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

Farzana Afridi

Vegard Iversen

M.R. Sharan

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Farzana Afridi[a]
Vegard Iversen[b]
M.R. Sharan[c]

Abstract

We use the nation-wide policy of randomly allocating village council headships to women to identify the impact of female political leadership on the governance of projects implemented 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. These results suggest that female political leadership may generate gains in governance but only after the initial, gendered disadvantages recede. Our findings highlight capacity building as necessary for bolstering the effectiveness of political quotas for women.

Keywords: political reservations, gender, NREGA, India
JEL codes: P26, I38

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[a] (corresponding author) 7, S.J.S. Sansanwal Marg, Indian Statistical Institute, Economics and Planning Unit, New Delhi-110016; Email: fafridi@isid.ac.in
[b] Institute for Development Policy and Management (IDPM), University of Manchester.
[c] Jameel Poverty Action Lab (JPAL), South Asia.

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] However, 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 sheds rigorous and in-depth light on the impact of women political leaders on corruption and other aspects of the quality of delivery of a large scale, rural poverty alleviation program in India. By exploiting both cross-sectional and panel data we are able to study whether and how governance outcomes improve (or worsen) 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 thus suggesting that if more women entered politics, corruption would diminish.[3] However, the reported relationship is likely to be spurious and driven by omitted, underlying variables

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[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 focus exclusively on 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.

that correlate positively with corruption and negatively with female political representation.[4] We endeavor, instead, to identify the causal impacts of the gender of political leaders 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 arguably 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 as well as in panel data. Official audit reports over a five year period allow us to build a village-level panel dataset with in-depth information about the quality of and corruption in program delivery. This puts us in a position to explore whether early setbacks that may be triggered by the inexperience of female political leaders recede and public service delivery improves through learning by doing and as experience accumulates. In the cross-section, we pin down the quality of program delivery using information on the experience of beneficiary households when registering with the program and in the receipt of program benefits. We

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[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 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.

also explore whether the individual characteristics (Khosla, 2011) of female village council heads influence the quality of their leadership, and as a consequence, the effectiveness of affirmative action policies. 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 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 development settings. 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. They contend that these findings are 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]

Thus, while the evidence on the quality of public service delivery in village councils headed by women is ambiguous, research on the impact of female leadership on corruption in public programs is practically absent. This fundamental neglect is of immediate policy relevance given the renewed global commitment to increasing women's participation in political life (World Development Report, World Bank, 2012) and 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-

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

[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%. 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).

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 the political sphere 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 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 prone to letting public funds leak and to 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 is not yet well understood.

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 the program since its inception. Although this result does not hold for every program process, all significant coefficients points 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 account for variation in the performance of female reserved village councils over time, we

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[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 inclined to 'misuse' public office if this promoted family interests. See Booth and Nolen (2012) and Alatas et al. (2009) for laboratory experiments which also suggest that risk-aversion of women may be context specific.

find that although the number irregularities in NREGA implementation - in both labor and materials related component of the program - were significantly higher in female reserved village councils at the onset of the program, these decline with the duration of the tenure of the head or sarpanch. 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 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 discrepancies in the NREGA program 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. 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% of which was accounted for by expenditure on wages.[10]

Several steps need to be followed by a household in order to obtain NREGA work. The first is to apply to the village-council or the Gram Panchayat (GP) for 'registration', in writing or orally. Once registered, the GP is required to issue a free of cost 'Job Card' with

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[9] http://nrega.nic.in/rajaswa.pdf

[10] Afridi (2008) finds that there may have been an upto 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

photographs of all adult household members and regular updates on the number of days worked and wages earned by each household member on all NREGA projects. Following receipt of 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. Wage disbursement should occur on a weekly basis and not beyond a fortnight.[11] Under the Act, the cost of material components of projects (including the wages of the 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 payments.

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 meant to be responsible for planning and for the subsequent execution of at least 50% of all NREGA works in villages (between one to three) within its purview. Further, the portfolio of projects to be implemented should be prepared on the basis of priority assigned by the residents of the GP in a meeting (Gram Sabha). 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.

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

A novel feature of the NREGA, distinct from previous workfare programs in India, are the mandatory 'social' audits of projects implemented under the program. The Act envisages, somewhat naively, that audits will be organized by beneficiary households at regular intervals and are therefore referred to as 'social'. 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

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.[12] Second, the state has introduced a unique solution to the challenge of credible auditing of NREGA projects. In 2006, the state government vested 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.

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,

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[12] 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/)

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).

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.[13] 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 critical program functionary.[14] Second, the sarpanch selects the suppliers of the material

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[13] 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).

[14] 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

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 (AE), Technical Assistants (TA)) and/or the suppliers as brought out by anecdotal evidence from the field. Hence, 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 (upto 2010) with the characteristics of the village council (including the sarpanch) unchanged.

AP also presents the opportunity to use data from the official audit reports of NREGA projects. Since late 2006 the SSAAT has trained auditors at the state, district and village level in how to conduct audits of NREGA public works (Aakella and Kidambi, 2007). The same audit team audits all GPs within a mandal in approximately a week's time. In conjunction with Right to Information (RTI) 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

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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.

expenditures.[15] Complaints by individuals, groups of individuals and by the audit team itself are recorded and attested in audit reports prepared for each GP. The audits are followed by a "public hearing" where findings are discussed for each GP and the responsibility for each violation pinned on one specific or multiple program functionaries.[16] Thus, the scope for frivolous complaints is minimal, if at all. Systematic and standardized audits have since 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-July 2011.[17] 100 mandals were randomly selected across these districts (12 or 14 mandals in each district). In each randomly chosen mandal,

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[15] 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.

[16] The timing of the audits is determined by the SSAAT. The SSAAT has put in place meticulous checks and balances to prevent program functionaries being audited from corrupting the members of the social audit team (see Figure A3 in the appendix for the audit process).

[17] 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.

three gram panchayats were selected in the following manner –

1. the GP which was the administrative headquarter of the mandal.[18]

2. one randomly selected GP from the list of all GPs reserved for a female sarpanch in that 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.

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, sarpanch's motivation for standing for office and other questions including assistance received in the day-to-day execution of sarpanch duties. 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.

Our second source is data extracted and codified from the original, social audit reports for each GP.[19] These GP audit reports have two sections: a standardized audit report card

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[18] 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.

[19] In instances where the original audit reports were missing we supplemented them with information from the abridged versions of the audit reports which are available on the

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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 audit including a calculation of financial misappropriations. These impressions and calculations are informed by the second section of the audit report – the list of all registered complaints and discrepancies uncovered during the door to door verification process and project site visits. We use data only from the latter section of the reports. [20]

Each of these two sources of data are linked to the village census abstracts for 2001 and the State Election Commission (SEC) data on reservation of sarpanch seats in 2006.[21]

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

[20] 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.

[21] 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% 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.

We, therefore, utlize 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 in the village. The population density, availability of irrigated land and distance to an urban center and the level of public goods provision are comparable between these GPs. The statistics suggest that the reservation of the post of sarpanch for women was indeed random in AP. [22]

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.[23]

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[22] Female sarpanchs typically held office almost exclusively due to the reservation policy. Only 6.5% of sarpanchs in unreserved GPs in our sample were women.

[23] '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".

The bottom panel of Table 2 describes the audit data between 2006 and 2010. We find no difference in the number of audits or the number of complaints filed per audit in reserved and unreserved GPs. While more than 80 per cent of the complaints are labor related, and this share is marginally higher in reserved GPs, we do not find any significant differences in the number or the nature of complaints filed between the two types of GPs.

Using data from our household survey in Table 3, the top panel compares the characteristics of the sampled beneficiary households by GP reservation status. There are insignificant differences in all average household attributes, except the proportion of ST households which is significantly higher in unreserved GPs. Furthermore, households' awareness about program entitlements does not differ between the two types of GPs.[24] 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 the sampled households.

We then contrast the average reported experience of households with the program in reserved and unreserved GPs using the cross-sectional household data in the bottom panel in Table 3. We first describe households' experience with registering for work (obtaining a job card), the first step to obtaining work, and a process for which the GP is fully responsible. The first two rows show that both the likelihood of being asked to pay to receive the free job card and the average amount paid (conditional on having paid the bribe) is higher in reserved

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[24] Beneficiaries are well aware of the 100 day entitlement, the role of the Gram Sabha in identifying the priority of projects and the required parity in male and female pay. In contrast, cognizance of unemployment benefit entitlements was nearly absent.

GPs. [25] We find no significant difference in the time required to obtain a job card while a higher proportion of beneficiaries are likely to hold registration cards in reserved GPs.[26]

The following panel in Table 3 describes the experience of households with receiving wage payments for NREGA work. While there is no significant difference in the proportion of households asked for a bribe to receive due wages or the amount of bribe paid, conditional on bribe payment, households were more likely to have been paid less than their wage entitlements in reserved GPs.[27] Wage payments are also significantly more likely to be delayed and to have been made in cash (instead of being directly deposited in the beneficiary's post office or bank account) in female reserved GPs. The latter indicates a greater potential for leakage of entitled wages through misappropriation by NREGA functionaries. The last panel suggests that a higher proportion of households were asked to verify labor records and conditional on such verification, they were also more likely to have discovered discrepancies in wage payments in reserved GPs. [28]

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[25] Almost 80 per cent of all bribes for registration or job cards were paid to the FA: this figure does not differ significantly between reserved and unreserved GPs.

[26] A comparison of the method by which the household obtained NREGA work suggests that female headed GPs were more likely to have informed program stakeholders of the availability of NREGA work.

[27] 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.

[28] While the reference period for 'households' experience with registering with the program' and 'verification of labor records' is since the inception of the NREGA, for 'receipt of program benefits' it is the 12 months prior to the survey date.

The summary statistics, thus, suggest that while the policy of randomly reserving village council headships for women was implemented, sarpanchs in reserved GPs appear significantly 'weaker'. While there is no significant difference in the frequency of occurence of audits and the sampled households are comparable in the two types of GPs, households in female reserved GPs were more susceptible to experience leakages or misappropriation of program funds than in unreserved GPs.

C. Estimation methodology

To establish causal links between female reservations and corruption in NREGA, we conduct two separate analyses in this paper. 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:

$$NREGA\_outcome_{ijk} = \beta_0 + \beta_1 R_{jk} + \beta_2 \mathbf{X}_{jk} + \beta_3 \mathbf{Z}_{ijk} + \beta_4 D_k + \varepsilon_{ijk} \tag{1}$$

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 attributes (number of primary schools, presence of paved road, number of postoffices 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 has a significant and major role to play in the execution of the 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 work and finally, receiving payments for work. Our dependent variables, therefore, represent the private responses of the households to the survey questions discussed in the second panel of Table 3 above.

Our second set of analysis is based on 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:

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

The findings of the audit for GP j in mandal k in district l in audit year t, $Audit_{jklt}$, is a function of whether the GP is reserved for a female sarpanch, R_{jkl}; a vector of GP characteristics, X_{jkl} (as in equation 1); mandal fixed effects and time trends for year of audit between 2006 to 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

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implementation and performance of the NREGA which are correlated with the reservation status of the GP. 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 period by the same audit team.

It is quite possible that the performance of female village council heads varies over time. To explore the effects of 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, 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 $\alpha_{1+}\Sigma_t\ \alpha_t$ where t takes values from 2007 to 2010. Thus the coefficient on R_{jkl} indicates the effect of female reservation on program performance in 2006.

4. Results

A. Cross-sectional analysis - household survey

In Table 4 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. We focus attention on the process outcomes which were significantly different between the two types of GPs in Table 3. Our results are largely consistent with those in Table 3.

As seen in row 1, the likelihood that a beneficiary household was asked to pay to receive a job card is large and 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 wages received were below the wages due in row 3. However, delays in wage payments, a strong hint of administrative inefficiency, are more common in female headed GPs and significant for both specifications (row 4). This is almost 4 per cent higher than the average number of weeks for receipt of wage payments in unreserved GPs. Although mean wage payments through cash-in-hand were significantly higher in reserved GPs in Table 3, the coefficient is positive but insignificant once we control for mandal level unobservables and household, sarpanch and GP characteristics (row 5).

Recall that the awareness levels of the average households in the two types of GPs were not significantly different in our survey (see Table 3). 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 6 in both specifications. Since it is the audit team that typically approaches beneficiary households for record verification and audits often do not cover 100 per cent of beneficiary households, this

difference may reflect greater concern on part of the auditors about malfeasance 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 7, although the coefficient is marginally 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.[29]

Overall, the analysis in this table suggests that households in female reserved GPs are more likely to have experienced corruption and/or sub-standard administration of the public program. Although this result does not hold for every program process, each significant coefficient points in the same direction. The conclusions hold both for processes for which the GP is almost entirely responsible (viz. registration and distribution of job cards in panel 1) and for those for which it shares responsibilities (viz. wage payments in panel 2 and on-site labor records in panel 3) with other program functionaries as explained earlier in the paper.

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[29] With regard to the other coefficients, we find that program implementation is significantly better in the headquarter GP but there is no systematic relationship between the process outcomes and other village characteristics. Interestingly, being an SC or ST household, as opposed to an OBC household, increases the probability of finding discrepancies in own labor records conditional on verification. Also, the higher the level of education of the sarpanch, relative to being illiterate, the more likely the household was asked to pay for the job card. However, the amount of the payment is lower relative to illiterate sarpanch, conditional on payment.

Furthermore, we do not find any evidence to suggest that unreserved GPs perform significantly worse on any program process relative to female reserved GPs.

To disentangle the determinants of the average effects in Table 4, we interact the reservation status of the GP with individual characteristics of the elected sarpanch. Using the specification from column (2) in Table 4, we report the coefficient on female reserved sarpanch, prior political experience of sarpanch and for the coefficient on the interaction of the two for each outcome variable in Table 5. We find that our results from Table 4 are largely unchanged, and if anything more robust as indicated by the coefficient on 'GP reserved for female' across columns 1 to 7. We do find, however, that conditional on paying a bribe for a job card, the amount of the bribe is lower in reserved GPs as shown in column 2. The coefficient on the interaction of reservation status with experience does suggest that reserved GPs with experienced sarpanchs do perform better on corruption (column 1) and on the quality of governance (column 4). 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 16 percentage points lower than in a reserved GP with an inexperienced sarpanch. Note that the effect of political experience per se is not necessarily 'positive' for governance outcomes (contrast the coefficients on prior political experience in columns 2 and 4). As expected, since the audit process is conducted independently we do not find any significant effects of reserved sarpanch's political experience in column 6. If we sum up the total effect of being in a GP reserved for females then the results in Table 4 are reversed for those process outcomes for which the GP is completely or partially responsible (except column 7). For instance, in column 1 the point estimate for total effect of a reserved GP on being asked to pay for a job card is now negative (0.094-0.158), suggesting that if we account for experience, households in GPs with reserved female sarpanchs are less likely to be asked for a bribe for a job card.

Next, we classify our entire sample by GPs in which the sarpanch reports using day-to-day assistance of a relative (or friend) in the execution of sarpanch duties and those which don't in Table 6. We find that the negative effects of being in female reserved GPs in the overall sample are driven primarily by those GPs where sarpanchs use assistance. For instance, note that the point estimate on reserved female sarpanch in row 1, column 1 is almost double of that in row 2, column 1. Furthermore, the coefficients on 'female reserved GP' in row 2 is significantly negative in columns 2 and 5, suggesting that experienced reserved female sarpanchs improve governance and lower corruption. In column 4, we find that the significant delays in wage payments in reserved GPs are driven by those GPs where the sarpanch reports requiring day-to-day assistance. Finally, reserved female sarpanchs who require assistance with their work perform significantly worse on targeting the program. The probability that a beneficiary household is below poverty line (BPL) is almost 7 percentage points lower as indicated by the negative coefficient in row 1, column 6. This does not hold for experienced reserved sarpanchs as suggested by the insignificant coefficient in column 6, row 2.[30]

We now turn to the audit panel data analysis to determine whether the role of learning and experience suggested by the household level analysis holds up.

B.   Panel data analysis - social audit reports

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[30] A caveat to our interpretation of the results in Tables 5 and 6 is the possible correlation between the unobservable characteristics of the GP, program process outcomes and the individual characteristics of the elected sarpanch. For instance, it is possible that GPs which demand good performance by their sarpanchs also elect relatively more experienced reserved sarpanchs. Results from the panel audit data do not suffer from this concern.

The results of the audit data analysis are reported in Table 7. The data have been restricted to GPs in which at least two rounds of NREGA audits occurred between 2006 and 2010. The analysis is reported for a balanced panel of two audits per GP.[31] Each column refers to the type of audit finding. The dependent variable(s) is the sum of each type of malfeasance discovered in a GP in an audit, whether registered by individuals, groups or the audit team itself. For instance, in the first row the dependent variable is the number of labor related complaints in the GP in an audit. The audit findings, thus, 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 in terms of the labor component of the program, we find that the coefficient on female reservation in row 1 is positive. It suggests that reserving the position of the sarpanch for a woman significantly raised the number of labor related issues registered during an audit in 2006. Given that the average number of labor complaints per audit was almost 5 during 2006-10, the coefficient in column 1 on 'reserved GP' suggests that labor complaints in 2006 were more than 40 per cent higher (i.e., 1.98/4.9) in female reserved GPs relative to an average audit year. However, the incidence of labor complaints declines over time, as indicated by the negative coefficients on the interaction of female reservation with audit year. There is no significant effect of female reservation on the number of complaints related to impersonation or benami wage payments, as shown in column 2. But it is more likely that the number of complaints filed related to excess wage payments and bribes in wage payments in female reserved GPs are higher as indicated in column 3. These

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[31] Our results are qualitatively unchanged in the unbalanced panel for audit data between 2006 and 2010 in our sampled GPs.

irregularities were over 70 per cent higher in 2006 in female reserved GPs than the average of such complaints per audit over 2006-10 (i.e., 0.58/0.84). Note that recording wage payments in excess of wages actually received by a laborer is a means of exaggerating records in the measurement books for materials used in the project. Notice that the coefficients on the interaction of reservation status with audit year are negative throughout. The latter 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 positive coefficients on female reservation in columns 4 and 5 indicates that this characteristic of the GP has a bearing on the nature of misappropriation of expenditures related to materials in the program but significantly only for fraudulent expenditures on ghost projects (column 4) in 2006. Since the number of complaints of ghost projects in an audit in a GP was less than 0.20 during 2006-10, the coefficient of 0.24 in the first row of column 4 suggests that such irregularities were more than 100 per cent higher than in an average audit year in female reserved GPs in 2006. The interaction terms are again negative and significant in both columns 4 (and 5) indicating that this particularly blatant from of corruption declined over time in these GPs.[33]

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[32] Results for complaints related to non-payment or delay in wage payments are insignificant and not reported here due to space constraints. Delayed wage payments, the predominant component of this type of complaint, does not necessarily imply corruption in the program.

[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

So far, we find that the results from the audit data reinforce those from the household survey. Both labor and materials related misappropriations are likely to be higher in GPs reserved for women, but significantly so in the early years of inception of the program. The panel audit data suggest that program leakages may reduce over time, particularly in the early years of sarpanch tenure, indicating that the accumulation of experience matters exclusively for sarpanchs elected to reserved GPs and does not affect program performance in general. 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 A1 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 – our results suggest that women political leaders' experience translates into crucial improvements in governance outcomes.

Next, to explore whether our results indicate that there is capture of power 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 the culpability of malfeasance is differentially higher on bureaucrats (MPDO, APO, BPM) or the technical staff (TA, AE) in female reserved GPs. Our results are reported in Table 8. We restrict the analysis to irregularities in the labor component of the program since they comprise more than 80% of all irregularities in our audit data.[34] The

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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.

[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

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 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 with prior political experience of the reserved female sarpanch as indicated by the negative, albeit insignificant, 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 as 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.

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irregularities in materials expenditure only. This could be because of the small sample of materials related complaints in the audit data.

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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 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.

However, reporting bias concerns are likely when households know that grievances will be made public, as is the case with the audit reports. But the results reported in Table 7 show that complaints related to the material component of the program, a grievance that requires techinical knowledge and is mostly reported by auditors, were higher in female reserved GPs and displayed a similar pattern of decline over time. Nevertheless, to address possible reporting bias in the audit data we restrict our analysis to 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 be vulnerable to such a bias. We report the results for 2006-10 for a balanced panel of audit team findings in Table 9. The coefficients on 'reserved GP' is positive for all types of audit findings (except in column 2), although they are imprecisely estimated given that less than 20 per cent of all audit findings are attributed to

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[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."

the audit team. However, we do find that the probability of a malfeasance in material component (column 4) and a complaint being pinned on the field assistant, a GP level functionary whose appointment is through the village council, is higher in reserved GPs (column 6) in 2006 and declines over time. This finding lines up with our results in Table 7 which also suggest that the incidence of corruption and poor governance is higher in reserved GPs but declines in later years.

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.

Thus, our results, across both the households 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 political 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 (Gram Panchayats) 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 governance, 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 of the public program. 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 suggest that irregularities are more likely to be prevalent in the initial years of program implementation in GPs reserved for women. The overall analysis, thus, confirms that the possibility of poor governance or plain corrupt practices may be higher in female reserved GPs.

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. The explanation is also supported by results

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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. It is similarly apparent that political reservations need to be credibly backed up to improve governance outcomes since elected female leaders often require assistance in the day-to-day execution of duties, are less educated and are less likely to have prior political experience. Lack of adequate administrative support and training in the utilization of financial resources by grass roots institutions may seriously 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)
Village characteristics[+]	**N=172**	**N=124**	
Persons per hectare of village area	3.55	3.26	0.30
	(0.289)	(0.327)	(0.439)
Number of primary schools	4.58	3.66	0.92**
	(0.300)	(0.301)	(0.436)
Number of middle schools	1.54	1.41	0.13
	(0.154)	(0.175)	(0.235)
Number of senior secondary schools	0.95	0.77	0.18
	(0.107)	(0.114)	(0.159)
Number of primary health centers	0.28	0.23	0.05
	(0.034)	(0.038)	(0.052)
Drinking water	0.99	0.99	0.00
	(0.006)	(0.008)	(0.010)
Tap water[1]	1.20	1.20	0.00
	(0.034)	(0.040)	(0.052)
Tube well[2]	1.43	1.38	0.05
	(0.051)	(0.063)	(0.081)
Hand pump[3]	1.03	1.01	0.03
	(0.016)	(0.018)	(0.025)
Number of post offices	0.88	0.82	0.06
	(0.028)	(0.036)	(0.045)
Approach road is paved[4]	1.10	1.16	-0.06
	(0.025)	(0.035)	(0.042)
Proportion of cultivated area which is irrigated	0.28	0.24	0.04
	(0.020)	(0.022)	(0.030)
Distance to nearest town (kms.)	29.69	31.31	-1.62
	(1.512)	(1.855)	(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	Reserved GP	Difference
	(1)	(2)	(1) – (2)
I. Sarpanch characteristics[a]	**N=169**	**N=128**	
Age	44.72	42.31	2.40**
	(0.726)	(.940)	(1.168)
Scheduled caste	0.15	0.20	-0.06
	(0.027)	(0.036)	(0.044)
Scheduled tribe	0.20	0.13	0.06
	(0.031)	(0.030)	(0.043)
Other backward caste	0.46	0.47	-0.01
	(0.038)	(0.044)	(0.059)
Illiterate	0.00	0.09	-0.09***
	(0.00)	(0.025)	(0.022)
Higher secondary or more education	0.54	0.15	0.40***
	(0.038)	(0.032)	(0.052)
Political experience and background			
Own prior political experience	0.22	0.11	0.11**
	(0.032)	(0.028)	(0.044)
Family member with prior experience	0.39	0.45	-0.05
	(0.038)	(0.044)	(0.058)
Relative of another GP member	0.07	0.14	-0.07**
	(0.020)	(0.031)	(0.035)
Assistance with day to day official work			
Receives assistance	0.13	0.73	-0.60***
	(0.026)	(0.040)	(0.045)
Is accompanied to panchayat meetings	0.07	0.50	-0.43***
	(0.019)	(0.044)	(0.044)
II. GP level audit characteristics, 2006-10 [b]			
	N=171	**N=125**	
Number of social audits	2.47	2.57	-0.09
	(0.058)	(0.062)	(0.086)
Number of complaints per audit	6.00	5.82	0.19
	(0.318)	(0.386)	(0.497)
Number of registered complaints, 2006-10			
Total	15.47	14.80	0.67
	(0.917)	(0.975)	(1.359)
Labor related	12.38	12.40	-0.03
	(0.778)	(0.833)	(1.155)
Non-payment/delay in wage payment	4.95	4.30	0.64
	(0.478)	(0.440)	(0.674)
Impersonation/benami wage payments	2.68	3.30	-0.61
	(0.238)	(0.430)	(0.461)
Excess payments/bribes in labor expenditures	2.06	2.12	-0.06
	(0.163)	(0.192)	(0.252)
Non-existent works	0.47	0.43	0.04
	(0.082)	(0.106)	(0.132)
Excess payments/bribes in material expenditures	0.74	0.52	0.22
	(0.128)	(0.122)	(0.183)

Note: Standard errors in parentheses. ***significant at 1% ** 5% and *10%.
[a]Missing sarpanch data for 3 GPs. [b] No audit reports available for 4 GPs. Excluded category 'other labor/materials' complaints.

Table 3: Household level characteristics by reservation status of gram panchayat

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

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

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

Program process	Coefficient on GP reserved for female		
	(1)	(2)	N
Registering with the program			
(1) Asked to make payment for job card	0.066**	0.077**	1484
	(0.030)	(0.032)	
(2) Bribe amount conditional on payment	-4.228	-8.521	243
	(6.883)	(6.994)	
Receiving program benefits			
(3) Wages received lower than wages due	0.026	0.030	1453
	(0.021)	(0.022)	
(4) Weeks for wage payment receipt	0.089*	0.095*	1484
	(0.051)	(0.051)	
(5) Wage payment through cash-in-hand	0.002	0.002	1484
	(0.023)	(0.024)	
Verification of program funds			
(6) Asked to verify labor records	0.083**	0.086**	1473
	(0.039)	(0.037)	
(7) Discrepancy in labor records, conditional on on (6)	0.055*	0.053	775
	(0.031)	(0.034)	
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 5: Effect of reservation status of GP on governance and corruption (household survey)

Coefficient	Registering with the program		Receiving program benefits			Verification of program funds	
	Asked to make payment for registration card	Bribe amount conditional on payment	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)
GP reserved for female	0.095***	-24.480**	0.033	0.131**	0.008	0.090**	0.067*
	(0.033)	(10.320)	(0.024)	(0.057)	(0.025)	(0.039)	(0.036)
Prior political experience	0.010	-54.400**	0.032	0.132*	-0.000	0.002	-0.001
	(0.046)	(20.960)	(0.036)	(0.077)	(0.035)	(0.051)	(0.046)
Prior political experience	-0.157*	67.100*	-0.036	-0.314**	-0.049	-0.030	-0.160
GP reserved for female	(0.084)	(37.950)	(0.088)	(0.149)	(0.070)	(0.111)	(0.140)
Constant	-0.727**	276.600**	-0.086	1.541***	-0.468**	0.058	-0.555
	(0.335)	(122.300)	(0.232)	(0.514)	(0.232)	(0.360)	(0.354)
N	1454	240	1423	1454	1454	1443	758
R^2	0.275	0.719	0.211	0.284	0.460	0.575	0.288

Note: All regressions are OLS. Separate regressions reported in each column and panel. 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 6: Effect of reservation status of GP on governance and corruption (household survey)

Sample characteristic	Registering with the program		Receiving program benefits			Targetting
	Asked to make payment for registration card	Bribe amount conditional on payment	Wages received lower than wages due	Weeks for wage payment receipt	Wage payment through cash-in-hand	Beneficiary household is BPL
	(1)	(2)	(3)	(4)	(5)	(6)
(1) sarpanch requires	0.228**	-9.127	0.067	0.231***	-0.000	-0.074*
day-to day assistance	(0.095)	(9.259)	(0.049)	(0.074)	(0.042)	(0.041)
N	560	103	534	560	560	560
R^2	0.39	0.93	0.36	0.47	0.70	0.30
(2) sarpanch does NOT	0.115**	-16.680*	-0.017	0.108	-0.066**	0.011
day-to day assistance	(0.055)	(9.110)	(0.036)	(0.099)	(0.029)	(0.008)
N	894	137	889	894	894	893
R^2	0.37	0.86	0.29	0.34	0.51	0.31

Note: All regressions are OLS. Separate regressions for each coefficient. Each regression includes mandal fixed effects, controls for household, sarpanch and village census characteristics as elucidated in previous tables. BPL implies 'below poverty line'.

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

Table 7: Effect of reservation status of GP on governance and corruption (audit data)

Coefficient	Number of labor related irregularities			Number of material related irregularities	
	Total labor related complaints	Impersonations or benami wages	Excess payments/bribes	Work does not exist	Excess payments/bribes
	(1)	(2)	(3)	(4)	(5)
GP reserved for female	1.979**	0.94	0.584**	0.241*	0.119
	(0.810)	(0.961)	(0.261)	(0.131)	(0.100)
GP reserved for female x 2007	-2.173**	-0.850	-0.669*	-0.259*	-0.115
	(0.957)	(0.958)	(0.402)	(0.149)	(0.111)
GP reserved for female x 2008	-1.946**	-0.911	-0.783**	-0.309**	-0.149
	(0.911)	(0.988)	(0.336)	(0.140)	(0.108)
GP reserved for female x 2009	-1.406	-0.968	0.299	-0.309*	-0.219
	(1.043)	(1.013)	(0.345)	(0.172)	(0.141)
GP reserved for female x 2010	-0.347	0.087	-0.527	-0.118	-0.075
	(1.257)	(1.243)	(0.356)	(0.137)	(0.132)
2007	-3.524	-1.148	-4.25***	-0.338	0.225
	(3.158)	(1.787)	(1.399)	(0.444)	(0.246)
2008	-1.299	-2.312	0.375	-0.543	0.225
	(7.774)	(2.036)	(1.948)	(0.358)	(0.350)
2009	-1.915	1.095	-1.369*	-0.312	0.448
	(2.612)	(1.587)	(0.733)	(0.366)	(0.327)
2010	-2.438	-1.018	0.324	-0.25	0.268
	(8.437)	(2.183)	(2.120)	(0.545)	(0.451)
Constant	1.666	-0.202	1.377	-0.569	-0.006
	(5.073)	(2.806)	(1.560)	(0.563)	(0.489)
N (Number of observations)	490	490	490	490	490
R^2	0.52	0.43	0.37	0.34	0.32

Note: The sample is restricted to audit rounds 1 and 2 in those GPs where at least two audits were conducted between 2006-10. 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 8: Responsibility for irregulairties in labor expenditures (audit data)

Coefficient	All labor related irregularities			Labor related irregularities filed by audit team		
	APO	MPDO		APO	MPDO	
	(1)	(2)	(3)	(4)	(5)	(6)
GP reserved for female	0.009	0.021**	0.024**	0.157**	0.096**	0.103**
	(0.012)	(0.009)	(0.010)	(0.049)	(0.042)	(0.046)
Prior political experience	-0.008	0.001	0.009	-0.024	-0.024	-0.011
	(0.012)	(0.008)	(0.010)	(0.045)	(0.039)	(0.044)
Prior political experience x GP reserved for female			-0.023			-0.052
			(0.018)			(0.095)
Constant	0.084	-0.124	-0.131	-0.415	0.648	0.620
	(0.119)	(0.075)	(0.075)	(0.454)	(0.447)	(0.447)
N	2608	2608	2608	426	426	426
R^2	0.10	0.10	0.10	0.44	0.48	0.48

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 between 2006-10. Audit-GP with no complaints are dropped from the analysis (9 GPs with only one audit and 9 GPs with atleast 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%.

Table 9: Effect of reservation status of GP on governance and corruption (audit data, irregularities registered by the audit team)

Coefficient	Number of labor related irregularities			Number of material related irregularities		Number of all irregulaties
	Total labor related complaints	Impersonations or benami wages	Excess payments/ bribes	Work does not exist	Excess payments/ bribes	Field Asst. held responsible
	(1)	(2)	(3)	(4)	(5)	(6)
GP reserved for female	0.067	-0.056	0.112	0.200**	0.110	0.664**
	(0.832)	(0.192)	(0.371)	(0.100)	(0.094)	(0.296)
GP reserved for female x 2007	-0.379	-0.006	-0.17	-0.226*	-0.100	-0.731**
	(0.854)	(0.216)	(0.375)	(0.116)	(0.106)	(0.324)
GP reserved for female x 2008	0.051	0.106	-0.131	-0.228**	-0.14	-0.352
	(0.858)	(0.232)	(0.386)	(0.102)	(0.100)	(0.321)
GP reserved for female x 2009	-0.068	0.061	-0.072	-0.354**	-0.221*	-0.874***
	(0.836)	(0.200)	(0.379)	(0.140)	(0.132)	(0.311)
GP reserved for female x 2010	-0.134	0.039	-0.210	-0.118	0.046	-0.408
	(0.856)	(0.198)	(0.388)	(0.108)	(0.125)	(0.318)
2007	-0.335	0.725	-0.096	0.406*	0.294	0.205
	(1.252)	(0.545)	(0.318)	(0.236)	(0.251)	(0.936)
2008	3.057**	0.237	0.604	-0.654*	0.283	2.178***
	(1.374)	(0.250)	(0.639)	(0.350)	(0.381)	(0.647)
2009	-1.811*	0.554	0.124	0.270	0.446	-0.999
	(0.995)	(0.461)	(0.248)	(0.178)	(0.333)	(0.727)
2010	3.037**	-0.142	0.520	-0.501	0.270	2.529***
	(1.520)	(0.365)	(0.648)	(0.535)	(0.474)	(0.785)
Constant	0.051	-0.426	-0.153	-1.021**	-0.061	-0.161
	(1.557	(0.731)	(0.385)	(0.445)	(0.470)	(1.047)
N (Number of observations)	490	490	490	490	490	490
R^2	0.34	0.28	0.32	0.28	0.31	0.36

Note: The sample is restricted to audit rounds 1 and 2 in those GPs where at least two audits were conducted between 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 A1: Effect of reservation status of GP on women's voice (audit data)

Gender of complainant	Coefficient on GP reserved for female			
	(1)	(2)	(3)	N
(i) Female	0.103***	0.104***	0.103***	1293
	(0.036)	(0.038)	(0.036)	
(ii) Number of complaints filed by females	0.464**	0.456**	0.448**	692
	(0.178)	(0.177)	(0.178)	
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

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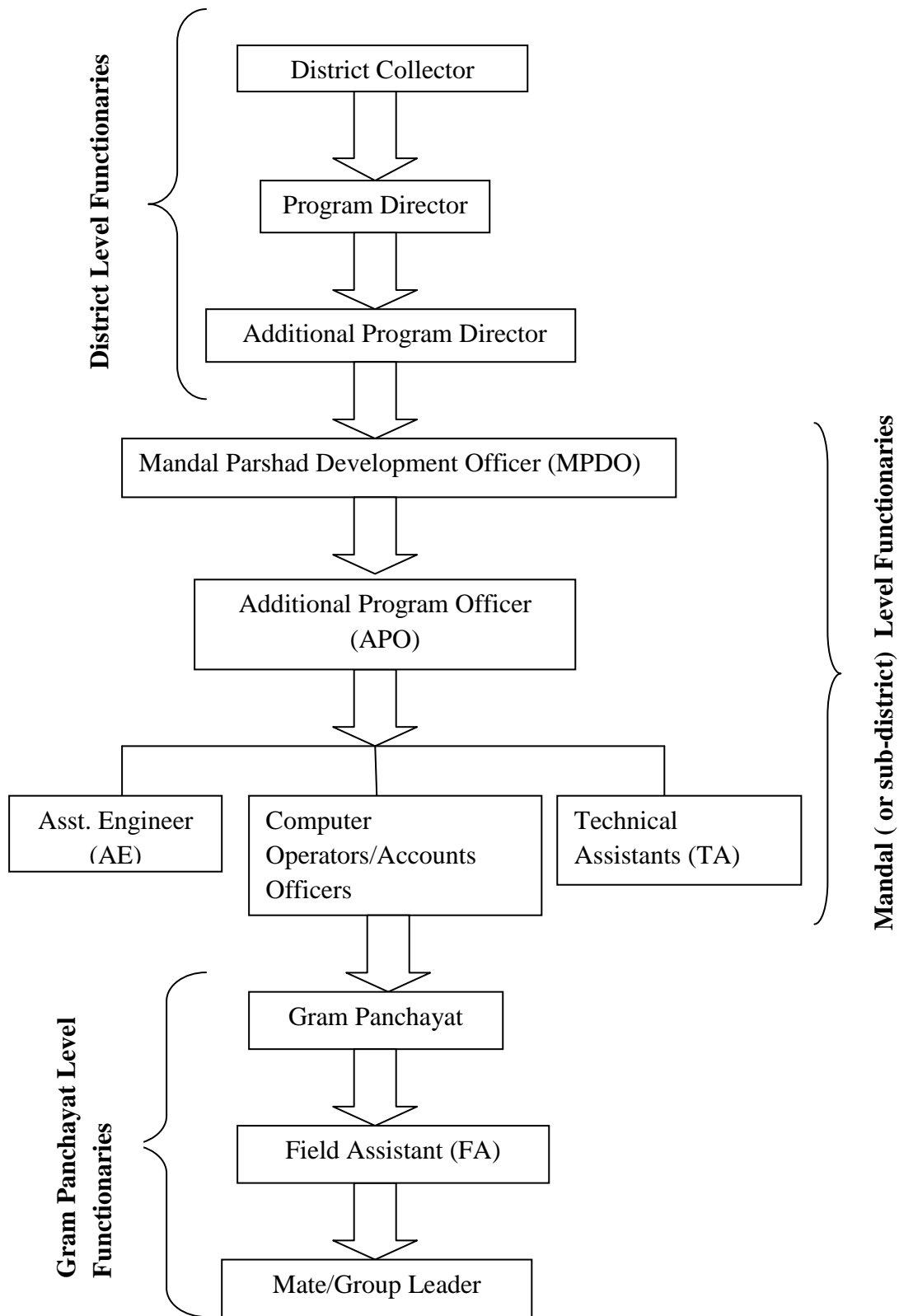
Figure A2: Flow of NREGA funds in Andhra Pradesh

FA verifies and closes labor records once every week	FA, TA and AE verify expenditure on materials for each project

Records submitted to MPDO

MPDO verifies records	→	Payorder generated for materials	→	Amount deposited in bank account of supplier

Labor records entered into data bank by CO

Payorder generated for wage payments

Amount deposited into account of beneficiary	→	Payorder issued to post office or bank by MPDO	→	Withdrawal from bank/post office account by beneficiary

Figure A3: Administration of Social Audits in Andhra Pradesh

<u>**Society for Social Audit, Accountability and Transparency**</u>
<u>(SSAAT)</u>
responsible for training of auditors and conducting social audits

<u>**STEP 1**</u>
quarterly schedule of social audits at mandal or block level

<u>**STEP 2**</u>
Intimation letters to District Collector and MPDO

<u>**STEP 3**</u>
Formation of social audit teams – state (SRP), district (DRP) and village (VSAs) representatives

<u>**STEP 4**</u>
Training of VSAs

<u>**STEP 5**</u>
verification of records - door to door visits, focus group meetings, site visits for verifications

<u>**STEP 6**</u>
Public hearing of findings

<u>**STEP 7**</u>
Decision taken report pins responsibility for each irregularity

<u>**STEP 8**</u>
Action taken report

Source: SSAAT website http://125.17.121.162/SocialAudit/
Note: SRP: state resource person; DRP: district resource person; VSA: village social auditor.