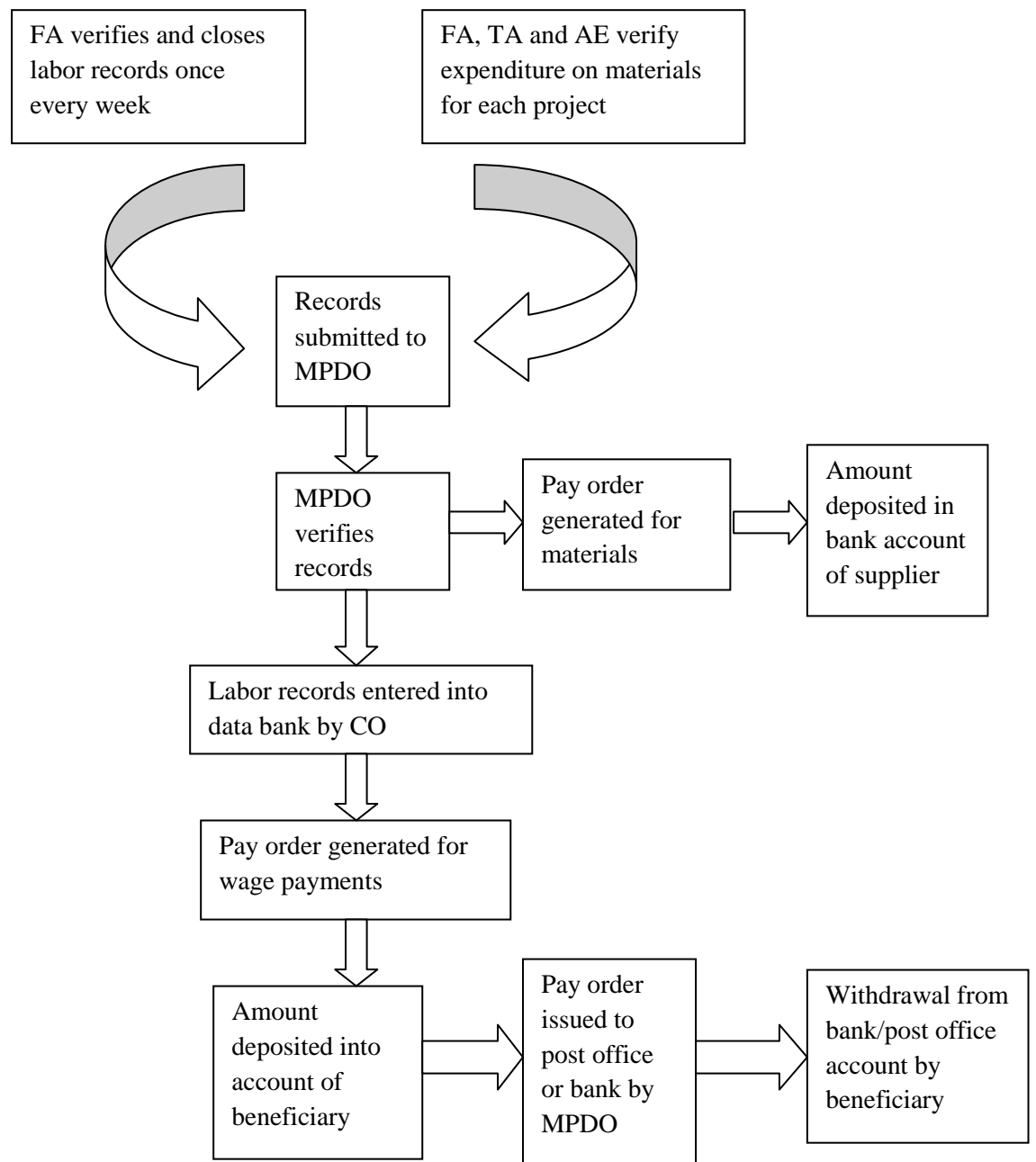
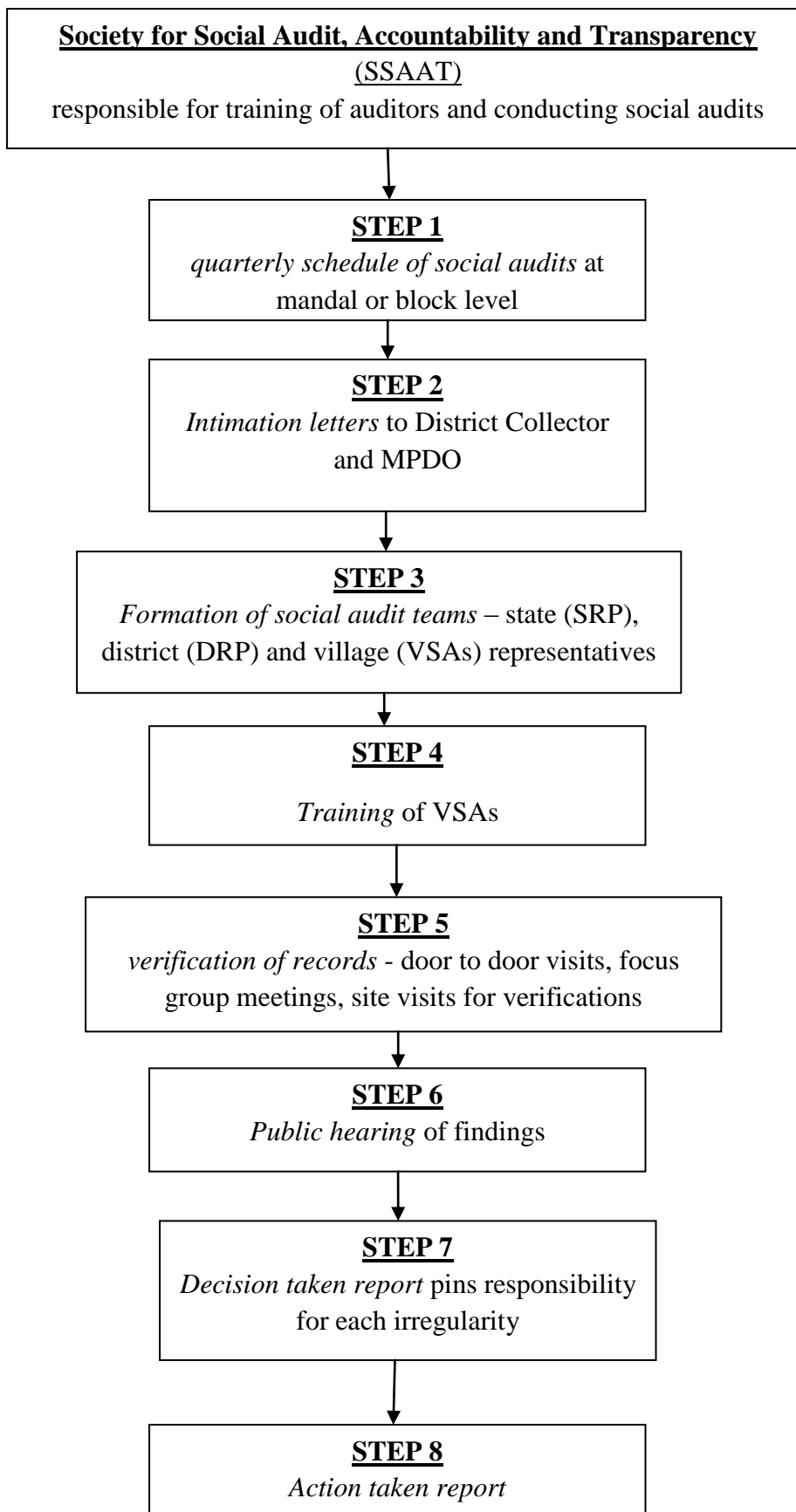


Figure A3: Administration of Social Audits in Andhra Pradesh



Source: SSAAT website <http://125.17.121.162/SocialAudit/>

Note: SRP: state resource person; DRP: district resource person; VSA: village social auditor.