London School of Economics and Political Science

Four "New Political Economy" Essays

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A thesis submitted to the Department of Economics of the London School of Economics for the degree of Doctor of Philosophy

July 7, 2009

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Declaration

I certify that the thesis I have presented for examination for the MPhil/PhD degree of the London School of Economics and Political Science is solely my own work other than where I have clearly indicated that it is the work of others (in which case the extent of any work carried out jointly by me and any other person is clearly identified in it).

Radu Ban
July 7, 2009

Statement regarding conjoint work

Chapter 1 of my dissertation is based on conjoint work with Dr. Vijayendra Rao. Dr. Rao provided the raw data for the chapter –the transcripts of the village meetings and the household survey data. The research question, research methodology, literature review, data analysis and actual writing of the chapter are entirely my contribution. I estimate my share in the Chapter 1 investigation at 90 percent.

Chapter 2 of my dissertation is based on conjoint work with Dr. Vijayendra Rao. Dr. Rao provided the raw data for the chapter –the village and household level surveys, and collaborated on the research question. The research methodology, literature review, data analysis and actual writing of the chapter are entirely my contribution. I estimate my share in the Chapter 2 investigation at 70 percent.

Chapter 3 of my dissertation is based on conjoint work with Dr. Andreea Balan Cohen. Dr. Balan Cohen provided the data and background literature about the Old Age Assistance outcomes and provided feedback on the research question and on the completed draft of the chapter. The original research question, research methodology, data analysis gathering of political economy data, the theoretical model and actual writing of the chapter, are entirely my contribution. I estimated my share in the Chapter 3 investigation at 75 percent.

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July 7, 2009

Abstract

The first two essays examine the functioning of two local governance institutions empowered or created by the 73rd amendment to the Indian constitution. First, I look at village meetings which were given real decision-making powers by the constitutional amendment, thus becoming real deliberative spaces. The setting of village meetings allows me to study deliberative democracy, a frequently discussed but infrequently empirically examined alternative to preference aggregation (such as through voting). In particular, by using village meetings transcripts and linking them with a household survey, I am able to investigate the relationship between group and individual characteristics, and voice. My main findings show that not all villagers are equally heard in the meetings. I find that the deliberations are not equitable, relative to norms of equal influence relative to group size, and of equal time dedicated to each participant.

Second, I look at political reservations for women, mandated by the same constitutional amendment. By using a household survey that includes the household of the village leader, I am able to examine whether the leaders in reserved constituencies are token women, chosen from among the weak women of the village only to be controlled by the traditional elites. I find that the women leaders are not weak, as they are among the younger, wealthier and more knowledgeable women in the village. In addition to this finding about the selection of women, I am also comparing the policy outcomes between reserved and unreserved constituencies. I find that women perform no differently from men in terms of provision of public goods, but also that women perform worse than men in terms of meeting with upper level officials. A finding that emphasizes the antagonism between women leaders and the traditional elites, is that women leaders' performance is negatively affected by the concentration of landownership in the hands of the upper castes.

In the third essay I examine the role of gubernatorial political incentives in the provision of assistance to the elderly in the early years of social security in the United States. I find that assistance to the elderly is higher when the term limit is not binding. Furthermore, as predicted by my theoretic model, I find that the term limit effect is present only in the states where the fraction elderly takes on moderate values. In addition the term limit effect is smaller when political competition is less intense. These findings combined suggest that assistance to elderly is shaped by the electoral incentives of the state governor.

Finally, in the fourth essay, I examine the change in the likelihood of voting due to a weather shock. In particular, I find that the decrease in the likelihood of voting due to rain during the election day is higher for less educated, relative to more educated individuals. One hypothesis that I put forward is that individuals who experience a lower drop in the likelihood of voting due to rain act strategically because they realize that their vote is likely to weigh more given that overall voting presence is reduced. An important assumption that I make is that, conditional on the comprehensive set of observable individual characteristics, the increase in the cost of voting due to rain is equal across individuals. Using measures of rain for specific time intervals during the election day I make comparisons between individuals for whom this important assumption may hold.

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Introduction

Tim Besley in his 2004 Keynes Lecture [Besley 2004] defines the recent research at the intersection of economics and political science as "The New Political Economy." A defining feature of The New Political Economy is an emphasis on taking theoretical hypotheses, about the functioning of institutions or about individual incentives, to data. This empirical emphasis forms the substance of the following collection of essays. Each essay asks a political economy question and answers it by examining the appropriate dataset.

The first two essays examine the functioning of two local governance institutions empowered or created by the 73rd amendment to the Indian constitution. First, I look at village meetings which were given real decision-making powers by the constitutional amendment, thus becoming real deliberative spaces. The setting of village meetings allows me to study deliberative democracy, a frequently discussed but infrequently empirically examined alternative to preference aggregation (such as through voting). In particular, by using village meetings transcripts and linking them with a household survey, I am able to investigate the relationship between group and individual characteristics, and voice. My main findings show that not all villagers are equally heard in the meetings. I find that the deliberations are not equitable, relative to norms of equal influence relative to group size, and of equal time dedicated to each participant.

Second, I look at political reservations for women, mandated by the same constitutional amendment. In the second essay I follow the pioneering work of Raghabendra Chattopadhyay and Esther Duflo [2004] who first investigated the

outcomes of these reservations by exploiting the econometric boon of random assignment of reserved constituencies. By using a household survey that includes the household of the village leader, I am able to examine whether the leaders in reserved constituencies are token women, chosen from among the weak women of the village only to be controlled by the traditional elites. I find that the women leaders are not weak, as they are among the younger, wealthier and more knowledgeable women in the village. In addition to this finding about the selection of women, I am also able to look at the traditionally examined outcome of the reservation process - the comparison of policy outcomes between reserved and unreserved constituencies. I find that women perform no differently from men in terms of provision of public goods, but also that women perform worse than men in terms of meeting with upper level officials. An additional finding that emphasizes the antagonism between women leaders and the traditional elites, is that women leaders' performance is negatively affected by the concentration of landownership in the hands of the upper castes.

In the third essay I examine the role of gubernatorial political incentives in the provision of assistance to the elderly in the early years of social security in the United States. Here, I follow in the footsteps of Tim Besley and Anne Case[1995] who have first examined empirically the effect of gubernatorial term limits on policy outcomes. This essay shows that, at least during its inception, old age assistance was shaped by institutions, in particular political incentives generated by term limits, rather than by the preferences of the voters. In addition, this essay complements the literature on the political motives behind the New Deal relief programs. However, in contrast with the existing literature, this essay provides a clearer identification of the political incentives by using state level policy measures and within-state variation in term limits. To be specific, I find that assistance to the elderly is higher when the term limit is not binding. Furthermore, as predicted by my theoretic model, I find that the term limit effect is present only in the states where the fraction elderly takes on moderate values. In addition the term limit effect is smaller when political competition

is less intense. These findings combined suggest that assistance to elderly is shaped by the electoral incentives of the state governor.

Finally, in the fourth essay, I examine the change in the likelihood of voting due to a weather shock. In particular, I find that the decrease in the likelihood of voting due to rain during the election day is higher for less educated, relative to more educated individuals. One hypothesis that I put forward is that individuals who experience a lower drop in the likelihood of voting due to rain act strategically because they realize that their vote is likely to weigh more given that overall voting presence is reduced. An important assumption that I make is that, conditional on the comprehensive set of observable individual characteristics, the increase in the cost of voting due to rain is equal across individuals. Using measures of rain for specific time intervals during the election day I make comparisons between individuals for whom this important assumption may hold.

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Chapter 1

Is Deliberation Equitable? Evidence from Transcripts of Village Meetings in South India[1]

1.1 Introduction

A decision-making process is considered democratic if it results in an outcome that reflects the 'will of the people'. Democracy's central challenge is to discern this will, particularly among people with different preferred outcomes. The theory of democracy proposes, according to Jon Elster[1986], two solutions to this challenge. The first solution, the subject of social choice theory, aggregates preferences across individuals. In this view of the world individuals do not interact with each other, they simply express their preferences, as they would do in a market transaction. The second solution to the democratic challenge is deliberation. Instead of aggregating preferences across individuals, the ideal deliberative process consists of discussions during which some individuals can be persuaded by others to change their preferences and at the end of which "unanimous preferences"(Elster, 1986, p. 112) emerge. In this paper we use data extracted from transcripts of village meetings, coupled with household surveys,

[1] This chapter is based on joint work with Vijayendra Rao

to empirically explore the mechanism of deliberation. In particular, we look at the extent to which individual preferences for public goods are matched by discussion of public goods in the meetings.

It is important to keep in mind that our study does not have a counterfactual institution. We do not claim the village meetings are inequitable with respect to other forms of direct or deliberative democracy. As these village meetings are constitutionally mandated a real counterfactual does not exist. The scope of our study is limited to the deliberative space of these village meetings and we can only claim that we find inequities in this space, relative to a norms of equal group level influence relative to group size and equal time dedicated to every participant.

There is a large literature on processes that aggregate individual preferences - particularly on voting behaviors, but the literature on deliberative processes is relatively sparse: Osborne, Rosenthal, and Turner[2000] study participation in meetings from a theoretical perspective. Their model assumes that individuals have favorite policies represented by a point in a multidimensional space, with valuations depending only on the Euclidean distance between the implemented policy and their favored policy. This model predicts that only individuals with extreme positions participate in meetings. They assume that the outcome of the meeting is a function of the favorite policies of the participants and conclude that the outcome is likely to be random. Turner and Weninger[2005] do an empirical test of this theoretical model using data on the participation of firms in public regulatory meetings. They find that firms with preference for extreme rather than moderate policies are much more likely to attend. Besley, Pande, and Rao[2005a], using the same household level data from our paper, study the determinants of participation in village meetings. They find that women, illiterates, and the wealthy(in term of asset ownership) are less likely to attend the meetings but disadvantaged castes and the landless are more likely to attend. They also find that when village meetings are held the targeting of benefits to

the poor (Below Poverty Line cards) is more effective.[2]

Some scholars (Dryzek and List[2003], List[2008]) argue that social choice and deliberative democracy should not be viewed as antagonists because deliberation may in fact free social choice from the impossibility results by making individual preference more single peaked and hence amenable to aggregation by voting. List, Luskin, Fishkin and McLean[2006] find evidence for the effect of deliberation on preferences. They use data from deliberative polls, and measure individuals preference before and after the deliberation. Their results show that deliberation does indeed move preferences closer to single peakedness.

Deliberative processes have acquired particular importance in recent years, particularly in the developing world, because of the increasing emphasis placed on community-based decision making by policy makers[Mansuri and Rao 2004]. Part of the reason for this emphasis is a belief that involving people to participate in decisions that affect their own lives will make development more "demand-driven," and improve the quality of governance by increasing the proximity of decision-making processes to citizens and thus enhance transparency and accountability. This has led countries around the world to give increasing powers to local governments[Bardhan and Mookherjee 2006]. Several scholars have expressed concern that in unequal societies this would subject village decisions to the risk of elite-capture ([Bardhan and Mookherjee 2000], [Bardhan 2002]), but there is not much evidence about how these processes actually work[3].

Much of what we know about the empirics of deliberative processes are from deliberative polls which are a set of methods developed by the political scientist James Fishkin and his colleagues where groups of randomly chosen individuals are gathered in groups to conduct discussions on particular subjects

[2] Also see Chaudhuri and Heller[2003] for evidence on the highly positive impact of a campaign that empowered *gram sabhas* in the state of Kerala.

[3] There is some evidence analyzing the match between the preferences of individuals and the outcomes of commmunity-based decisions, a process known in that literature as "preference-targetting" (Mansuri and Rao 2004). Chattopadhaya and Duflo[(2004b)] examine the role of political reservations for women on the match between women's preferences and the decisions of gram panchayats, Rao and Ibanez[2005] and Labonne and Chase[2007] study the match between preferences of households and the outcomes of commity-based decision making showing some elite dominance.

(http://cdd.stanford.edu/). The method has generated a wealth of information on deliberation, but it has the limitation that the deliberative processes studied are not a part of a regular and routine system of government but the result of an academic intervention within an constrained setting. Studies of deliberative systems of government are very rare and largely qualitative. Jane Mainsbridge's[1983] seminal ethnography of town meetings in Vermont provides rich insights into how deliberation works as a system of government and comes closest to an analysis of the kind we conduct in this paper. Her work outlines the complexity of the deliberative process but largely supports the idea that common interests facilitate deliberation, particularly in settings where citizens prefer to avoid adversarial discussions[4]. On the other hand, James Madison in the Federalist Papers (Federalist No. 10 [1787]) famously cautioned that "a pure democracy, by which I mean a society consisting of a small number of citizens, who assemble and administer the government in person, can admit of no cure for the mischiefs of faction." Similarly, Albert Hirschman[1976] has argued that deliberation may be manipulated by an "articulate minority". There is, however, a lack of credible evidence testing whether deliberative processes can result in domination by a faction (Fishkin and Lushkin (p. 294)).

In this paper we examine the mechanism of deliberation in Indian village governments. Our data consisting of transcripts of open village meetings, *gram sabhas*, empowered by the Indian constitution to make important decisions for the village, linked with household-level preferences, enable us to examine the relationship between individual preferences and the preferences that emerge during deliberations. Our research question is whether the deliberations in the village meetings are equitable along two dimensions. First, we consider equitability from the perspective of different villager groups, such as the groups defined by landownership. In this perspective village meetings are equitable if groups of equal size have equal influence on the topics of discussion. Second, we consider equitability from the perspective of individuals who have different

[4]Also see the Fung and Wright[2003] edited volume that has several case-studies of deliberative decision making.

priorities. In this perspective village meetings are equitable if the priorities of all individuals are allotted representation and time in the meeting. We find that the group of large landowners has an unduly large influence on the topics of discussion relative to its size. At the same time we are able to uncover the role of interactions between different groups in the process of deliberation. Our evidence suggests that the landless and large landowners free ride on each other's support, while the support of the large and small landowners is complementary to each other.

We also find that the preferences of the landed individuals are more likely to be mentioned in the meeting and are also taking up more time in the meetings. Equally important, the voices of disadvantaged castes, while not dominating the meeting, are also heard. The transcript data allows us to distinguish between officials' and villagers' talk, as well as between men's and women's talk. Using these partitions, we are able to more accurately pinpoint the source of these effects. We find that the land dominance effect does not stem from the officials favoring the landed in their talk but rather from the landed being more vocal among villagers. In addition, we find that the preferences of the disadvantaged castes are more likely to be mentioned in the officials' talk but not in the villagers' talk. Within villagers' talk we also notice that the preferences of Muslims are taking up less time, relative to the those of Hindus. This finding suggests that the Muslim minority, which does not benefit from the affirmative action measures offered to disadvantaged castes, is marginalized in these meetings. Another notable finding is that within women's talk the preferences of women take up more time. This finding is particularly important in light of the measures taken by the Indian government to promote the political participation of women. In the transcripts we were also able to identify instances where decisions regarding the provision or maintenance of public goods were taken. Using these instances, we find that decisions, and in particular positive decisions, are more likely to be reached for the public goods preferred by the landed class. We want to emphasize that the evidence of inequities is restricted

to the deliberative space of the village meetings. We do not have data about the policy outcomes that may follow these meetings, so we cannot say whether the inequities in deliberation translate into inequities in outcomes.

Having found that the preferences of the landed class are more likely to be mentioned and take up more time in the meeting, we also want to investigate whether any village level characteristics accentuate or mitigate this effect. Literacy has been shown to have a positive effect on the outcomes of local governance. For example, Besley, Pande and Rao[2005b] find that increased literacy reduces village leaders' opportunism. Our findings also show that literacy has a positive effect in that it mitigates the power of the landed in village meetings. Political reservations for women and disadvantaged castes have been also documented to play an important role in local governance. The evidence on the role of women's reservations is mixed. Chattopadhyay and Duflo[2004b] find that women leaders benefit their villages while providing the public goods preferred by women. Ban and Rao[2008a], on the other hand, find that women leaders do not influence the provision of public goods and that their performance is hampered by the presence of a large upper caste landowner faction. Chattopadhyay and Duflo[2004a], and Besley, Pande and Rao[2004b] find that reservations for disadvantaged castes yield benefits to the members of these castes in the village. In this paper, we find that reservations for women and disadvantaged castes exacerbate the power of the landed in village meetings. Finally, we examine the role of upper level supervision in these meetings. We find that the presence of a powerful upper level bureaucrat, the Block Development Officer, mitigates the power of the landed in village meetings.

1.2 The Context: Village Government in South India

Article 243 of the Indian constitution empowers village councils (*Gram Panchayats* - henceforth GPs) elected every five years with the powers to prepare

and implement plans for "economic development and social justice," it also mandates that a *gram sabha*, a deliberative body consisting of all individuals registered to vote within the *Gram Panchayat*'s jurisdiction, will exercise such powers and functions as given it to it by the state legislature. In the South Indian states of Andhra Pradesh, Karnataka, Kerala and Tamil Nadu, where our data are from, the state legislatures have given the *gram sabhas* considerable powers. They are expected to prepare village plans, discuss budgets, select beneficiaries for government program, impose new taxes and modify old ones, and discuss "such other matters as may be prescribed." In effect these states have made *gram sabhas* the linchpin of village government and mandate that they should be held between two to four times a year, depending on the state. This power is somewhat tempered by the fact that GP budgets in most Indian states, with the exception of Kerala, have been low, and *gram sabhas* are not held as regularly as required by state law (Besley, Pande, and Rao[2005a]). However, the rights granted to them by law to make decisions on public good allocation and beneficiary selection, which are central to village life, ensure that *gram sabhas* are a powerful, constitutionally mandated, deliberative space.

The average *gram sabha* lasts 86 minutes. They typically begin with a presentation by a village official - either the president or the village secretary, after which the discussion is opened to the public. Occasionally an agenda is circulated in advance which directs the discussion towards certain subjects but, more usually, it is an open discussion where villagers bring up particular demands or grievances which are then responded to by a member of the council, or the village secretary - a local bureaucrat who assists the council. This call-response model is sometimes diverted by an extensive speech either by a council member or a villager on topics that can range from requests to comply with tax payments, to critiques of affirmative action, to a hagiography of the village council's tenure outlining its various accomplishments. The latter is more likely to occur when the *gram sabha* is held during an election year.

Local officials such as public works engineers are required to attend the

gram sabha to answer technical questions and respond to concerns. Sometimes higher-level officials also attend. The most significant of these is the Block Development Officer (BDO) who is the administrative officer in charge of the Block (sub-district level administrative entity) where the GP is located. The BDO is a powerful person and his (it is almost always a him) presence can significantly alter the discourse of deliberation because he has the power to make things happen: allocate budgets and people to pressing needs, and to impose sanctions in case of improprieties. Article 243 also mandates political reservations for presidencies of councils and for council members seats. The proportion of seats reserved for underprivileged castes ("scheduled castes" and "backward castes") is allocated according to their proportion in the population, and a third of the seats are reserved for women[5].

1.3 Data and Methodology

In order to study *gram sabha* deliberations we bring together two different sources of information. In November 2001 we conducted a survey at the village and household level to study various aspects of GPs in South India employing a sampling methodology described in detail in the next section. One randomly chosen adult from every household in the sample was asked questions about the household's socioeconomic status, household structure, views and use of public services in the village, and access to targeted benefits from the government. The respondents were also asked to provide open-ended responses rank-ordering their preference for problems in the village that needed attention. The problems were elicited from the respondent and postcoded into broader categories. From this ordering we constructed an individual preference measure: defined as his or her first-ranked problem in the village.

Then from January to September 2003 we tape-recorded the proceedings of

[5]Previous research has demonstrated that reservations can alter the nature of decisons made by panchayats (Besley et al.[2004b], Chattopadhyay and Duflo[Chattopadhyay and Duflo(2004a)] [(2004b)])

38 *gram sabhas* in a sub-sample of the villages surveyed in the 2001 survey. This was supplemented by another round of 93 *gram sabha* recordings from October 2004 to February 2006 - where the 38 villages from 2003 were revisited along with an additional 55 villages, also selected from the original 2001 sample. Table 1.1 presents the meeting breakdown by round and state. Each transcript was divided into paragraphs, according to the natural pauses in speech. In the transcripts, all speakers were identified by position (official or villager) and gender[6]. A change in speaker automatically translates into a new paragraph, but a speaker can have more than one consecutive paragraph. For each paragraph the topics mentioned were recorded via two methods: First, topics were manually coded, by reading every transcript and noting the topics mentioned in each paragraph. Second, to ensure the replicability of our findings, we coded the topics by keyword searches[7]. The two methods yield very similar results, and in the paper we will base our results on the keyword-searched topics. In addition, we also identify whether a decision was taken in any paragraph, whether it was a decision for or against, and the topic of the decision. This identification of decisions was done manually. In the appendix we provide a couple of examples of decisions. Hence, we can partition the transcripts based on the hierarchical position of the speaker (official or villager), the gender[8] of the speaker, and on whether the paragraph contains a decision (for or against). In Table 1.2 we present summaries for the occurrence and the fraction of lines dedicated to each of these partitions.

We define two measures for each topic: the occurrence of the topic, as a dummy variable, and the intensity of the topic. The intensity of the topic is defined as the ratio between the number of lines in the paragraphs in which the topic was mentioned and the total number of lines in the transcript. Furthermore, we apply the definitions of these measures to every partition. Hence, we have an occurrence and intensity measure for officials' talk, villagers' talk,

[6] Speaker caste is also identified in some transcripts.

[7] The list of keywords is available upon request

[8] The gender of the speaker was not identified in 10% of the discussions, including one full transcript

women's talk, men's talk, any decision, decision for, and decision against[9]. In Table 1.3 we present the summaries of topic measures overall and for each partition.

As explained in more detail below, we construct measures of group level support for each topic and analyze how support among different groups impacts the likelihood of a topic being mentioned. Furthermore, we match household level preferences with the topics revealed in the *gram sabha* in the household's village. These matched topics are then studied both as indicators, and in their level of intensity, to understand the types of households who are more likely to have their preferences discussed in the *gram sabha.*

1.3.1 Sampling

The sample was selected from seven districts in the four South Indian states, two in Andhra Pradesh (AP) – Medak and Chithoor, three in Karnataka (KA) – Bidar, Kolar and Dakshin Kanada, two in Kerala (KE) – Kasargod and Palakkad, and two in Tamil Nadu (TN) – Dharmapuri and Coimbatore. Districts within states and blocks (sub-district level entities) within districts were purposively chosen to control for common histories and cultural similarities. The district and block sampling is less relevant for this paper and is described in more detail in Besley *et.* al. ([2004a]).

The blocks are divided into several GPs – each of which consist of between 1 and 6 villages depending on the state. From every sampled block in AP, KA and TN we randomly selected 3 of our 6 sampled GPs and conducted household interviews in all the sampled villages falling within these GPs. In Kerala we randomly selected 2 GPs in one block and one GP in the other block. Within sampled GPs we conducted household interviews in all sampled

[9]For example, the occurence measure for water in officials' talk equals 1 if water is a topic in a paragraph spoken by an official and 0 otherwise. The intensity measure for water in officials' talk equals the ratio between the number of lines in paragraphs spoken by an official on the topic of water divided by the total number of lines in the transcript. It is important to note that the denominator for the intensity measures is always the total number of lines in the transcript

wards[10]. This results in a household sample that draws from 101 GPs with 259 villages. Twenty households were sampled at random from every selected village[11], of which four always belonged to Scheduled Caste or Tribes (henceforth SC/ST – who benefit from affirmative action programs mandated by the Indian constitution). In addition to these randomly sampled households the president of the GP, and the ward members were also subjected to a household interview. This yielded a total number of 5445 households.

Due to budgetary limitations we omitted recording *gram sabhas* in Andhra Pradesh in round 1. In the other three states we randomly selected 4 blocks from Karnataka, 5 blocks from Kerala, and 6 blocks from Tamil Nadu, resulting in a total *gram sabha* sample of 38 villages. In round 2 we expanded the sample to include the state of Andhra Pradesh where we visited 18 villages in 6 blocks. In the other three states, in addition to the villages where we recorded *gram sabhas* in 2003 we sampled 10 more blocks resulting in an total sample of 131 *gram sabhas* in 97 villages. Out of these 131 visited *gram sabhas*, in 4 instances the village leaders did not allow the proceedings to be taped.

To explore the relationship between individual preferences and the topics discussed during the *gram sabha* we link the household data to the meeting transcript from the same village. In the villages where both rounds of meetings were recorded, each household is counted twice. Hence, our analysis is based on the subset of 2488 households located in villages where *gram sabhas* were recorded.

1.3.2 Methodology

In our analysis we begin with the assumption that there are no constraints that prevent all topics to be mentioned in any single transcript. To support this assumption we present the distribution of the number of topics mentioned

[10] In Kerala, wards are of approximately the same size as villages in the other three states

[11] The survey team leader in every village walked the entire village to map it and identify total number of households. This was used to determine what fraction of households in the village were to be surveyed. The start point of the survey was randomly chosen, and after that every Xth household was surveyed such that the entire village was covered (going around the village in a clockwise fashion with X=Number of Households/20).

in Table 1.6. The probability distribution function increases, reaching a maximum at 6 topics, then decrease, with the maximum observed number of topics being 8. The theoretical maximum number of topics is 9. While not providing any definite answers, this distribution does not suggest any evident cutoff or constraint in the number of discussed topics. This assumption implies that the mentioning of a topic in a *gram sabha* does not affect the likelihood of mentioning another topic. This reflects the deliberative aspect of the *gram sabha*, in that any participant is free to express his or her views. Furthermore, there is no time limit to the *gram sabha*, hence talk about a topic is unlikely to reduce the time available for other topics.[12]. In particular, one may be concerned that one individual's talk precludes another individual from talking at the same time. Given the disconnect that exists between our household level data and the transcript data - our household respondents are unlikely to be the actual speakers in the *gram sabha* -, this is not a problem for our study.

We first construct group level measures of support for all topics ever mentioned in a meeting. The groups are those defined in Table 1.5. For each group we count the number of respondents that mentioned a particular topic as a priority. We then match this measure of support with an indicator variable for whether that particular topic was mentioned in the meeting. Alternately, to relax the assumption of linear effect of support group size, we create three support categories within each group - 0 supporters, 1 supporters, and 2 or more supporters. To estimate the effect of group level support on the likelihood of being mentioned we then estimate the following equation. In this equation the unit of observation is the topic within a transcript.

$$\Pr\{T_{it} = 1\} = \alpha_i + \theta_t + \beta S_{it}^k + \epsilon_{it} \tag{1.1}$$

Where α_i are topic fixed effects, θ_t are transcript fixed effects, and S_{it}^k is the vector of support levels for each subgroup of group k. To correct for correlation

[12]The duration of the Gram Sabhas in our sample has a mean of 86 minutes and indeed a large standard deviation of 49 minutes. The shortest one takes 15 minutes and the longest 325 minutes.

within a transcript, we cluster standard errors at transcript level. We run this regression separately for each group.

In order to explore the interactions between support among different subgroups, we add interaction terms to the above equation. We thus estimate the following equation.

$$\Pr\{T_{it} = 1\} = \alpha_i + \theta_t + \beta S_{it}^k + \sum_{q \neq j} \gamma_s S_{it}^j S_{it}^q + \epsilon_{it} \tag{1.2}$$

We run this regression separately for each subgroup j of group k.

Second, we measure the extent to which a villager's preferences are matched by the topics. To this end, we construct two individual level variables, a match dummy (MD) and a match intensity (MI). Let $T_g = \{(t_{kg})\}$ the set of topics[13] mentioned at the meeting in village g, with each topic t_{kg} being occupying a fraction f_{kg} of the discussion. Let an individual i living in village of g have topic t_i as her first priority. Then the match dummy is defined as:

$$MD_{ig} = \begin{cases} 1 & \text{if } t_i \in T_g \\ 0 & \text{otherwise} \end{cases}$$

and the match intensity is defined as:

$$MI_{ig} = \begin{cases} f_{ig} & \text{if } t_i \in T_g \\ 0 & \text{otherwise} \end{cases}$$

Table1.9 presents the summaries of the match indicator and match intensity.

To estimate the effect of household and individual characteristics on preference match we use these two measures as dependent variables in ordinary least squares estimations:

$$MD_{ig} = \alpha_g + \sum_{t \in U} \gamma_t I(t_i = t) + \beta X_{ig} + \epsilon_{ig} \tag{1.3}$$

[13]Note that all T_g are subsets of the universe of topics U = {water, roads, electricity, housing, health, education, employment, agricultural, liquor}

$$MI_{ig} = \alpha_g + \sum_{t \in U} \gamma_t I(t_i = t) + \beta X_{ig} + \epsilon_{ig} \quad (1.4)$$

Where α_g are village level fixed effects, γ_t are preference fixed effects, and X_{ig} is the matrix of individual and household level variables described in Table 1.4. It is important to note the two types of fixed effects that we use. First, by employing village level fixed effects we control for all village level characteristics that may affect both the individual characteristics and the preference match. Second, by employing preference fixed effects, we control for any unobserved characteristics specific to individuals who hold a given preference. To correct for correlation within a village, standard errors were clustered at the village level.

1.4 Results

In Table 1.2 we present the summaries of the different transcript partitions. Looking at the intensity column we find that officials' talk takes up 66 percent of the discussions, while villagers' talk takes up the remaining 34 percent. Men appear to dominate, taking up 81 percent of the discussions. We also find that at least a decision is reached in 56 percent of the meetings, at least a for decision in 51 percent of the meetings, and at least an against decision in 17 percent of the meetings. The time dedicated to decisions is very brief as it only takes a couple of lines to say the decision. Given this briefness, in the following results we will focus only on the occurrence of decisions and not the time dedicated to them.

In Table 1.3 we present the summaries of *gram sabha* topic[14] measures overall, by speaker's position in the hierarchy, by speaker's gender, and by whether the paragraph contains a decision. From this table we take away that there are no systematic differences between the topics discussed by villagers and officials, or men and women. The rank-ordering of both the occurrence and intensity

[14]There are topics discussed in the gram sabha that are not expressed as priorities by the households. The priority topics of the households, taken together, take up 53 percent of the meetings.

measures are nearly identical across the speaker type partitions. We also note that the ordering is nearly identical for the topics where decisions for and against were reached, the only striking difference being the decisions about roads.

Table 1.4 presents the summary statistics for the individual level variables, including preferences. We first look at whether individuals with different characteristics have significantly different preferences. Table 1.5 presents these findings. We observe that the amount of land owned leads to a large and significant difference in preferences. Large landowners are more likely to have a preference for roads and education, and less likely to have a preference for housing, in contrast with the landless villagers. Preferences also vary significantly across caste groups, but not across gender and age groups. The forward castes are more likely to have a preference for roads, as compared to Scheduled Castes and Scheduled Tribes(SCST). The backward castes (BC/OBC) are more likely to have a preference for water, as compared to the two other groups. Muslims are more likely to have a preference for water and less likely to have a preference for roads than non-Muslims. Furthermore, politicians[15] are more likely to have a preference for water and less likely to have a preference for roads than non-politicians.

Having reviewed the group level differences in preferences we proceed to analyze whether any of these differences translate into the transcript topic space. Table 1.7 presents the results of estimating 1.1 with linear measures of group support, for the groups previously defined. We observe that the only group for which support within its subgroups has a significantly different effect on the likelihood of the topic being mentioned is the group defined by landownership. Having an additional supporter for a topic in the large landowner subgroup increases the likelihood of the topic being mentioned by 2.5 percent. This increase is significantly different than zero and, more importantly, significantly higher than the increase in likelihood associated with increasing support in the landless or small landowner group. None of the other subgroups have a similar

[15] Defined as current or former *Gram Panchayat* presidents or ward members

influence.[16] To relax the assumption of linear effects of group support, we also estimate 1.1 using indicator variables for different levels of support. We only do this for the subgroups defined by landownership The first column of Table 1.8 presents these results. We observe that having two or more supporters for a topic in the large landowners' subgroup increases the likelihood of the topic being mentioned by 8.4 percent. This increase is significantly different from zero and significantly higher than that associated with having two or more supporters in the small landowners' group. However, this increase is not significantly higher than the increase associated with having two or more supporters in the landless group. Taken together, the results from Table 1.7 column (1) and Table 1.8 column (1) suggest that, relative to the support among landless and small landowners' groups, the support among large landowners has a larger influence on deciding which topics are discussed.

We are able to address two possible reasons for this larger influence. First, because we do not observe the actual attendance of these groups in the meetings, one obvious reason could be that large landowners attend the meetings in larger proportion. However, as Besley, Pande, and Rao ([2005a]) using the same dataset found, attendance (in a meeting occurring prior to the household survey) is significantly higher among landless than among landed individuals.[17] Hence it is unlikely that our finding is driven by unobserved differences in attendance.

Second, we look at the interactions between support in different subgroups. To shed light on the interactions between these subgroups we estimate equation 1.2 separately for the landless, small landowners and large landowners. The results are presented in Table 1.8, columns (2), (3), and (4), respectively. In column (2), the increase in likelihood associated with going from zero to at least two large landowner supporters, in the absence of any landless supporters

[16] Increasing support among the literate also produces a significant increase in the likelihood, but the differential effect relative to iliterates is not significantly different from zero.

[17] The findings of Besley, Pande, and Rao were based on the entire household sample. Since in our study we only observe the households in the villages where the Gram Sabha was recorded (roughly half the sample), we re-did their computations in our sample. In the landless group attendance was 27 percent, in the small landowners' - 18 percent, and in the large landowners' - 11 percent.

is positive and significant. Similarly, in column (4), the increase in likelihood associated with going from zero to at least two landless supporters, in the absence of any large landowner supporters is positive and significant. In addition, the interactions between having more than two supporters in the landless and large landowner subgroups are negative both in column (2) and (4), although significant only in column (4). Taken together, these three results suggest that support among the landless and the large landowners act as supplements in influencing the likelihood of mentioning a topic. When support among the first group is absent, the second group appears to make efforts to bring the topic into discussion, as evidenced by the significant difference in likelihood associated with increased support in the second group. However, when support among the first group is high, the second group appears to stop making efforts, as evidenced by the significantly lower difference in likelihood associated with increased support in the second group. A second finding that emerges from the interaction results is the complementarity between support in the small and large landowners' groups. This is evidenced by the positive and significant increases in likelihood associated with simultaneous support in these two groups, seen in columns (3) and (4). Rather than free riding on each other's support as in the case of landless and large landowners, small and large landowners reinforce each other's support.

What do these results, about the relationship between group level support and topics, say about the equitability of deliberation in village meetings? First, they suggest that, relative to a counterfactual in which equally sized groups have equal influence on the likelihood of a topic being discussed, village meetings are not equitable. The group of large landowners has an unduly large influence, relative to its size. Second, this unduly large influence may not necessarily be due to an imbalance of "deliberative power" favoring the large landowners, but rather to a rational choice of the landless to "piggyback" on the support of the large landowners. At the same time, these group level results should be interpreted with caution, as the group sizes are derived from a household sample (of 20 households per village) and may not be representative of the group sizes

in the entire village population.

Having found that large landowners, as a group, significantly influence the topics discussed in the meetings, we move on to analyzing the household level determinants of topics. Table 1.9 presents the summary of preference matching. We observe that the average individual has a 90 percent chance of having her preference mentioned during the meetings. Furthermore, the average individual's priority takes up 21 percent of the discussion. Looking at the breakdown by type of speaker we observe officials are more likely than villagers to mention the average individual's preference. We can interpret this as officials being more substantive and egalitarian in their speech, while villagers' speech may possibly leave more room for competition between villagers for expressing their preferred topic. A similar comparison can be made between matching within men's and women's talk. The men, taking up the overwhelming majority of the discussions, are much more likely to mention the average individual's preference. As for decisions, the average individual has a 28 percent chance of having his preference decided on during the meeting. Furthermore, s/he has a 24 percent chance of receiving a decision for and a 9 percent chance of receiving a decision against[18].

We now proceed with exploring the effect of individual characteristics on the likelihood of preference matching and match-intensity. Table 1.10 presents the results of the ordinary least squares estimation of (1.3) and (1.4). In column (1) the dependent variable is the match indicator. In column (2) the dependent variable is the match-intensity. The results show that in the unrestricted speech, having more land and being in a disadvantaged caste makes it more likely for one's preference to be mentioned. In addition, being a Muslim reduces the time dedicated to discussing one's preference. Specifically, owning 10 more acres of land increases the owners match likelihood by 1 percent, and being part of the Scheduled Castes or Scheduled tribe increases one's match likelihood by 3 percent. Hence, the difference in match likelihood between an SC/ST and a

[18]The for and against match likelihood add up to more than 28 percent, because it is possible for a topic to receive both a positive and a negative decision in the same meeting

Forward Caste[19] is the same as the difference between a landless individual and a very large landowner owning 30 acres of land. These two effects imply that owning more land gives one a stronger voice in village meetings, as suggested by the group level findings, but also that being afforded the benefits of affirmative action in the case of SC/STs helps in being heard. Being a Muslim reduces the time dedicated to one's preference by about 2 percent. This discrimination effect against Muslims is particularly important in the light of the SC/ST effect. It implies that a minority such as Muslims, that is not protected through affirmative action will have a hard time expressing their views in a deliberative space.

We want to emphasize the disconnect between the household survey and the transcripts. There is a gap of at least two years between the collection of the household data and the first round of transcripts. The household respondents from whom we collect the preference data are very unlikely to be the actual participants and speakers in the meetings. Hence the results have to be interpreted with this disconnect in mind and the meaning of "heard" should be the figurative one. In a more practical sense, this disconnect increases the likelihood that our observations are independent. If we had interviewed the actual participants in the *gram sabha* then an individual's talk would have an externality, by preventing or encouraging other villagers to speak and the observations would no longer be independent. The disconnect in our data is actually helping in this respect.

What do these individual level results say about the equitability of deliberation in village meetings? They suggest that, relative to a counterfactual of equal time allocated to each participant, village meetings are not equitable. Large landowners are more likely to have their priority mentioned and their priority takes up a larger portion of the meeting.

Once we decompose the discussion by the position of the speaker in the village hierarchy, in Table 1.11, we see that the land effect arises from the domi-

[19] Forward Caste is the omitted category

nation of landowners issues in the discourse of the villagers and not from a preferential treatment by village officials. Furthermore, in the villagers' speeches, the large landowners are not only more likely to have their priority mentioned, but that it takes up a larger fraction of the discussion. Specifically, owning 10 more acres of land increases the owners preference match likelihood by 2 percent and the match intensity by 0.6 percent. Decomposing the caste effect, we observe that the advantage of SCSTs is driven by an increased preference match likelihood within officials' talk, which is not paralleled in the villagers' talk. A possible interpretation of this effect, is that attention to the needs of the SCSTs is mandated via targeted programs and officials are trying to ensure that these programs are implemented. Being an SCST is associated with a 3 percent increase in match likelihood within officials speech, but this increased likelihood is not accompanied by an increased intensity. This may be seen as a sign that the attention to the SCST priorities is met only in form and does not affect their predominance in the deliberations.

In Table 1.12 we decompose the discussion by the gender of the speaker. The first notable result is that within women's talk, the preferences of women take up more time (column (2)). This effect is particularly important in the light of the measures, such as political reservations, taken by the Indian government to promote the political participation of women. In a related paper, using the same transcript data, we have found that in villages where the position of *Gram Panchayat* president is reserved for women, women to tend to talk more during the village meetings[Ban and Rao 2008b]. This finding implies that affording voice to the women has real benefits for the women's community. A similar result was found by Chattopadhyay and Duflo[2004b]: in constituencies reserved for women the public goods investments reflect the preferences of women. The second notable (non)result is that within women's talk, the effect of landownership disappears. This may be interpreted as women's talk being insulated from the traditional power of the landed class. The effect of landownership is present within men's talk, but only in the indicator equation. Another interesting result

is the age effect within men's talk. Older individuals are less likely to have their preferences mentioned when men are speaking.

In Table 1.13 we examine the effect of individual characteristics on the likelihood of a decision being reached with regards to one's preferred topic. We find that again, owning more land increases the likelihood of having one's preference decided upon. When we distinguish between for and against decision, we find that the land effect is driven by the for decisions. Specifically, owning 10 more acres of land increases the likelihood by 2.5 percent (2.7 percent among for decisions). This finding further emphasizes the power of the landed class in the deliberative space. It implies that not only are voices of the landed stronger in the overall discussions, but are also stronger in the crucial, decision making stages of the discussions.

In the remaining part of the paper, we investigate whether our village level characteristics of interest, literacy, political reservations, and supervision, matter for the deliberative process. In particular, we look at whether these characteristics mitigate or exacerbate the effect of individual characteristics observed in our main results. To estimate this effect, we include in our regression an interaction [20] term between the characteristic of interest and landownership. We focus on interactions with landownership as this is individual characteristic that is consistently associated with increased likelihood and intensity of match. We present the results in Table 1.14. First (columns (1) and (2)), we find that, compared with average literacy villages, in high literacy[21] villages, the land domination effect is significantly reduced. In fact, in high literacy villages, large landowners are at a disadvantage in terms of both likelihood of preference match and match intensity. One interpretation of this is that high literacy "lubricates" deliberative interactions by allowing officials to raise issues that matter to a wide group of people and thus make discussions more inclusive. This finding is in line

[20] The regressions include village fixed effects, so the *level* of the institutional measure is absorbed in these fixed effects

[21] Literacy has been classified by quartiles. Low literacy villages have literacy below 33 percent(1st quartile); average literacy - between 33 and 57 percent(2nd and 3rd quartile); high literacy - above 57 percent(4th quartile)

with numerous other findings that highlight the beneficial role of literacy on the functioning of local governance. For example, Besley, Pande and Rao[2005b], using the same village level data, find that increased literacy reduces village leaders' opportunism.

Next, we look at the effect of political reservations disadvantaged castes (columns (3) and (4)). The effect of these political reservation has been recently well documented. Chattopadhyay and Duflo[2004b] find that women achieve better outcomes than the unreserved (by and large male) presidents and that women invest in public goods that are preferred by women. In a separate paper ([2004a]) they find that SCST presidents invest in public goods preferred by SCSTs, a result that is also found by Besley, Pande, Rahman, and Rao[2004a]. We find that women's, SC/ST, and other backward castes (OBC) reservations exacerbate the land dominance effect, in terms of the likelihood of match, and that SC/ST reservations also exacerbate the land dominance effect in terms of the intensity of match. In fact, we see that the land dominance effect is absent outside the reserved constituencies. We interpret these results as a sign that political reservation for castes weakens village leadership which, in turn, reduces the restraints on the large landowners. We have also tested the hypothesis that in women reserved or caste reserved constituencies, the women and the members of the lower castes are more likely to have their priorities mentioned. We have found no evidence of this[22].

Finally, in columns (5) and (6) we look at the influence of the presence of the BDO in the meetings. We find that when this official attends the *gram sabha*, the land dominance effect is reduced. Specifically, while large landowners are still more likely to have their priorities mentioned, in the presence of the BDO the time spent discussing these priorities is significantly reduced. This underlies the disciplining role that higher level officials can play in the deliberative process. Furthermore, this result has a simple policy implication by showing a straightforward action that may be taken to reduce elite dominance[23].

[22] These results are available upon request

[23] It is possible that the presence of the BDO is endogenous, but the endogeneity is more

1.5 Conclusion

This paper attempts to peer inside the black box of deliberative democracy. We use a unique dataset of transcripts of *gram sabhas* (village meetings) in South India to learn about the process of deliberation. These meetings are a part of the system of village government, held at regular intervals, and are empowered by the Indian constitution to make important decisions for the village. We find that powerful groups, such as large landowners as a group and as individuals do exert an unduly large influence on the deliberative process. At group level we are able to highlight important interactions between large landowners, small landowners, and landless. We find that the landless and the large landowners appear to free ride on each others' support and that small and large landowners complement each others' support. It may be that the lack of complementarity between the landless and any other group is a reason for their lack of influence. At individual level, the preferences of the large landowners are more likely to be mentioned and to dominate the deliberations by taking up more time. This effect occurs in the villagers' discourse, and does not reflect preferential treatment from officials who attend the meeting. Our results also show that the needs of disadvantaged casts are also reflected in the deliberative process, but this occurs because these needs are mentioned by officials. We also find that institutions matter in the deliberative process; high literacy tempers the extent to which *gram sabhas* are dominated by landlords. Landlord domination is also reduced when the Block Development Officer - an important local official - attends the meetings. On the other hand, in village where the presidency is reserved for lower castes, the discourse tends to be even more dominated by landowners suggesting that political reservations may produce weak leaders.

While our results suggest that there are inequities in the deliberation process, it is important to keep in mind that we cannot say whether these inequities extend to actual outcomes. As we will revisit the households and villages with a second round survey, we will be able to test whether the inequities in delib-

likely due to village characteristics which are absorbed in the fixed effects

eration translate into inequities in outcomes. For example, we can construct a measure of inequity at *gram sabha* level and then examine how this measure correlates with post *gram sabha* outcomes both at household and at village level. Nevertheless, at this time we have evidence that the topics of discussion in the *gram sabha* are related to subsequent public goods outcomes. We conducted a village level facility survey which recorded the quality of roads in the village, in November 2001 and again in 2005. Using the transcript data from the first round, to limit the potential for reverse causality, we find that villages where discussion about roads take a larger share of the *gram sabha* also experience a greater improvement in the quality of roads between 2001 and 2005.[24]

Thus, in this paper we examine the innards of the deliberative process by conducting an examination of the discourse of deliberation within *gram sabhas* in rural India. These meetings are among the most widespread deliberative spaces in regular and routine use within a system of government in human history. By matching proceedings within transcripts of *gram sabhas* with the preferences of villagers we are able to see whose voices are heard, whose priorities are mentioned, and how institutions affect deliberative dominance by elites.

[24]The quality of roads is measured on a scale from 1 to 6, 1 being a mud road and 6 being an asphalt road. The improvement in roads is measured as the fraction of roads, by length, that has moved upward in quality between 2001 and 2005. In estimating the relationship between discussion about roads and improvement we control for initial road quality, a wide range of village level variables, and block fixed effects. We also perform a falsification test, by estimating the relationship between discussions about water and road improvement, and we find no relationship. These findings are available upon request.

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Table 1.1: Breakdown by round and state

State	Round		Total
	1	2	
Andhra Pradesh	0	18	18
Karnataka	6	31	37
Kerala	15	15	30
Tamil Nadu	16	26	42
Total	37	90	127

Table 1.2: Summary of gram sabha partitions

Partition		Occurence indicator	Intensity
1. Hierarchy	Village official	1	0.66
			(0.22)
	Villager	0.96	0.34
			(0.22)
2. Gender	Man	0.99	0.81
			(0.22)
	Woman	0.69	0.09
			(0.13)
3. Decision	Any decision	0.56	0.02
			(0.04)
	Decision for	0.51	0.02
			(0.04)
	Decision against	0.17	0.01
			(0.02)

Note: 1) Standard deviations of intensity measures in parenthesis

2) For 10 percent of the discussions, the speaker's gender cannot be identified

Table 1.3: Summary of gram sabha topics

			Hierachy				Gender				Decision		
	Overall		Official		Villager		Man		Woman		Any	For	Against
Topic	Indicator	Intensity	Indicator	Intensity	Indicator	Intensity	Indicator	Intensity	Indicator	Intensity	Indicator	Indicator	Indicator
Water	1	0.28	0.94	0.19	0.86	0.09	0.98	0.24	0.43	0.02	0.37	0.33	0.07
		(0.16)		(0.16)		(0.10)		(0.16)		(0.04)			
Roads	0.94	0.21	0.87	0.13	0.80	0.08	0.93	0.18	0.40	0.02	0.34	0.29	0.13
		(0.15)		(0.14)		(0.09)		(0.15)		(0.04)			
Education	0.83	0.13	0.70	0.09	0.63	0.03	0.80	0.10	0.35	0.01	0.09	0.08	0.02
		(0.14)		(0.13)		(0.05)		(0.13)		(0.03)			
Health	0.72	0.09	0.62	0.07	0.46	0.02	0.67	0.07	0.24	0.01	0.06	0.05	0.01
		(0.11)		(0.11)		(0.03)		(0.10)		(0.02)			
Electricity	0.74	0.08	0.61	0.06	0.49	0.02	0.69	0.07	0.16	0.00	0.09	0.06	0.02
		(0.11)		(0.11)		(0.03)		(0.11)		(0.02)			
Housing	0.69	0.08	0.60	0.06	0.50	0.02	0.65	0.06	0.25	0.01	0.06	0.06	0.00
		(0.12)		(0.11)		(0.03)		(0.11)		(0.02)			
Employment	0.19	0.01	0.13	0.01	0.07	0.00	0.14	0.01	0.06	0.00	0.02	0.02	0.00
		(0.03)		(0.03)		(0.01)		(0.03)		(0.01)			
Agricutural	0.14	0.01	0.13	0.01	0.01	0.01	0.13	0.01	0.02	0.00	0.03	0.03	0.00
		(0.03)		(0.03)		(0.09)		(0.03)		(0.00)			
Liquor	0.03	0.00	0.01	0.00	0.03	0.00	0.02	0.00	0.01	0.00	0.00	0.00	0.00
		(0.01)		(0.00)		(0.01)		(0.00)		(0.00)			

Note: Standard deviations, of intensity measures in parenthesis

Table 1.4: Household level summary

Variable	Mean (SD)
Land (acres)	2.26
	(5.12)
Age	37.17
	(12.59)
Literate	0.74
Woman	0.49
SC/ST	0.19
BC/OBC	0.45
Muslim	0.07
Politician	0.11
Priority	
Water	0.38
Roads	0.38
Electricity	0.07
Housing	0.07
Health	0.05
Employment	0.02
Education	0.01
Agricultural	0.01
Liquor	0.00
N	2488

Note: Standard deviations, of continuous measures, in parenthesis

Table 1.5: Priority detail

	Total	Land			Age			Gender		Caste			Religion		Politician	
Priority		0	(0, 4]	(4, 64]	[16, 30]	(30, 50]	(50, 89]	M	F	SC/ST	OBC	Forward	Hindu	Muslim	No	Yes
Water	0.38	0.40	0.38	0.34	0.37	0.40	0.36	0.38	0.38	0.35	0.41	0.37	0.37	0.51	0.38	0.45
Roads	0.38	0.37	0.36	0.45	0.37	0.38	0.40	0.37	0.39	0.33	0.35	0.43	0.39	0.28	0.39	0.30
Electricity	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.08	0.06	0.07	0.04	0.07	0.07
Housing	0.07	0.08	0.08	0.03	0.08	0.06	0.08	0.07	0.07	0.17	0.05	0.04	0.07	0.08	0.07	0.05
Health	0.05	0.05	0.06	0.05	0.07	0.05	0.03	0.06	0.05	0.04	0.06	0.06	0.05	0.06	0.05	0.06
Employment	0.02	0.03	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.03	0.02	0.02	0.02	0.01	0.02	0.02
Education	0.01	0.01	0.01	0.03	0.01	0.01	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.03
Agricultural	0.01	0.01	0.01	0.03	0.01	0.01	0.02	0.02	0.01	0.00	0.01	0.02	0.01	0.01	0.01	0.02
Liquor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
N	2488	1132	1001	355	897	1223	368	1258	1230	470	1114	904	2308	180	2221	267
χ^2			0.000			0.279		0.018			0.000		0.000		0.015	

Note: 1)Cell values represent the fraction of households in the category that has mentioned the priority listed in the leftmost column
2)p-values of a Chi-squared test of the hypothesis that priorities are identically distributed across the categories, at the bottom
3)SC/ST : Scheduled Caste/Scheduled Tribe, OBC: Other Backward Caste

Table 1.6: The distribution of the number of mentioned topics

Number of mentioned topics	Frequency	Percent
1	2	1.57
2	7	5.51
3	11	8.66
4	16	12.6
5	23	18.11
6	37	29.13
7	25	19.69
8	6	4.72
Total	127	100

Table 1.7: Mentioned topics and group level support

Topic is mentioned												
(1)		(2)		(3)		(4)		(5)		(6)		
# landless	0.0028	# literate	0.0069*	# SC/ST	0.0131	# muslims	-0.0048	# female	0.0097	# politic	0.0117
	(0.0047)		(0.0035)		(0.0093)		(0.0161)		(0.0077)		(0.0174)
# land (0,4] acres	-0.0070	# iliterate	-0.0056	# BC	-0.0015	# nonmuslims	0.0036	# male	-0.0039	# non-politic	0.0022
	(0.0052)		(0.0072)		(0.0055)		(0.0030)		(0.0081)		(0.0032)
# land (4, 64] acres	0.0250***			# Forward	0.0071						
	(0.0083)				(0.0061)						
Constant	0.1406***	Constant	0.1406***	Constant	0.1411***	Constant	0.1410***	Constant	0.1418***	Constant	0.1408***
	(0.0276)		(0.0278)		(0.0275)		(0.0276)		(0.0278)		(0.0277)
land 5+ - landless	0.0223**	literate-iliterate	0.0125	SC/ST-BC	0.0146	muslim-nonmuslims	-0.0084	female-male	0.0136	politic-nonpolitic	0.0095
	(0.0100)		(0.0089)		(0.0116)		(0.0169)		(0.0148)		(0.0188)
land 5+ - land 1-4	0.0320***			SC/ST-forward	0.0061						
	(0.0109)				0.0122						
N	1143		1143		1143		1143		1143		1143
Adj R-sq	0.6276		0.6265		0.6264		0.6262		0.6264		0.6262

Notes: The dependent variable is an indicator for whether a topic was mentioned in a transcript. The explanatory variables are the number of respondents in the different categories that mentioned the topic as their priority. All regression contain priority and transcript fixed effects. Standard errors in parenthesis, clustered at transcript level. * significant at $p < 0.1$, ** significant at $p < 0.05$, *** significant at $p < 0.01$

Table 1.8: Mentioned topics and land support categories

	Topic is mentioned			
	(1)	(2)	(3)	(4)
Landless support 1	0.0238	0.0076	0.0439	-0.0030
	(0.0381)	(0.0551)	(0.0531)	(0.0456)
Landless support 2+	0.0438	0.0479	0.0519	0.0789**
	(0.0314)	(0.0506)	(0.0509)	(0.0349)
Land (0,4] support 1	-0.0051	0.0145	-0.0011	-0.0356
	(0.0325)	(0.0492)	(0.0501)	(0.0376)
Land (0,4] support 2+	-0.0220	-0.0423	-0.0683	-0.0770*
	(0.0338)	(0.0493)	(0.0479)	(0.0400)
Land (4,.) support 1	-0.0318	-0.0711	-0.1542**	-0.1588**
	(0.0434)	(0.0688)	(0.0737)	(0.0724)
Land (4,.) support 2+	0.0841**	0.1343***	-0.0172	0.0376
	(0.0332)	(0.0511)	(0.0566)	(0.0669)
Landless support 1 & Land (0,4] support 1		-0.0619	-0.0749	
		(0.0928)	(0.0907)	
Landless support 1 & Land (0,4] support 2+		-0.0260	-0.0175	
		(0.0918)	(0.0822)	
Landless support 2+ & Land (0,4] support 1		-0.0178	-0.0669	
		(0.0708)	(0.0712)	
Landless support 2+ & Land (0,4] support 2+		0.0426	-0.0005	
		(0.0669)	(0.0621)	
Landless support 1 & Land (4,.) support 1		0.2250**		0.1278
		(0.1048)		(0.1084)
Landless support 1 & Land (4,.) support 2+		0.0311		-0.0044
		(0.0911)		(0.0715)
Landless support 2+ & Land (4,.) support 1		-0.0089		-0.1971*
		(0.0852)		(0.1037)
Landless support 2+ & Land (4,.) support 2+		-0.0986		-0.1144*
		(0.0686)		(0.0630)
Land (0,4] support 1 & Land (4,.) support 1			0.1958**	0.2794**
			(0.0941)	(0.1172)
Land (0,4] support 1 & Land (4,.) support 2+			0.1765**	0.1641**
			(0.0737)	(0.0755)
Land (0,4] support 2+ & Land (4,.) support 1			0.2240**	0.3315***
			(0.0858)	(0.1016)
Land (0,4] support 2+ & Land (4,.) support 2+			0.1455*	0.1579**
			(0.0741)	(0.0782)
Adjusted R-squared	0.6272	0.6275	0.6287	0.6322
Number of observations	1,143	1,143	1,143	1,143

Distribution of support categories	Landless support	Land (0,4] support	Land (4,.) support
0	775 (67.8%)	773 (67.63%)	961 (84.08%)
1	130 (11.37%)	158 (13.82%)	107 (9.36%)
2+	238 (20.82%)	212 (18.55%)	75 (6.56%)

Notes: The dependent variable is an indicator for whether a topic was mentioned in a transcript. The explanatory variables are indicators for the support categories. The omitted category is that with no supporters in any of the subgroups. All regression contain priority and transcript fixed effects. Standard errors in parenthesis, clustered at transcript level. * significant at $p < 0.1$, ** significant at $p < 0.05$, *** significant at $p < 0.01$

Table 1.9: Summary of preference match

	Match indicator	Match intensity
Overall	0.90	0.21
		(0.17)
Village official talk	0.82	0.14
		(0.15)
Villager talk	0.74	0.07
		(0.08)
Man talk	0.90	0.18
		(0.16)
Woman talk	0.38	0.02
		(0.04)
		-
Any decision	0.28	
Decision for	0.24	-
Decision against	0.09	-

Note: 1)Standard deviations of match intensity in parenthesis
2)Due to very reduced decision talk, described in Table 3, match intensity for decisions were not computed

Table 1.10: Preference match regression

	(1) Match indicator	(2) Match intensity
Land	0.00102*	0.00049
	(0.00063)	(0.00035)
Literate	0.00833	0.00286
	(0.00946)	(0.00548)
Age	-0.00199	-0.00093
	(0.00139)	(0.00070)
Age sq.	0.00002	0.00001
	(0.00002)	(0.00001)
Woman	0.01254	-0.00060
	(0.00843)	(0.00315)
SC/ST	0.03449**	-0.00451
	(0.01707)	(0.00657)
BC	0.01756	0.00277
	(0.01305)	(0.00425)
Politician	0.00203	-0.00177
	(0.01169)	(0.00504)
Muslim	-0.00659	-0.02380**
	(0.02385)	(0.00987)
Constant	0.90354***	0.24474***
	(0.04258)	(0.03201)
Observations	2488	2488
Adj R-sq	0.572	0.564

1)Village, Priority and Round fixed effects included
2)Standard errors, clustered at village level, in parentheses
3)*$p < 0.1$, **$p < 0.05$, ***$p < 0.01$
4)The dependent variable in (1) equals 1 if the individual's priority is mentioned in the meeting, and 0 otherwise
5)The dependent variable in (2) equals the fraction of lines in the transcript dedicated to the individual's priority, if the priority is mentioned in the meeting, and 0 otherwise
6)The estimation is done by OLS, which in (1) implies a linear probability model

Table 1.11: Preference match regression, hierarchy partition

	(1) Officials indicator	(2) Officials intensity	(3) Villagers indicator	(4) Villagers intensity
Land	0.00046	-0.00008	0.00196***	0.00057**
	(0.00111)	(0.00024)	(0.00074)	(0.00023)
Literate	0.01789	0.00075	0.00379	0.00211
	(0.01150)	(0.00394)	(0.01129)	(0.00347)
Age	-0.00118	-0.00078	-0.00092	-0.00015
	(0.00144)	(0.00055)	(0.00217)	(0.00040)
Age sq.	0.00002	0.00001*	0.00001	0.00000
	(0.00002)	(0.00001)	(0.00003)	(0.00000)
Woman	0.00495	-0.00106	0.00999	0.00046
	(0.00877)	(0.00261)	(0.01013)	(0.00179)
SC/ST	0.03000*	-0.00062	0.00101	-0.00389
	(0.01731)	(0.00589)	(0.01880)	(0.00344)
BC	0.02155*	0.00166	-0.00819	0.00111
	(0.01337)	(0.00344)	(0.01319)	(0.00216)
Politician	-0.00685	-0.00412	-0.00724	0.00235
	(0.01275)	(0.00422)	(0.01489)	(0.00278)
Muslim	-0.00035	-0.01066	-0.03665**	-0.01314***
	(0.02561)	(0.00782)	(0.01692)	(0.00449)
Constant	0.80288***	0.16959***	0.60397***	0.07515***
	(0.04611)	(0.02841)	(0.07440)	(0.01216)
Observations	2488	2488	2488	2488
Adj R-sq	0.611	0.607	0.564	0.589

1)Village, Priority and Round fixed effects included

2)Standard errors, clustered at village level, in parentheses

3)*$p < 0.1$, **$p < 0.05$, ***$p < 0.01$

4)The dependent variable in (1) and (3) equals 1 if the individual's priority is mentioned in the officials', and, respectively, villagers' talk, and 0 otherwise

5)The dependent variable in (2) and (4) equals the fraction of lines in the officials', and, respectively, villagers' talk dedicated to the individual's priority, if the priority is mentioned in the officials, and respectively, villager's talk and 0 otherwise

6)The estimation is done by OLS, which in (1) and (3) implies a linear probability model

Table 1.12: Preference match regression, gender partition

	(1) Women indicator	(2) Women intensity	(3) Men indicator	(4) Men intensity
Land	-0.00076	-0.00005	0.00133**	0.00050
	(0.00085)	(0.00007)	(0.00066)	(0.00034)
Literate	0.00568	0.00213	0.00914	0.00223
	(0.01395)	(0.00174)	(0.01135)	(0.00481)
Age	-0.00020	0.00015	-0.00257*	-0.00118**
	(0.00187)	(0.00018)	(0.00150)	(0.00058)
Age sq.	0.00000	-0.00000	0.00003*	0.00002**
	(0.00002)	(0.00000)	(0.00002)	(0.00001)
Woman	0.00582	0.00171*	0.00429	-0.00309
	(0.01054)	(0.00098)	(0.00953)	(0.00292)
SC/ST	-0.02567	-0.00181	0.03615**	-0.00340
	(0.02403)	(0.00165)	(0.01687)	(0.00492)
BC	0.00522	0.00062	0.02203*	0.00511
	(0.01315)	(0.00095)	(0.01299)	(0.00398)
Politician	-0.01693	0.00087	0.00940	-0.00277
	(0.01519)	(0.00135)	(0.01304)	(0.00520)
Muslim	-0.04285*	-0.00119	-0.00835	-0.02423**
	(0.02710)	(0.00172)	(0.02358)	(0.00985)
Constant	0.33054***	0.01040*	0.96643***	0.24443***
	(0.07660)	(0.00656)	(0.05185)	(0.03148)
Observations	2394	2394	2394	2394
Adj R-sq	0.606	0.555	0.521	0.559

1)Village, Priority and Round fixed effects included

2)Standard errors, clustered at village level, in parentheses

3)*$p < 0.1$, **$p < 0.05$, ***$p < 0.01$

4)The dependent variable in (1) and (3) equals 1 if the individual's priority is mentioned in the women's, and respectively, men's talk, and 0 otherwise

5)The dependent variable in (2) and (4) equals the fraction of lines in the women's, and, respectively, men's talk dedicated to the individual's priority, if the priority is mentioned in the women's, and, respectively, men's talk, and 0 otherwise

6)The estimation is done by OLS, which in (1) and (3) implies a linear probability model

Table 1.13: Preference match regression, decision

	(1) Any, indicator	(2) For, indicator	(3) Against, indicator
Land	0.00255**	0.00270*	-0.00075
	(0.00127)	(0.00142)	(0.00063)
Literate	-0.02809*	-0.01841	-0.00456
	(0.01487)	(0.01617)	(0.01016)
Age	-0.00204	-0.00041	-0.00148
	(0.00195)	(0.00186)	(0.00130)
Age sq.	0.00002	0.00001	0.00002
	(0.00002)	(0.00002)	(0.00002)
Woman	-0.00843	-0.00842	-0.00219
	(0.01044)	(0.01008)	(0.00682)
SC/ST	-0.00878	-0.01310	-0.00179
	(0.02016)	(0.01998)	(0.01105)
BC	0.00100	0.00039	0.00206
	(0.01559)	(0.01522)	(0.00841)
Politician	0.02519	0.02526	0.00669
	(0.01707)	(0.01738)	(0.00864)
Muslim	-0.03546	-0.03916*	-0.00809
	(0.02388)	(0.02260)	(0.01283)
Constant	0.45100***	0.37042***	0.12237**
	(0.08253)	(0.07735)	(0.05850)
Observations	2488	2488	2488
Adj R-sq	0.486	0.496	0.392

1)Village, Priority and Round fixed effects included

2)Standard errors, clustered at village level, in parentheses

3)*$p < 0.1$, **$p < 0.05$, ***$p < 0.01$

4)The dependent variable in (1) equals 1 if the individual's priority is mentioned in any decision, **for or against**, taken in the meeting, and 0 otherwise

5)The dependent variable in (2) equals 1 if the individual's priority is mentioned in a **for** decision taken in the meeting, and 0 otherwise

6)The dependent variable in (3) equals 1 if the individual's priority is mentioned in an **against** decision taken in the meeting,and 0 otherwise

7)The estimation is done by OLS, which implies a linear probability model

Table 1.14: Preference match regression, interactions

	(1) Match indicator	(2) Match intensity	(3) Match indicator	(4) Match intensity	(5) Match indicator	(6) Match intensity
Land	0.00103	0.00084*	-0.00217	-0.00040	0.00106*	0.00068*
	(0.00090)	(0.00044)	(0.00151)	(0.00051)	(0.00065)	(0.00035)
Land*Low lit.	0.00108	-0.00015				
	(0.00139)	(0.00081)				
Land*High lit.	-0.00733*	-0.00483***				
	(0.00433)	(0.00131)				
Land*Woman res.			0.00491*	-0.00060		
			(0.00255)	(0.00123)		
Land*SC/ST res.			0.00440**	0.00191**		
			(0.00194)	(0.00078)		
Land*OBC res.			0.00609***	0.00128		
			(0.00198)	(0.00125)		
BDO					-0.05157	-0.11774*
					(0.04147)	(0.07363)
Land*BDO					-0.00113	-0.00496***
					(0.00295)	(0.00143)
Observations	2374	2374	2488	2488	2488	2488
Adj R-sq	0.580	0.584	0.573	0.564	0.573	0.580

1)Levels of explanatory from Table 1.10 variables included but not reported

2)Village, Priority and Round fixed effects included

3)Standard errors, clustered at village level, in parentheses

4)* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

5)The dependent variable in (1), (3), and (5) equals 1 if the individual's priority is mentioned in the meeting, and 0 otherwise

6)The dependent variable in (2), (4), and (6) equals the fraction of lines in the transcript dedicated to the individual's priority, if the priority is mentioned in the meeting, and 0 otherwise

7)The estimation is done by OLS, which in (1), (3), and (5) implies a linear probability model

Annex: Examples of decisions

The following is an example of a for decision, regarding water, in a meeting in Andhra Pradesh. The second paragraph, spoken by the *Gram Panchayat* president - *Sarpanch* contains the decision:

Villager, BC, Male: There is only one water tank for the entire village. One more tank should be constructed.

Sarpanch, OC, Male: Government has sanctioned 3 lakhs for constructing the tank but the contractors have not started the work. We have discussed about this with higher officials and very soon this will be constructed. Also we have asked the government to allot a place for the cattle but they have not responded.

The following is an example of a for decision, regarding roads, in a meeting in Tamil Nadu. The second paragraph, spoken by the *gram sabha* secretary contains the decision:

Male (Mr. Anumanthappan, Villager, SC): Near the Mariamman temple present here that is around the temple street light facility should be provided. Also light facility must be provided within the temple. Path leading to the temple is also in a very worst condition. So I request the Panchayat that must also provide a good path for that.

Male (Mr. Chandrakumar, Grama Sabha Secretary, MBC): Through this Panchayat decision is being made that the street light facility and construction of roads in the places near the temple. I convey that to you people in this Grama Sabha meeting.

The following is an example of an against decision, regarding schools, in a meeting in Tamil Nadu. The second paragraph, spoken by the Gram Panchayat president contains the decision:

Santhakumari, Villager, OBC: Didn't paint the school building.

President: You yourself have to look after this. There is no fund in the Panchayat.

Chapter 2

Tokenism or Agency? The Impact of Women's Reservations on Village Democracies in South India[1]

2.1 Introduction

The link between democracy and development is increasingly being emphasized by influential scholars[Sen(1999)] and development institutions [World Bank(2005)]. In particular, enhancing the participation of women within democracies is seen as central to improving governance [World Bank(2001)]. India offers, perhaps, the best opportunity to learn about the impact of raising the participation of women in democratic institutions because of a remarkable attempt to improve the representation of women in local village government. The 73rd amendment to the Indian constitution, passed in 1992, mandated that no less than a third of the total number of seats in democratically elected village governments (*panchayats*), and no less than a third of the office of President of the *Gram Panchayat* (village government unit, henceforth GP) should be reserved for women. The aim of this was to ensure that women would have a voice in

[1]This chapter is based on joint work with Vijayendra Rao

local government and, ultimately, help facilitate the formation of a more gender equal society. Since every Indian village is now required to participate in this exercise - the enormous variation and diversity among villages in India provide a remarkable laboratory to test models of democratic reform.

To analyze the effect of this policy, two questions need to be answered. First, what do the women presidents achieve relative to their male counterparts? Anecdotal evidence suggests that women,as newcomers to the political process, would be more enthusiastic and less corrupt and therefore more effective than entrenched male politicians. They would, therefore, generally improve the quality of governance [Vyasulu and Vyasulu(1999)] Second, who are these women presidents? Speculation and some anecdotal evidence suggest that they are tokens of powerful interests in the village; poorly educated, elderly, from impoverished families, easily manipulated and picked by elites to run [Ramesh and Ali(2001)]. A more optimistic view is that effective, educated women choose to run for elections.

Econometric work by Chattopadhyay and Duflo [(2004b)] - henceforth CD - looking at *panchayats* in the states of West Bengal and Rajasthan examined these issues in some detail and found some evidence consistent with an optimistic hypothesis: Women leaders tend to invest more in goods where women have expressed a preference, and less in goods preferred by men. Specifically, women leaders in West Bengal tend to invest more in water and road projects, and less in non-formal education,while in Rajasthan they invest more in water and less in roads. CD are able to identify the causal impact of reservations by establishing that reservation status is rotated among all GPs on a random basis – which allows the reservation process to be treated as a randomized trial.

While CD's results demonstrate the effectiveness of the *panchayat* reservations experiment, the results are restricted to two states, Rajasthan and West Bengal, of a very large and diverse country. These states, both from the north, are among the most male-biased in the country: Rajasthan ranks 21st and West Bengal 18th out of 24 states in a composite index of the status of women in In-

dia (Filmer, King, Pritchett 1998). Thus, a question remains of how applicable these results are to the rest of the country.

CD find that women presidents[2] in reserved constituencies tend to be worse educated than presidents (almost all men) in unreserved constituencies, a fact that they attribute to the possible existence of tokenism. This, however, begs the question of whether this gender differential in education reflects patterns in the general population or is a consequence of the reservations system. It also raises an important secondary question of whether the quality of presidents matters more in reserved *panchayats*; do better educated women function more effectively as presidents?

The work by Duflo and Topalova [(2004)], Bardhan, Mookherjee, and Torrado [(2005)], [(2008)], and Beamen *et* al. [(2008)] also econometrically analyzes the effect of women's reservation. Duflo and Topalova extend the Chattopadhyay and Duflo findings to 24 states and examine whether the performance of women leaders are perceived differently than men. The authors find that women's reservation leads to more and better drinking water facilities in the village, although the quality effect is not significant. For other public goods they find no significant effect of women's reservation. They also find that villagers are less likely to pay bribes in GPs reserved for women. However, the villagers' satisfaction with the president's performance is lower in GPs reserved for women. Furthermore, women get less "credit" for quantity and quality improvements than men. These findings are extended by Beamen *et* al. (2008). The authors also find that women leader perform no worse and sometimes better than men but that they receive consistently worse evaluations. However, the authors argue that women reservations improve attitudes toward women leaders. This improvement in attitudes is measured by quantifying the responses to hypothetical situations ("vignettes") involving women leaders. Furthermore, the authors find that Implicit Association Tests conducted to measure bias against

[2] In West Bengal, village presidents are called "pradhans" and this is the term used throughout CD. However in the Southern Indian states which are the setting for our study, they are called "adhyakhsa", "sarpanch", or president. We will henceforth call them president.

women in leadership roles show a decreased bias in villages with women leaders. Bardhan *et* al. (2005) examine the effect of women's reservation on the targeting of various local programs. They find that women's reservation improves the targeting of subsidized loans to disadvantaged groups but at the same time, worsens the targeting of employment grants. In their follow-up paper (Bardhan *et* al. 2008) they do not find positive inter-village effects of women reservations on drinking water and roads, but they do find negative effects of women reservations on targeting of BPL cards and employment to poor households.

The impact of women politicians is also examined by Clots-Figueras [Clots-Figueras(2005)]. The author looks at women's political behavior as state legislators. She finds that women legislators elected in seats reserved for Scheduled Castes/Tribes are more likely to adopt women-friendly laws, relative to women elected in open seats.

Another important issue, a major theme in the "action research" literature, is the salience of local structures of inequality and power [Rai *et* al.(2001)]. Villages dominated by powerful caste groups tend to be much more dictatorial. Thus, when such villages are reserved for women one expects that the presidents would be more likely to be subservient to elites. This raises the question of whether local structures of oligarchy and inequality have more influence over women presidents. Bardhan, et al. find that the effect of women's reservations on targeting is indeed lower in villages with higher land inequality.

An evaluation of the effects of reservations for women must include both evidence on the process by which women are selected in reserved constituencies, and on how their performance compares with leaders in unreserved ones. The three other papers on women's reservation cited above only address the performance comparison. Besley, Pande and Rao [Besley *et* al.(2005a)] focus on the political economy of politician selection using the same data as ours. In examining the broader issue of political selection, they show that more educated and politically connected individuals are more likely to get elected, but this relationship does not hold in constituencies reserved for women.

In this paper we connect these two literatures by conducting a more detailed analysis of political selection in constituencies reserved for women, and examining the impact of women's reservation on performance. We find evidence against two potential channels for tokenism. First, tokenism does not appear to be working through the selection of weak women. Second, tokenism does not appear to be working through the spouse's influence. Less than 20 percent of women presidents are persuaded to run by their spouse. We also find that *panchayats* 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. Importantly, however, political experience enhances the performance of women leaders more than it does for men. Also, women in villages which are less dominated by upper castes, and in states that have relatively mature *panchayat* systems, perform better, and, respectively, no worse than men. This suggests that institutional factors affect women politicians more than they affect men.

Our data, from a survey conducted between November and December 2002 in the southern states of Andhra Pradesh, Karnataka, Kerala and Tamil Nadu, is interesting for two reasons: First in contrast to West Bengal and Rajasthan, these states have low levels of gender disparity compared to the rest of the country – with Kerala ranked on the top of all major Indian states on the status of women index [Filmer *et* al.(1998)]. Thus comparing the CD paper with these results could provide some valuable insights into how women's reservations works within relatively more gender-equal societies.

Second the four states present an interesting comparison within themselves in their approach to decentralization[3]: Kerala and Karnataka have been among the leaders in promoting village democracy in India. Karnataka has had women's reservations in place since 1959, and in 1983 it passed landmark legislation giving *panchayats* a streamlined organizational structure that served as a model for the 73rd amendment. Kerala has had a more checkered history, but was one

[3] See Matthew and Buch, [Matthew and Buch(2000)] for a detailed account of the history of panchayats at the state level.

of the first states to adopt and implement the 73rd amendment. This has been followed by a commitment to give *panchayats* meaningfully large budgets and the power and authority to make decisions. Andhra Pradesh on the other hand, despite a long history of *panchayat* legislation has not had regular elections. Moreover, since 1997 the state government also instituted a system of "participatory governance" that served to undermine the authority of *panchayats*[4]. Tamil Nadu, similarly, has instituted reforms from the 73rd amendment but without giving village *panchayats* much teeth with budgets and placing most of the decision making at higher levels of government.

2.2 Data

2.2.1 Sampling Strategy

The sample was selected, using a strategy designed to control for path-dependencies and cultural factors while making state comparisons, from two districts in AP – Medak and Chithoor, three in Karnataka – Bidar, Kolar and Dakshin Kanada, two in Kerala – Kasargod and Palakkad, and two in Tamil Nadu – Dharmapuri and Coimbatore. The districts within states were selected, with one exception, to focus on those that had belonged to the same administrative unit during colonial rule, but had been transferred to different units when the states were reorganized in 1956[5]. From these states, pairs of blocks (which are the next level of administrative unit) one from each state were selected to be similar on the language spoken by a majority of the population. All blocks

[4] Since 2005, a newly elected government in the state is attempting to shore up the authority of panchayats.

[5] These are the districts of Bidar and Medak from the erstwhile state of Hyderabad, now in Karnataka and AP respectively, Pallakad, Coimbatore, Kasargod, Dakshin Kanada, Dharmapuri, and Chithoor, all from erstwhile Madras state and now in Kerala, Tamil Nadu, Kerala, Karnataka, Tamil Nadu and AP respectively. Since Bidar and South Kanara district in Karnataka are "special" in that they represent the worst and best districts in the state in development indicators, we also sampled Kolar district which is the one exception to the block matching rule in our sample. Kolar was a part of erstwhile Mysore state the precursor to modern Karnataka and thus does not follow the colonial- rule matching process described above. However, adding it does allow for more variation when we compare the other three states with Karnataka. Furthermore, Kolar has common borders with both Chithoor in AP and Dharmapuri in TN - which allows for a three part comparison within the same geographic area.

from within the sampled districts are chosen to be the closest possible in their majority language to a block in the matching district of the neighboring state. Since language is a good proxy in these regions for cultural differences given the prevalence of caste and linguistic endogamy, language matching allows us to partially control for "unobservable" sociocultural differences.

The blocks are divided into several GPs or village government units – each of which consist of between 1 and 6 villages depending on the state. From each sampled block , in the states of AP, KA and TN, we randomly sampled 6 GPs in every block. In Kerala the population per GP is roughly double that in the other three states. For this reason in Kerala we sampled 3 GPs in every block. This procedure gave a total of 201 GPs. From these we selected a village sample. In AP, Karnataka and Tamil Nadu we sampled all villages if the GP had 3 or fewer villages. If it had more than three villages, then we selected the president's village and randomly selected two other villages. We excluded all villages with less than 200 persons from our sampling frame. All hamlets with population over 200 were considered as independent villages in drawing the sample. In Kerala we directly sampled wards instead of villages (as villages in Kerala tend to be very large) – we sampled 6 wards per GP. This gave us a final village sample size of 527 villages[6]. For sampled villages, any associated hamlets were also included as part of the sample.

From every sampled block in AP, KA and TN we randomly selected 3 of our 6 sampled GPs and conducted household interviews in all sampled villages falling in these GPs. In Kerala we randomly selected 2 GPs in one block and one GP in the other block (the selection of which block to sample how many GPs from was also random), and within sampled GPs we conducted household interviews in all sampled wards. Overall this gave us a final sample size of 5180 households[7]. Twenty households were sampled at random from every

[6]The state-wise break up is AP: 69 villages, KA: 182 villages, KE: 126 wards; TN 129 villages.

[7]Number of villages for household sample were: AP: 32 villages, KA: 90 villages, KE 66 villages, TN 71 villages.

selected village[8], of which four always belonged to Scheduled Caste or Tribes (henceforth SC/ST – who benefit from affirmative action programs mandated by the Indian constitution). In addition to these randomly sampled households the President of the GP was also subjected to a household interview with some supplementary questions. Thus our sample of presidents coincides exactly with the GPs. presidents were not available for interviews in a few of our GPs – so our final president sample is reduced from 201 to 192. The complete sample has been used for other analyses[Besley *et* al.(2005c)] but for the purposes of this study we have omitted the GPs that have multiple reservations for women and scheduled castes, keeping only GPs reserved for women and the unreserved GP. Thus our sample consists of 106 *Gram Panchayat*s containing 310 villages in the four states and about 2100 households containing about 7100 individuals within them[9].

2.2.2 Questionnaires

Data was collected at the village, president and household level. At the village a questionnaire was administered using Participatory Rapid Appraisal (PRA) techniques [Chambers(1997)] to a group of individuals (mainly men) selected to represent different social groups in the village, to assess their views on problems in the village, the work done by *Panchayat*, and obtain measures of inequality and oligarchy. PRA techniques were also employed on a group of selected women to get measures of women's preferences on problems faced by the village. In addition, a facilities assessment was conducted by an investigator devoted to the task of looking at the quality of schools, clinics, roads, drinking water, and sanitation. We also obtained secondary data from the 1991 census of India for the villages in our sample.

[8]The survey team leader in every village walked the entire village to map it and identify total number of households. This was used to determine what fraction of households in the village were to be surveyed. The start point of the survey was randomly chosen, and after that every Xth household was surveyed such that the entire village was covered (going around the village in a clockwise fashion with X=Number of Households/20).

[9]Analyzing the complete data set with controls for GPs with multiple reservations produces results that are very clse to those reported in this paper. We have omitted GPs that have multiple reservations primarily to make the exposition less complicated.

In addition to this village level data, one randomly chosen adult from every household in the sample was asked questions on the household's socioeconomic status, household structure, views and use of public services in the village, private government benefits. They were also asked to rank-order problems in the village. Since the sample is divided between male and female respondents this provides yet another source of information on gender differences on preferences about village problems. All presidents in the sampled GPs had to answer the household questionnaire, but were also asked a series of questions to assess their knowledge about the political process – such as the names of prominent elected officials and reservation rules.

2.2.3 Reservation process

All GPs within a block are selected for women's reservation by rotation, with a third of all GPs mandated to be reserved for women presidents at any given time. The method of rotation varies across states and is determined by the state's election laws. Typically a list of GPs is prepared for each block – ordered by the proportion of women in the population, and the first GP in the list selected for reservation in the first election, along with the fourth, the seventh and so on, skipping three in sequence. In the next election the second GP in the list is selected, and additional GPs picked again by skipping three sequentially. This method, while not perfectly random, ensures that GPs are selected for women's reservation via an exogenous process. Two of the states – AP and Tamil Nadu have direct elections for the president – akin to a presidential system, while two – akin to a prime ministerial system - have indirect elections. Every village is divided into wards, each of which elects a member to the *Panchayats*, and each ward is also reserved using a rotation system. Thus 1/3 of all GP members are always women. In reserved GP's with indirect elections the president is elected from among the women ward members. Table 2.1 presents a breakdown of the president's gender by reservation status and state.

To test the exogeneity of the reservations system we regress a dummy for women's reservations, one at a time, on fourteen measures of public service quality and general levels of development, as well as demographics, from the 1991 census. Since census data are available to the election commissions to determine the composition of constituencies, if villages were selected for reservations on the basis of any endogenous criteria we would expect to see a correlation between reservations status and at least some of the census outcomes. State dummies are also included in all these regressions to allow for the possibility that states may have implemented the 73rd amendment reforms at a different pace, and used different rotation and election systems. Table 2.2 presents results from these regressions[10]. Of the fourteen variables we tested, twelve have coefficients that are not significantly different from zero. Only two variables – medical facilities and fraction irrigated land in the GP – are significant for reasons that are unclear. This suggests that reservations were unlikely to have been allocated to GPs on the basis of observable characteristics and supports the assertion that they were exogenously allocated.

The 73rd amendment also mandated reserved seats for scheduled castes and tribes (SC/ST) and for other backward castes(OBC) on the basis of their proportion in the village population. In the four states we are studying, SC/ST and OBC reservation overlap with women's reservations. Thus approximately a third of GPs with SC/ST or OBC reservations would – randomly – also be reserved for women. This is likely to confound the impact of the two types of reservations so we focus on contrasting GPs exclusively reserved for women with unreserved GPs. The impact of SC/ST reservations on *Panchayats* has been examined elsewhere [Besley *et* al.(2004)], [Chattopadhyay and Duflo(2004a)].

[10] As we are interested in the unconditional effect of each variable on the likelihood of being reserved, we ran separate probits rather than a single probit with all variables on the right-hand-side. Also, a chi-squared test could not reject the null hypothesis that the variables were jointly equal to zero in a multivariate probit.

2.2.4 Units of observation

The units of observation change through the course of the paper to allow us to analyze a more complete set of issues that relate to women's reservations. Since this could be a little confusing we provide a concise description of these changes; In the exogeneity tests, we estimate differences between GP level variables hence the unit of observation is the GP. Throughout the section dealing with the activities of women presidents the unit of observation is the village. An exception is the analysis of president's meeting with higher level officials, where the unit of observation is the GP (as there is one president for each GP). Throughout the section dealing with the characteristics of women presidents the unit of observation is the individual.

2.3 Results

2.3.1 Impact of Reservations on Women's Participation

One important impact of women's reservation is on women's political and community participation. Besley, Pande and Rao [Besley *et* al.(2005b)] show that community participation, measured by attendance in public village meetings, improves targeting towards disadvantaged sections of the village. CD find that in *Panchayats* reserved for women, the fraction of women among village meeting (*gram sabha*) participants increased significantly, in West Bengal villages, while in Rajasthan it decreased - but not significantly. The results in Table 2.3 indicate that there is neither a significant effect of women's reservation on women's participation in the *gram sabha*, nor in the presence of women's organizations[11]. We conclude that the presence of women leaders does not have noticeable effects on women's participation. One reason for this divergence from CD is that in our sample women's participation in the *gram sabha* is already at

[11]Note that about a third of villages in the sample did not answer the question on the proportion of women who attend gram sabha meetings. Of the 99 villages that did not respond to the question 24% are reserved for women which is less than the proportion of reserved villages (30%) in the full sample. It is possible that this could bias the results, but the direction of the bias is unclear.

a much higher level relative to West Bengal (33 percent vs. 7 percent) so there is less room for growth.

2.3.2 Impact of Reservations on *Panchayat* Activities

Data on the activities of *panchayats* come from the PRA. In the PRA, respondents were asked to assess the number of activities of the *panchayats* after the last election on a variety of public good investments. In order to have comparable measures across the public goods categories we standardize the actual counts by subtracting its mean and dividing by its standard deviation[12]. Table 2.4 attempts to replicate CD's results by examining the unconditional difference in *panchayat* activities, for a variety of goods and services, between reserved and unreserved GPs. We first report mean activity levels in the two categories, and then the coefficient of a dummy variable for women's reservations from a regression that controls for block fixed effects with standard errors clustered at the GP level. From the seven activities we examine, we see a significant difference only for activities in education. Relative to unreserved *panchayats*, *panchayats* reserved for women had significantly more education-related activities. However, on the vast majority of activities, reserved presidents do no differently than unreserved presidents. Indeed, we see that the differences between reserved and unreserved *panchayats* in these six categories are not jointly significant.

Since the PRA was conducted with mostly male participants there is a potential male bias in the performance measures derived from the PRA. To address this bias we use a set of performance measures derived from the facility survey. In the survey we asked whether there were any improvements in different categories of public goods since the last GP election. We use these improvement indicators as performance measures[13]. We report mean levels in the two categories and then the coefficient for women's reservation from a linear probability regression (as these are binary measures) that controls for block fixed

[12]The summaries of the actual counts are presented in Annex 1.
[13]The summaries of these indicators are presented in Annex 2

effects. These results also show that reserved presidents do no differently than unreserved ones.

It should be noted that, in three of these states, *panchayats* do not have control over large amounts of discretionary funds. The exception is the state of Kerala where *panchayat* budgets are the largest in the country[World Bank(2004)]. The lack of budgetary discretion in the three other states could impede the ability of GPs, both reserved and unreserved, to have much of an impact. But any short-term impacts would be more observable in the PRA which is picking up GP performance in the management of public goods, while the facilities data measure actual changes in the supply of public goods and are therefore less sensitive to short-term change.

In order to free ourselves from the assumption of budget availability we find a measure of activity that does not need financial resources. A major function of GPs is to lobby higher levels of government for public goods, resources and services. Therefore, we examine the extent to which GP presidents have meetings with officials from higher-levels of government[14]. The results show that women presidents are significantly less likely to meet with higher-level officials than unreserved presidents. We are unable to distinguish between whether this stems from poorer networks and communication skills among women presidents, or from an increased reluctance among higher officials to meet with women presidents.

Thus, we conclude that women presidents are very similar in their performance as providers of public goods to their male counterparts. The only substantial difference is in their reduced likelihood of meeting with higher level officials.

Reservations and Women's Preferences

CD show that the impact of women's reservations on the activities of *panchayats* is affected by the preferences of women. We test whether men and

[14] The summary is available in Annex 3

women differ significantly in their preferences for public good investments in the village. Note our data on priorities of men and women is based on a retrospective question on problems faced two years ago, while CD's is based on preferences revealed by the issues women petition the GP about. Therefore the preference data in the two surveys are not exactly comparable. But even with our method we do notice significant differences between men and women both in PRA and household surveys - suggesting that the information is picking up gender differences. Table 2.5 reports the results comparing preferences from the men's and women's PRA. We see that the large differences are in water and sanitation, which women are more likely to see as a problem, and roads, which men are more likely to see as a problem. These differences are tested with a regression controlling for village fixed effects, and we see that the differences on water, sanitation and roads persist after village effects are controlled. However, on four of the seven priorities there is no gender difference observed.

PRAs are better suited to looking at public goods because they are the result of a public interaction where issues that require a collective consensus are more likely to arise. To examine issues that may matter more at the level of households, we contrast the PRA data with data on the ranking of problems from two years ago at the individual level in Table 2.6. Here we see that men have a greater preference for health and infrastructure, while women are more likely to consider water and electricity as a priority. Controlling for village fixed effects, however, no differences remain suggesting that they are driven by differences in village characteristics. Thus, while we see differences in preferences across men in women from two different sources of data, these differences are not consistent across our data sources. Recalling that women presidents are more active in education, we conclude there is no evidence to suggest that women presidents are acting in a manner that is more sensitive to the preferences of women[15].

[15] We also conducted an analysis, similar to CD, with activity-specific regressions where women's reservations were interacted with women's preferences to see if these preferences were driving the activities of women-reserved pradhans. These results, available from the authors on request, also do not demonstrate any relationship between preferences and panchayat

2.3.3 Selection of women presidents

Having examined the performance of women presidents we move on to study the characteristics of women presidents. Particularly, we want to know whether women are tokens. Tokenism may work through different channels. Using our data we can empirically rule out two channels of tokenism. First, tokenism may work through spouses or political elites persuading women to contest the elections. Hence, we look at who persuaded presidents to contest elections. Table 2.7 provides simple cross-tabulations. We see that the responses for the two categories are similar – both groups were more or less equally likely to have been asked to contest by political elites - Members of the Legislative Assembly (MLAs), previous presidents, and important members of the community. The largest difference comes from reserved women being more likely to have been persuaded by their spouses to run than unreserved presidents. However, even with this large difference, less than 20 percent of women presidents were persuaded to run by their spouses, but the persuasion results should be interpreted with caution as the cell sizes are small.

Second, tokenism may work through the selection of weak women as presidents, so that they can be easily influenced by the male elites. To examine this channel we look at president characteristics in reserved and unreserved seats. Table 2.8 provides the summary statistics. It should be noted that age, education, and knowledge score are individual level variables, while all other variables are at the household level. Reserved presidents are younger, worse educated (by two years of schooling), have smaller land holdings, lower knowledge scores[16], and have less political experience than unreserved presidents. Note that the standard deviations on education and the knowledge score are larger for reserved women than for unreserved presidents – suggesting that women

activites.

[16]Knowledge scores come from a series of political knowledge questions where respondents were asked to identify the names of prominent leaders such as the prime minister and chief minister, and to explain important rules such as the percentage of villages in a GP reserved for women. Only the respondent to the survey has a knowledge score, hence the smaller number of observations for this variable.

who stand for election in reserved seats are a very diverse group. However, it is possible that these differences merely reflect gender differentials in the general population, since 85% of presidents in unreserved GPs are men – and women are distinctly worse educated than men on average. We can check this by comparing women who become presidents with women, in the general population, who are eligible to stand for election (they have to be over 21 and literate). This comparison, column (4) with column (2), shows that women presidents are from the top end of the distribution of women on landholding, wealth and knowledge, and above average on education and age. Interestingly, women presidents have fewer small children (age 0-5) in their household than the average eligible woman suggesting that women with demanding family pressures are less likely to stand for office[17]. These summaries also shed light on whether women presidents are from the same elite families as men presidents. The results show that women presidents are less likely to have former presidents or ward members in their households than men presidents, but are about equally likely to have politicians in general in their households.

Given the extent of dispersion in these distributions it is possible that there is a lot of spatial variation in attributes and that these trends may not persist once spatial controls are included. To account for this we run the following OLS regression on individual level data:

$$P_{bi} = \alpha_b + DW_{bi} + \mu C_{bi} + \gamma V_{bi} + \varepsilon_{bi} \tag{2.1}$$

Where P_{bi} is the set of individual i's characteristics in block b, α_b are block fixed effects, W_{bi} indicates whether the individual is elected president in a seat reserved for women, and C_{bi} is an indicator for an SC/ST household. V_{bi} is a vector of inequality and oligarchy in individual i's village, and ε_{bi} is the error term. We run two specifications. In the first specification, we restrict the sample to eligible women. In this specification D measures how different reserved(women) presidents are from other eligible women, thus providing a difference free of

[17] We thank Bina Agarwal for this suggestion.

gender effects. In this specification we set γ=0. In the second specification, we restrict the sample to the set of presidents. D now measures how different reserved(women) presidents are from unreserved presidents in the observed attributes.

Table 2.9 reports the results for the coefficient D for a variety of attributes, for the three specifications mentioned above. Looking at the 2nd column which compares reserved and unreserved presidents, we see that reserved presidents are significantly worse off than unreserved presidents in their education, knowledge and political experience, and also tend to be younger. However, looking at the 1st column we see that they are better off than comparable women in the population in terms of land ownership, wealth and knowledge score. In terms of age, women president are older, and in education they are not different from the average eligible woman. They also have fewer small children in the household than the average eligible woman These results do not support the claim that claim that women presidents are weaker than the average woman.

To provide a benchmark for comparison, we also examine the difference in characteristics between individuals elected in unreserved constituencies (the vast majority - 85 percent - of whom are men) and eligible men. Comparing columns (1) and (3), we observe that unreserved presidents differ from eligible men in similar ways that women presidents do from eligible women. The only distinction is that unreserved presidents are substantially more educated than the average man.

Finally we examine whether the gap between women leaders and other women is different from the gap between unreserved leaders and other men. Here we see that the gap in the extent to which women leaders are more knowledgeable than other women is greater than the gap between unreserved leaders and other men, but that the reverse is true for the gap in land ownership.

We thus conclude that there is empirical evidence against two channels through which tokenism may act. We do not rule out however, that tokenism may also act through other, unobservable channels. Another conclusion is that

the high levels of heterogeneity in the general population of women may be reflected in the high levels of heterogeneity among women leaders which may matter in their effectiveness as presidents.

Reservations and president characteristics

In testing the impact of women's reservation on *panchayat* activities, the heterogeneity in the quality of presidents has to be kept in mind. Does the quality of the president matter? Does it matter more in reserved GPs? Cognizant of the exogeneity of women's reservations, we can test these hypothesis in the OLS following framework:

$$Y_{bv} = \alpha_b + \beta P_{bv} + \gamma V_{bv} + \eta W_{bv} + \phi(p_{bv} * W_{bv}) + \varepsilon_{bv} \qquad (2.2)$$

Y_{bv} is a measure of overall *panchayat* activism in village v, block b. We use two different measures. The first one is derived from the PRA and is constructed as the mean of the standardized counts of activities across all public goods categories. The second one is an indicator for meeting with higher level officials[18]. α_b are block fixed effects. P_{bv} is the matrix of president characteristics[19], and V_{bv} is the set of village characteristics[20]. W_{bv} is an indicator for whether the GP to which the village v belongs is reserved for women. The coefficient η is an estimate of the impact of women's reservations conditioning on everything else. ϕ provides an estimate of the differential impact of president characteristics in villages with GPs reserved for women, relative to unreserved ones. p_{bv} is one column vector of P_{bv}[21]. We examine how the president's age, education, wealth,

[18]The PRA results have more variation than the results from the facilities. Results using facilities data as outcomes tend to have similar signs as the PRA results but are almost always insignificant. Hence, for the sake of brevity, we do not report the facilities survey results in these interaction tables.

[19]age categories: young (21-30), prime(30-50), old(50+); education (years); number of terms previously served as either president or ward member; dummy for wealthy (= 1 if owns TV or radio, watch, and fan); landholding(acres)

[20]proportion land controlled by upper castes; land Gini categories: low (1st quartile), medium(interquartile range), high(4th quartile), literacy rate, fraction landless, pradhan's village

[21]15% of pradhans in unreserved GPs are women so we can also control for pradhans sex in these regressions. Adding this slightly weakens the effect of reservation but does not change the effects of interactions. We do not report them.

land holding and political experience affect his or her performance in reserved relative to unreserved *panchayat*s.

Table 2.10 reports the results for these five specifications using the measure of performance from PRA. The most important result is that political experience matters in *panchayat*s reserved for women. In fact, women presidents without previous political experience perform worse relative to their male counterparts. But, keeping in mind that experience is measured as number of terms served, as women gain experience they catch up to men and potentially surpass them. This is an optimistic result that provides an empirical basis for encouraging women to take leadership positions. When interpreting this result, it should also be noted that women face considerable hurdles in being elected president in unreserved constituencies. However the number of terms served includes terms served as ward member which perhaps are within reach of women even in the absence of reservations.

Table 2.11 illustrates how president characteristics impact the likelihood of meeting with higher level officials. Age, landholding and political experience have a significantly different impact on women and men presidents. Young and middle age women presidents are more likely to meet with higher level officials than young and middle age men presidents. At low levels of land holding male presidents are more likely to meet higher officials, but as land holdings increase female presidents become more likely to meet higher officials. Political experience again plays an important role, particularly for women presidents; as women gain experience they start catching up with men in the likelihood of meeting higher officials.

Reservations and village characteristics

Another important question that has to be addressed is the extent to which inequality and concentration of power in one caste in the village affect the effectiveness of women presidents? Can elite domination affect *panchayat* governance, particularly in reserved GPs? We use an OLS framework identical to the

previous one except that now we interact reservation with village characteristics.

$$Y_{bv} = \alpha_b + \beta P_{bv} + \gamma V_{bv} + \eta W_{bv} + \phi(v_{bv} * W_{bv}) + \varepsilon_{bv} \quad (2.3)$$

The notations are the same as before; v_{bv} is a subset of V_{bv}. We examine the differential effect of upper-caste domination and land inequality in reserved and unreserved GPs. Table 2.12 presents the results for the measure derived from PRA. The first village characteristic of interest is the proportion of land held by upper castes - which indicates the extent to which upper castes are "dominant" in village life [Srinivas(1959)]. We observe that, in reserved GPs, a higher proportion of land held by upper castes leads to lower overall GP activism. Furthermore, in villages where upper castes hold only small fractions of land women presidents are more effective than men[22]. Since the caste distribution of villages with women-reserved and unreserved presidents are not significantly different, these results should not be interpreted as high castes blocking the efforts of low castes, but of patriarchy being more pronounced in villages dominated by upper castes which stifles women's ability to lead. There is no significant differential effect of land inequality, which suggests that large fractions of land in the hands of a small group is only harmful if that group happens to be the upper caste. These results are, however, not observed in Table 2.13 which report on the determinants of meeting higher officials.

Reservations and States

The advantage of using block pair fixed effects (as described in the sampling strategy) is that it allows us to estimate state effects and thus it permits us to examine how reservations work across states, controlling for historic and

[22] By our calculations (available on request), at the average level of upper caste land fraction (0.25) there is no significant difference between women and men presidents. However, as the proportion of land held by upper castes increases, women presidents tend to become significantly less effective than men presidents. A referee suggests an alternative explanation for these results; that in villages with high fractions of upper caste land, the upper castes may dominate PRA group surveys, so the effectiveness of women Presidents in these villages could simply be underreported in the PRA. We feel this is unlikely. PRA participants were carefully selected to represent all the numerically important groups in the village and moderators were instructed to prevent domination of the discussion by any one one group.

linguistic similarities. We use the same framework and introduce interaction with state dummies.

$$Y_{pv} = \alpha_p + \delta S_{pv} + \beta P_{pv} + \gamma V_{pv} + \eta W_{pv} + \phi(S_{pv} * W_{pv}) + \varepsilon_{pv} \qquad (2.4)$$

Y_{pv} is the measure of overall GP activism in village v, pair p. α_p represents the pair fixed effects. S_{pv} are state dummies[23]. The rest of the variables are the same as the block fixed-effects specification. In Table 2.14 we explore the extent to which the effects of women's reservation on the measure of activity derived from PRA, differs across states. Only in Andhra Pradesh do we see a significant difference between the performance in reserved and unreserved constituencies, with reserved constituencies underperforming. This result may be due to a politically immature reservation and electoral system in Andhra Pradesh. In the three other states the differences are not significant. However, this result should be interpreted with caution as there are only 3 woman Presidents in the Andhra Pradesh sub-sample.

Table 2.15 presents the results for the measures derived from meeting higher officials. The results show that the overall lower likelihood of meeting higher officials in reserved constituencies is driven by the state of Kerala. In Andhra Pradesh and Tamil Nadu, women presidents are more likely to meet higher officials, while in Karnataka there is no significant difference.

2.4 Conclusion

The results of this analysis do not show a simple women's reservations effect. We do however conclude that women presidents never perform worse than men. A notable exception is in their interaction with higher level officials were they do not do as well as men. Unlike Chattopadhyay and Duflo (2004) there is no evidence to show that reserved women presidents act in ways that are more

[23] We keep Kerala as the omitted category

congruent with the preferences of women. The contrast with Chattopadhyay and Duflo may reflect the fact that their evidence is from Rajasthan and West Bengal, an area of India with much higher gender differentials than South India where our survey was conducted.

Concerning the characteristics of women presidents, we find evidence against two channels of tokenism. Women are as likely to be persuaded to contest by political elites as unreserved presidents; less than 20 percent are persuaded to contest by their husbands. Women presidents are not weak. They are from the upper end of the distribution of women and tend to be more knowledgeable about political activities, more politically experienced, and wealthier than the average woman.

Another important message is that heterogeneity matters. In particular, women presidents in reserved GPs are unambiguously more effective when they are more experienced. Furthermore, we see that women in reserved GPs perform worse when most of the land in the village is owned by upper castes. This suggests that caste structures may be correlated with structures of patriarchy making the job of women particularly difficult when they are confronted with entrenched hierarchies. There is also some evidence to suggest that women presidents in reserved GPs in AP perform the worst, while those in Kerala and Karnataka tend to perform better. This in conjunction with the positive effect of the presidents political experience together suggest a hopeful future. As women acquire more experience via the reservations system, and as the system continuous to mature, women will become more effective leaders. Thus, our results are far more supportive of the "optimists" than the "pessimists" but suggest that women presidents may benefit from facilitation and training in less supportive institutional environments.

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Table 2.1: Fraction Women among Presidents in Reserved and Unreserved GPs

	GP reserved for women	Unreserved GP
Andhra Pradesh		
number GPs (number villages)	3(6)	14(15)
Proportion of Female Presidents	100%	14.3%
Karnataka		
number GPs (number villages)	7(20)	23(62)
Proportion of Female Presidents	100%	34.8%
Kerala		
number GPs (number villages)	6(36)	8(48)
Proportion of Female Presidents	100%	0%
Tamil Nadu		
number GPs (number villages)	11(31)	34(92)
Proportion of Female Presidents	100%	2.9%
Overall		
number GPs (number villages)	27(93)	79(217)
Proportion of Female Presidents	100%	15.2%

Note: Sample excludes GPs reserved for SC/STs, OBCs, SC/ST women, or OBC women.

Table 2.2: Exogeneity of Reservation

Variable (1991 census)	Marginal effect on probability of being reserved	Number of Observations
Population	0.003	103
	(0.246)	
Proportion Women	6.765	102
	(1.574)	
Fraction villages with educational facilities in GP	-0.222	100
	-(1.440)	
Fraction villages with medical facilities in GP	-0.318	100
	-(2.117)**	
Fraction villages with drinking water in GP	-0.157	100
	-(0.928)	
Fraction villages with postal facility in GP	-0.067	100
	-(0.563)	
Fraction villages with communication facility in GP	-0.043	100
	-(0.332)	
Fraction villages with power supply in GP	-0.204	100
	-(1.149)	
Fraction irrigated land in GP	-0.490	101
	-(1.742)*	
Average distance from town in GP	0.000	101
	(0.011)	
GP female literacy	-0.310	102
	-(0.747)	
GP male literacy	-0.238	103
	-(0.653)	
GP female employment	0.378	102
	(0.998)	
GP male employment	-0.198	103
	-(0.217)	

Note: 1) The marginal effects are computed from individual probit regressions with state fixed effects,
2) The total number of GPs is 106, not all variables are available for all GPs hence
the lower number of used observations
3) z-values in parentheses ** significant at 5 percent, * significant at 10 percent
4) In a probit with all the RHS variables included a chi–squared test cannot reject the null hypothesis that all the coefficients are jointly = 0

Table 2.3: Effect of Women's Reservation on Women's Participation

	Mean, Reserved GP	Mean, Unreserved GP	Difference	Nr.obs
Fraction women among	0.3619	0.3350	0.0270	211
Gram sabha participants	(0.0145)	(0.0107)	(0.0180)	
Fraction villages with	0.0680	0.0326	0.0354	300
women's NGOs	(0.0221)	(0.0111)	(0.0269)	
Fraction villages with	0.2134	0.1999	0.0135	304
women's CBOs	(0.0396)	(0.0268)	(0.0470)	

Note: 1) Standard errors, controlling for block fixed effects, clustered at GP level in parenthesis.
2) Sample excludes GPs reserved for SC/STs, OBCs, SC/ST women, or OBC women.
3) The difference between the number of observations and total number of villages (310) is due to the questions not being answered in all villages
4) CBO - Community Based Organization
5) Only NGOs and CBOs formed after last GP president election are counted

Table 2.4: President activity in reserved and unreserved villages, using outcomes from PRA, facilities, and president survey

	Reserved for Women	Unreserved	Difference	N
Outcomes from PRA				
Water	-0.047	0.020	-0.067	310
	(0.075)	(0.057)	(0.098)	
Health	0.056	-0.024	0.080	310
	(0.087)	(0.058)	(0.096)	
Education	0.129	-0.055	0.184	310
	(0.071)	(0.054)	(0.089)**	
Sanitation	0.012	-0.005	0.017	310
	(0.091)	(0.060)	(0.115)	
Roads	-0.020	0.009	-0.029	310
	(0.060)	(0.049)	(0.077)	
Transport	-0.028	0.012	-0.039	310
	(0.076)	(0.069)	(0.103)	
Electricity	-0.076	0.032	-0.108	310
	(0.097)	(0.062)	(0.119)	
Joint significance test p-value				0.392
Outcomes from Facilities				
Drinking water	0.239	0.253	-0.014	310
			(0.044)	
Schools	0.346	0.382	-0.036	310
			(0.066)	
Anganwadi	0.265	0.269	-0.004	310
			(0.034)	
Roads	0.492	0.526	-0.034	310
			(0.040)	
Joint significance test p-value				0.876
Outcomes from president Survey				
Met higher Panchayat	0.378	0.580	-0.202	106
			(0.078)**	

Notes: 1) The estimation of the difference includes block fixed-effects
2) ** significant at 5 percent

Table 2.5: Men's and women's priorities, 2 years ago, as expressed in the answers to the PRA questionnaire

Category	Fraction villages with women expressing preference for the category	Nr obs with women's preferences	Fraction villages with men expressing preference for the category	Nr obs with men's preferences	Difference: women - men
Water	0.466	307	0.392	310	0.075
					(0.033)**
Health	0.055	307	0.055	310	0.003
					(0.016)
Education	0.036	307	0.035	310	0.000
					(0.013)
Sanitation	0.101	307	0.048	310	0.052
					(0.019)***
Roads	0.094	307	0.177	310	-0 081
					(0.024)***
Transport	0.042	307	0.029	310	0.013
					(0.010)
Electricity	0.026	307	0.035	310	-0.010
					(0.013)

Note: 1) Preferences of women derived from women's PRA, preferences of men - from general PRA; 3 villages did not have a women's PRA

2) Difference is estimated with a linear probability model with the preference indicator as dependent variable and the female indicator as regressor

3) Village fixed effects included in estimation of difference

4) Standard errors of difference are clustered by village, in parenthesis

5) ** significant at 5 percent, *** significant at 1 percent

Table 2.6: Men's and women's priorities, 2 years ago, as expressed in the answers to the Household questionnaire

Category	Fraction women expressing preference for the category	Fraction men expressing preference for the category	Difference: women - men	Nr. Obs.
Water	0.357	0.351	-0.010	2113
			(0.020)	
Health	0.042	0.049	-0.005	2113
			(0.009)	
Education	0.019	0.022	0.003	2113
			(0.007)	
Infrastructure	0.309	0.316	-0.003	2113
			(0.021)	
Transport	0.042	0.046	0.003	2113
			(0.008)	
Electricity	0.058	0.044	0.013	2113
			(0.009)	
Housing	0.010	0.012	-0.001	2113
			(0.005)	

Note: 1) Difference is estimated with a linear probability model with the preference indicator as dependent variable and the female indicator as regressor
2)Village fixed effects included in estimation of difference
3) Standard errors clustered by village, in parenthesis
4) The sample consists of literate individuals at least 21 years old

Table 2.7: Persuasion

Person who persuaded to contest election	Reservation status	
	women	unreserved
Self initiated	2	16
	(7.41)	(20.25)
Political	5	14
	(18.52)	(17.72)
Spouse	5	1
	(18.52)	(1.27)
Relative and neighbors	4	13
	(14.81)	(16.46)
Caste and other groups	6	25
	(22.22)	(31.65)
Other	5	10
	(18.52)	(12.66)

Note:1)Percentages out of total reservation category size in parentheses

2) Political category includes: MP/MLA/party official, previous president, important leader in community, other ward members

3)Other includes: NGO and other unspecified categories

Table 2.8: Summary of individual characteristics

Characteristic	(1) eligible population	(2) eligible women	(3) eligible men	(4) president reserved for women	(5) unreserved president
Age	38.096	36.760	39.091	39.148	43.468
	(14.161)	(13.800)	(14.346)	(10.862)	(11.502)
Education	6.474	5.746	7.016	6.074	8.456
	(4.312)	(4.319)	(4.227)	(4.287)	(3.426)
HH landholding	2.814	2.765	2.850	7.909	9.244
	(5.157)	(5.189)	(5.133)	(9.597)	(9.654)
HH wealthy	0.420	0.440	0.404	0.778	0.722
	-	-	-	-	-
Knowledge score	3.602	2.424	4.439	3.185	4.608
	(2.218)	(1.974)	(1.990)	(1.642)	(0.912)
HH members age 0-5	0.674	0.688	0.664	0.370	0.595
	(0.975)	(0.993)	(0.961)	(0.839)	(0.899)
HH members age 6-10	0.513	0.543	0.491	0.481	0.620
	(0.814)	(0.826)	(0.804)	(0.849)	(0.773)
HH members age 11+	5.229	5.170	5.273	4.778	5.570
	(2.464)	(2.474)	(2.455)	(1.717)	(2.735)
Former president. or				7.41%	12.66%
ward member. in HH				1	10
Any former political				29.63%	25.32%
position in HH				8	20
Political experience					
0				55.6%	46.8%
				15	37
1				44.4%	38.0%
				12	30
2+				0.0%	15.2%
				0	12
Nr Obs.	7179	3064	4115	27	79

Note: 1) Wealthy = 1 if owning TV or radio, watch, and fan

2) Knowledge score only available for respondent, not entire household roster

Table 2.9: President Characteristics Comparisons

	(1)	(2)	(3)	
	President in Reserved Seat		Unreserved Seat	
	Compared with eligible women	Compared with unreserved presidents	Compared with eligible men	(3) - (1)
Age	2.085	-4.734	5.475	
	(2.212)	(2.237)**	(1.342)***	
Education	1.245	-2.620	1.768	
	(0.842)	(0.766)***	(0.402)***	
Land owned	2.566	0.110	6.348	**
	(1.264)**	(1.499)	(1.150)***	
Wealthy (dummy)	0.369	0.054	0.317	
	(0.087)***	(0.110)	(0.050)	
Knowledge score	1.004	-1.413	0.383	
	(0.300)***	(0.292)	(0.122)***	***
HH members age 0-5	-0.427	-0.118	-0.119	
	(0.142)***	(0.196)	(0.108)	
HH members age 6-10	-0.133	-0.047	0.055	
	(0.163)	(0.188)	(0.087)	
HH members age 11+	-0.368	-0.520	0.403	
	(0.313)	(0.397)	(0.295)	
Political experience		-0.461		
		(0.188)**		
N	3064	106	4115	

Note: 1) Literate individuals, aged 21 and above are the eligible population
2) The coefficient reported is that of the dummy for being elected in a seat reserved for women/unreserved
3) Block fixed effects included in all comparisons
4) The GPs reserved for SC/ST, SC/ST women, OBC and OBC women are excluded
5) Controls for SC/ST included in regressions (1), (2), and (3)
6) Controls for SC/ST, religion, household head literacy, household head occupation, household size, village literacy rate, inequality, oligarchy in (2)
7) Standard errors, clustered at GP level in parentheses
8) * significant at 10 percent; ** significant at 5 percent; *** significant at 1 percent

Table 2.10: Effect of women's reservation: Interactions with individual characteristics; Overall GP activity measured from PRA

	Overall GP activity				
	Age	Education	Wealthy	Land	Political exp.
Reservation for Women	0.188	0.090	0.207*	0.099	-0.358*
	(0.119)	(0.137)	(0.115)	(0.078)	(0.181)
President Young	-0.068				
	(0.173)				
President Prime	0.061				
	(0.127)				
Women Res * Young	0.230				
	(0.178)				
Women Res * Prime	-0.263*				
	(0.154)				
President Education		0.022*			
		(0.012)			
Women res * Edu		-0.003			
		(0.016)			
President wealthy			-0.186***		
			(0.066)		
Women res * wealthy			-0.178		
			(0.123)		
President land				0.006	
				(0.005)	
Women res * land				-0.005	
				(0.007)	
President Political Exp					-0.030
					(0.043)
Women res. * Exp					0.268**
					(0.111)
Adj. R-sq	0.501	0.493	0.495	0.493	0.500
N	297	297	297	297	297

Notes: 1)standard errors clustered at GP level in parenthesis,
* significant at p=0.1, ** significant at p=0.05
2) Sample excludes GPs reserved for SC/STs, SC/ST women, OBC, OBC women
3) The difference between N (297) and the number of villages in the sample (310) comes from villages for which the population is not available
4) Block fixed effects included in regression
5)Overall GP activity is an average of standardized measures from PRA
6)The levels of all variables in 9 and 10 are included in all specifications; the coefficients on the levels are reported only for the interacted variables
7)In addition, variables included but not reported: fraction landless, literacy rate, indicator for GP headquarter

Table 2.11: Effect of women's reservation: Interactions with individual characteristics; Meeting higher Panchayat

	Met higher *panchayat*				
	Age	Education	Wealthy	Land	Political exp.
Reservation for Women	-0.639***	-0.082	-0.050	-0.320***	-1.028***
	(0.207)	(0.254)	(0.246)	(0.121)	(0.287)
President Young	-0.282				
	(0.220)				
President Prime	0.130				
	(0.137)				
Women Res * Young	0.912**				
	(0.388)				
Women Res * Prime	0.393*				
	(0.235)				
President Education		0.016			
		(0.022)			
Women res * Edu		-0.019			
		(0.033)			
President wealthy			0.178*		
			(0.103)		
Women res * wealthy			-0.217		
			(0.268)		
President land				-0.006	
				(0.006)	
Women res * land				0.017*	
				(0.009)	
President Political Exp					-0.060
					(0.067)
Women res. * Exp					0.533***
					(0.183)
Adj. R-sq	0.625	0.604	0.606	0.614	0.639
N	102	102	102	102	102

Notes: 1)standard errors clustered at GP level in parenthesis,
* significant at p=0.1, ** significant at p=0.05, *** significant at p = 0.01
2) Sample excludes GPs reserved for SC/STs, SC/ST women, OBC, OBC women
3) The difference between N (102) and the number of presidents in the sample (106) comes from villages for which the population is not available
4) Block fixed effects included in regression
5)The levels of all variables in 9 and 10 are included in all specifications; the coefficients on the levels are reported only for the interacted variables
6)In addition, variables included but not reported: fraction landless, literacy rate,

Table 2.12: Effect of women's reservation: Interactions with village characteristics; Overal GP activity measured from PRA

	Overall GP activity	
	Proportion Upper caste land	Land Gini
Reservation for Women	0.157**	0.011
	(0.074)	(0.073)
Upper Caste Land Prop.	0.156	
	(0.103)	
Women res. * Upper Prop.	-0.367**	
	(0.177)	
Gini Low		-0.120
		(0.079)
Gini High		0.013
		(0.087)
Women res * Gini Low		0.152
		(0.147)
Women res * Gini High		0.052
		(0.133)
Adj. R-sq	0.498	0.493
N	297	297

Notes: 1)standard errors clustered at GP level in parenthesis,
* significant at p=0.1, ** significant at p=0.05
2) Sample excludes GPs reserved for SC/STs, SC/ST women, OBC, OBC women
3) The difference between N (297) and the number of villages in the sample (310) comes from villages for which the population is not available
4) Block fixed effects included in regression
5)Overall GP activity is an average of standardized measures from PRA
6)The levels of all variables in 9 and 10 are included in all specifications; the coefficients on the levels are reported only for the interacted variables
7)In addition, variables included but not reported: fraction landless, literacy rate, indicator for GP headquarter

Table 2.13: Effect of women's reservation: Interactions with village characteristics; Meeting higher Panchayat

	Met higher *panchayat*	
	Proportion Upper caste land	Land Gini
Reservation for Women	-0.161	-0.114
	(0.134)	(0.122)
Upper Caste Land Prop.	0.278	
	(0.201)	
Women res. * Upper Prop.	-0.176	
	(0.367)	
Gini Low		0.071
		(0.110)
Gini High		0.039
		(0.186)
Women res * Gini Low		-0.120
		(0.207)
Women res * Gini High		-0.579***
		(0.199)
Adj. R-sq	0.603	0.612
N	102	102

Notes: 1)standard errors clustered at GP level in parenthesis,
* significant at p=0.1, ** significant at p=0.05
2) Sample excludes GPs reserved for SC/STs, SC/ST women, OBC, OBC women
3) The difference between N (102) and the number of presidents in the sample (106) comes from villages for which the population is not available
4) Block fixed effects included in regression
5)The levels of all variables in 9 and 10 are included in all specifications; the coefficients on the levels are reported only for the interacted variables
6)In addition, variables included but not reported: fraction landless, literacy rate,

Table 2.14: Effect of women's reservation: State Interactions; Overall GP activity from PRA

	Overall GP activity
Reservation for Women	0.175
	(0.127)
Andhra Pradesh	1.377***
	(0.355)
Karnataka	0.608***
	(0.194)
Tamil Nadu	0.248
	(0.180)
Women res. * AP	-1.074***
	(0.328)
Women res. * KA	0.108
	(0.211)
Women res. * TN	-0.215
	(0.160)
Adj. R-sq	0.347
N	285

Notes: 1)standard errors clustered at GP level in parenthesis,
* significant at p=0.1, ** significant at p=0.05, *** significant at p =0.01
2) Sample excludes GPs reserved for SC/STs, SC/ST women, OBC, OBC women
3) The difference between N (285) and the number of villages in the sample (310)
comes from villages for which the population is not available,
and from one block which is not included in any block pair, hence dropping out of the estimation
4) Block pair fixed effects included in regression
5)Overall GP activity is an average of standardized measures from PRA
6)The levels of all variables in 9 and 10 are included in all specifications;
the coefficients on the levels are reported only for the interacted variables
7)In addition, variables included but not reported: fraction landless,
literacy rate, indicator for GP headquarter

Table 2.15: Effect of women's reservation: State Interactions; Meeting higher Panchayat

	Met higher *panchayat*
Reservation for Women	-0.490**
	(0.235)
Andhra Pradesh	-1.086***
	(0.298)
Karnataka	-0.312
	(0.227)
Tamil Nadu	-0.320
	(0.231)
Women res. * AP	0.539*
	(0.305)
Women res. * KA	0.577*
	(0.321)
Women res. * TN	0.052
	(0.272)
Adj. R-sq	0.556
N	100

Notes: 1)standard errors clustered at GP level in parenthesis,
* significant at p=0.1, ** significant at p=0.05, *** significant at p =0.01
2) Sample excludes GPs reserved for SC/STs, SC/ST women, OBC, OBC women
3) The difference between N (100) and the number of presidents in the sample (106) comes from villages for which the population is not available,
and from one block which is not included in any block pair, hence dropping out of the estimation
4) Block pair fixed effects included in regression
5)The levels of all variables in 9 and 10 are included in all specifications
the coefficients on the levels are reported only for the interacted variables
6)In addition, variables included but not reported: fraction landless, literacy rate

Annex 1: Summary of activity counts by reservation status

Nr.	water		health		education		sanitation	
Activities	woman	open	woman	open	woman	open	woman	open
0	68	136	67	157	60	145	74	157
%	73.12	62.67	72.04	72.35	64.52	66.82	79.57	72.35
1	23	72	20	47	29	63	17	54
%	24.73	33.18	21.51	21.66	31.18	29.03	18.28	24.88
2	2	9	6	13	4	8	2	5
%	2.15	4.15	6.45	5.99	4.30	3.69	2.15	2.30
3	0	0	0	0	0	1	0	1
%	0.00	0.00	0.00	0.00	0.00	0.46	0.00	0.46
4	0	0	0	0	0	0	0	0
%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
mean	0.29	0.41	0.34	0.34	0.40	0.38	0.23	0.31
N	93	217	93	217	93	217	93	217

Annex 1(cont): Summary of activity counts by reservation status

Nr.	roads		transport		electricity	
Activities	woman	open	woman	open	woman	open
0	46	110	89	199	45	103
%	49.46	50.69	95.70	91.71	48.39	47.47
1	39	87	4	17	35	79
%	41.94	40.09	4.30	7.83	37.63	36.41
2	8	16	0	1	12	27
%	8.60	7.37	0.00	0.46	12.90	12.44
3	0	4	0	0	1	2
%	0.00	1.84	0.00	0.00	1.08	0.92
4	0	0	0	0	0	6
%	0.00	0.00	0.00	0.00	0.00	2.76
mean	0.59	0.60	0.04	0.09	0.67	0.75
N	93	217	93	217	93	217

Annex 2: Summary of Outcomes from facilities data by reservation status

	drinking water		schools		anganwadi		roads	
	woman	open	woman	open	woman	open	woman	open
Improve since last GP election								
No	69	164	57	138	66	161	43	107
%	74.19	75.58	61.29	63.59	70.97	74.19	46.24	49.31
Yes	24	53	36	79	27	56	50	110
%	25.81	24.42	38.71	36.41	29.03	25.81	53.76	50.69
N	93	217	93	217	93	217	93	217

Annex 3
Summary of Meeting
higher *panchayat*

	woman	open
No	16	34
%	59.26	43.04
Yes	11	45
%	40.74	56.96
Total	27	79

Chapter 3

Taking Care of the Elderly: The Effect of Electoral Incentives on the Old Age Assistance Program, 1931-1955[1]

Introduction

Between 1950 and 1996, Social Security coverage expanded from 16 percent to over 90 percent of the elderly population, and benefits increased by over 270 percent ([Campbell 2003], 15-16).[2] As a result, in 1997, nearly 50 percent of the federal budget (about 10 percent of GDP) was used to pay for or subsidize services mainly aimed at the elderly ([Mulligan and Sala-I-Martin 1999a]). Demographics alone cannot fully explain the structure or the growth in government welfare programs for the elderly; political factors are most likely part of the explanation as well ([Mulligan and Sala-I-Martin 1999b] and [Muligan and Sala-I-Martin 1999c]). Media coverage of the elderly often depicts them as an increasingly powerful and highly successful political bloc, and seniors are, indeed, more politically active

[1] This chapter is based on joint work with Andreea Balan Cohen

[2] Between 1965 and 1997, the consumer price index rose by 397 percent, average wages by 476 percent, and Social Security benefits by 502 percent (Campbell 2003, 16)

relative to non-seniors.[3]

A fundamental question of political economy is whether, in a representative democracy, policy is shaped by the preferences of the voters or by the institutions (rules) governing the decision-making process. While institutions in general and term limits in particular have been shown to shape a variety of policies, from fiscal policy ([Besley and Case 1995]) to environmental policy ([List and Sturm 2006]), old age pensions have been considered to be influenced mainly by voters' preferences (see, for example, Persson and Tabellini [2000], section 6.2.3 for a review). In our paper we argue that, during its inception, the old age assistance program in the United States was shaped by institutions rather than preferences. Specifically, we show that, between 1931 and 1955, the political incentives generated by the institution of gubernatorial term limits affected the amount of assistance provided for the elderly.

Recent work ([Campbell 2003]) has shown that the expansion of the Social Security program and the rise in elderly political participation from the late 1950s onwards are indeed related, but with the growth in the Social Security program providing the starting point. In its early years, the Social Security program expanded "through the urgings of the Social Security Administration"; as the program grew, it increased seniors' political participation—by enhancing their free time and incomes—, which, in turn, helped ensure further program growth([Campbell 2003]).

Although the growth in the old age insurance (OASI) component of the Social Security program between 1935-1950s was indeed isolated from political pressures, the expansion of its welfare component—the Old Age Assistance (OAA) Program—was not. As we discuss in this paper, since the OAA program was administered at the state level, it was substantially more open to political

[3]For instance, between 1952 and 1996, senior voting in presidential elections increased by 15 percent (from 73 to 84 percent), whereas voting among the 18-35 and 35-64 age groups decreased by 16 percent (from 68 to 57 percent) and stayed constant (at about 77 percent) respectively (authors' calculations based on data in Campbell 2003, 28). In midterm elections, contemporary turnout differences among the elderly and other age groups are even more striking: seniors are now more than twice as likely to vote compared to those under 35 (Campbell 2003, 29). In addition, elderly are more likely to make campaign contributions, volunteer, and contact senators and congressmen through letter-writing (Campbell, 2003).

influences, and elderly politics did play a very large role in its expansion.

This paper thus complements Campbell (2003) and makes several contributions to the literature on the impact of politics on welfare programs for the elderly. First, we show that, as predicted by our theoretic model, the variation in OAA benefits between 1935-1955 was due in part to governors' vote seeking behavior. In order to identify the effect of political processes on OAA, we use the exogenous variation in political incentives provided by gubernatorial term limits to show that only governors who were able to run for reelection manipulated OAA payments, and that the elderly recipients were indeed the targeted group.

Second, our model predicts and the results confirm that governors used OAA for political purposes only in the states where OAA supporters represent a moderately sized population. At very low and very high numbers of supporters the costs of increasing OAA exceed the electoral benefits. Third, we show that governors facing higher electoral competition increased OAA benefits more than those in uncontested states.

The paper proceeds as follows. Section 1 presents a review of the related literature. Section 2 presents a brief history of the OAA program, and explains why this program, unlike OASI, was open to political influence. In section 3 we show how existing models of the influence of political incentives on economic policy can be modified to motivate the empirical findings. Section 4 describes the data and the empirical framework, and section 5 presents the results. In section 6 we investigate whether the political incentives for manipulating OAA may be due to the changing patterns of elderly political participation between 1931 and 1955. While we cannot provide definitive, empirically backed, evidence to this claim, we do review existing literature and secondary data. Section 7 concludes.

3.1 Related Literature

Our results are related to, but not readily reconciled with, three main strands of literature. To begin with, since we examine early welfare spending programs from a political angle, our results are related to the writings on the politicizing of New Deal relief programs ([Wright 1974], [Wallis 1987], [Anderson and Tollison 1991], [Couch and Shughart 1998], [Fishback 1999], [Fleck 2008]). This literature is concerned with the impact of state political power (at the national level) on the ability of states to attract federal New Deal resources. In this paper, however, we take a different approach, and focus on state level policy issues instead. By using the variation in term limits and focusing on specific welfare spending programs (OAA, AB, and ADC), we are able to isolate more clearly the political incentives faced by decision makers.

By focusing on the politics of a previously unexplored elderly Social Security program (OAA), as well as on an early time period 1931-1955, our results are also complementary to the "gerontocracy" literature which documents the political clout of the elderly as a lobby group in the post 1950s time period (Mulligan and Sala-I-Martin 1999a,b,c; Campbell 2003). As discussed in the introduction and section 6, we extend this literature by showing that, contrary to previous assumptions, the elderly were a powerful political force even prior to the Social Security amendments of 1950, albeit at the state, rather than the national level.

Finally, our paper is most closely related to the recent political economy literature which use term limits to estimate the effect of political incentives on economic policies ([Besley and Case 1995], [List and Sturm 2006]). We follow a similar approach to these papers, but we focus on an earlier time period, different policy variables, and use a new dataset on term limits and gubernatorial characteristics. Additionally, we contribute to this literature by addressing the choice of OAA policy tools by state governors, and showing that benefits were preferred to recipients due to their lower administrative costs and higher political benefits. Finally, as it will be discussed in greater detail below and in the next

section, we offer new insights on the role of policies to attract additional votes in the context of rival (rather than non-rival) benefits from state spending.

In their seminal paper, Besley and Case (1995) focus on state fiscal policies, and show that governors eligible for reelection have lower governmental expenditures and taxes due to the disciplining mechanism of elections. Furthermore, they also provide some evidence that term-limited governors are more likely to reverse redistributive policies (like minimum wages increases) than incumbents who are not constrained. List and Sturm (2006) use term limits to show that political incentives drive the decisions on secondary policy issues in ways that are not consistent with median voter or lobby models. They show that environmental spending differs between terms when the limit is biting and terms when the governor is eligible for reelection, and that this variation is larger when the states are "greener", i.e. when the proportion of pro-environmental voters in a state increases. The intuition for their second result is that governors who are catering to the pro-environmental interests in the greener states when they can run for reelection will reduce environmental spending once they become lame ducks.

In the setting of our paper, OAA spending is unlikely to be considered a secondary policy issue, since recipiency rates were as high as 50 percent of all elderly population in some states. Nevertheless, we also find significant variation in OAA spending between term-limited and not term-limited governors. However, in contrast to List and Sturm (2006), we find that this variation in OAA policy depends non-linearly on the share of the target population, namely the elderly. The main difference between our results and those from List and Sturm (2006) stems from the fact that environmental spending is, to a certain degree non-rival, whereas OAA spending is essentially rival. Hence, a fixed amount of environmental spending will bring the votes of all green voters in a state, regardless of their group size. By contrast, an increase in the number of people eligible for OAA results in lower spending per recipient. In the next section we show how to incorporate this insight into a career concern model in the vein

of Besley and Case (1995) and List and Sturm (2006), and that our empirical findings from section 5 are consistent with the predictions from this model.

3.2 OAA Background: Evolution and Politicizing, 1935-1955

3.2.1 The Structure and Evolution of the OAA Program, 1935-1955

The passage of the Social Security Act in 1935 marked the beginning of old-age pension programs in the United States.[4] It included provisions for two main programs targeted at the elderly, Old age Assistance (OAA) and Old Age Insurance (OASI). OASI later developed into the current Social Security Program, and was federally administered; OAA, on the other hand, was need-based and intended to be temporary, until the OASI Program would be fully rolled out.

We have described the characteristics and evolution of the OAA program between 1935 and 1955 in more detail elsewhere ([Balan Cohen 2006]). For the purpose of this paper, it is important to note four main features of the OAA program. First, the OAA program was very large in size, both absolutely (even by modern standards), and relative to OASI.[5] Second, although the federal government provided matching funds according to a pre-specified common formula, the ultimate responsibility in administering the program and in determining OAA benefits and recipients rested with the states themselves. A person generally qualified if she was 65 years and older, and if her level of resources was below a

[4] Although on paper 27 states had old age programs before 1935, in practice recipiency rates were close to zero almost everywhere, and benefits levels were very low[Costa 1988].

[5] Despite its present-day size and importance, until 1950 OASI was the smaller of the two programs; in 1947, for instance, 97 percent of the combined OAA and OASI payments went to OAA. In 1950, at the peak of the OAA program, 22 percent of the total elderly population (2.8 million people) were receiving benefits, and in some states, recipiency rates were as high as 50 percent. The size of the benefits was also high, with OAA benefits representing, on average, 11 percent of the average personal after-tax income, and about 20 percent of elderly per capita income during this time period

certain cutoff level that varied by state. Finally, the evolution of OAA program between 1935 and 1955 was characterized by enormous variation in benefits and recipients across states and time.[6]

3.2.2 OAA and State Politics

The OASI program was relatively isolated from political pressures during its early years. ([Lieberman 1998]) offers several explanations for this. First, since OASI was administered at the federal level, it was less susceptible to political pressures at lower levels. Second, since work under OASI was entirely procedural until 1941, it relied heavily on standard routines and carefully defined operations. Furthermore, even after benefits began to be paid in 1941, the operation of OASI was governed by the details of the Social Security Act, and required few rulemaking and adjudication procedures, thus curtailing the access of potential interest group to the policymaking process. Finally, the OASI program was administered by the Social Security Board, which, at least during its early years, was a politically independent agency.

All of these factors stood in stark contrast to those involved in the administration and implementation of the OAA program. First, since the OAA program was administered at the state rather than federal level, it was much more susceptible to the influence of local interest groups. Federal supervision of state plans limited this to some extent, but the leverage of the federal government over individual states was not very high.[7] Second, the rules for determining eligibility in the OAA program were not established by the Social Security Act or the federal government, but rather by the states' legislatures, creating ample opportunities for political lobbying.[8] Finally, due to its purported temporary

[6] In 1937, for instance, benefits varied from $61 in Mississippi to $380 in California, and OAA recipiency rates from 4 percent in Maine to 50 percent in Oklahoma. There was also a large variation in benefits and recipiency rates within states; for example, between 1940 and 1950, recipiency rates tripled in Alabama and decreased by more than one-half in Delaware.

[7] Since the federal government was not directly involved in administering state plans, it could punish noncompliant states only by cutting off matching federal funds, and thus undermining the program itself. Although the federal government was thus —understandably— reluctant to cut off funds to noncompliant states, it did do so on several "outrageous" occasions— for instance in Oklahoma in 1937.

[8] See for instance Lindford (1949) for a detailed account of the many legislative battles over

nature—until OASI would be fully rolled out—the OAA program was more subject to uncertainty regarding its size, which further increased the susceptibility of the program to political influences.[9]

The OAA program, however, was only one of a total of three welfare programs set up under the Social Security Act of 1935. The other two—Aid to Dependent Children (ADC) and Aid to the Blind (AB)— were targeted to different needy categories in the population, but had very similar administration and implementation characteristics compared to OAA.

Although ADC and AB were also potentially subject to political manipulation, however, the size of these programs between 1935-1955 was very small compared to that of OAA (see Figure 1). In addition, states were far more quicker in setting up OAA compared to ADC and AB programs—whereas all states had federally-approved OAA programs by 1939, this was not the case for ADC & AB programs until 1954. This is at least suggestive of a much higher priority granted to OAA programs in the budget allocation process at the state level.[10]

Political factors can account for much of this difference across programs. Given a set of programs targeted to different recipient categories, welfare programs for the more politically successful group will be larger, because this increases the governors' political payoffs from targeting a particular group.

3.2.3 OAA Policy Tools: Benefits vs. Recipients

State administrators of the OAA program had a choice of two margins along which to adjust state OAA spending in response to a given federal matching subsidy: an intensive margin (adjusting benefits per recipient), and an extensive one (changing the number of recipients through eligibility requirements). Due

OAA in Massachuestts.

[9] For OASI, the obvious connection between current contributions and future benefits ensured a more stable long-run perspective on program size (Lieberman 1998)

[10] An extreme example of this is provided by Colorado's case, whose constitution in 1940 (alterable only by a referendum of voters) stated that 85 percent of all state revenues from excise, consumption, retail and sales, liquor and inheritance taxes was to be allocated to OAA ([Clague and Gordon 1940], 14).

to administrative and political considerations, changing benefits was administrators' preferred policy tool.

To begin with, changing benefits for existing recipients was administratively less expensive than changing the number of recipients. Since OAA eligibility was determined on an individual basis, by visiting social workers, increasing the number of OAA recipients involved administrative costs associated with hiring, training and supervising social workers, as well as with expanding the structure of the OAA program to remoter areas. By contrast, changing the size of OAA benefits simply involved amending the existing OAA legislation and using the existent administrative structure. Furthermore, the "detection" costs associated with changing benefits were also lower, because federal supervision of state OAA plans involved a closer scrutiny of eligibility rules, but imposed no limitations on the size of the benefits.[11]

In addition to being administratively cheaper, changing benefits was also more likely to be politically beneficial, because the political power of current recipients was much greater than that of those who would have been added into the program. For example, the marginal elderly recipients in the South were poorer, more likely to live in rural areas, and more likely to be black compared to the average OAA recipient ([Hawkins 1956], [Quadagno 1988a]). Moreover, even in the richer non-southern states, the marginal OAA recipient was more likely to be poor and geographically isolated due to the higher administrative costs associated with expanding the program further away from high-density population areas.

By contrast, the elderly affected by expansions in the OAA program along the intensive (benefit) margin were more likely to live in richer, more industrial areas. Since the richer northern and western states had administrative and legislative infrastructure for OAA in place even before 1936, they were able to take advantage of federal subsidies faster. As a result, they had few elderly

[11] In Oklahoma in 1938 for instance, the federal government stopped OAA payments to the state upon discovering that ineligible persons were receiving benefits (New York Times, November 24, 1938)

on waiting rolls, and were thus more likely to respond to federal subsidies by increasing benefits rather than recipients. Even in the poorer southern states, changes in benefits were more likely to accrue to the initial recipients of OAA, who were more likely to be white and slightly better off([Quadagno 1988b]).

As we will discuss in more detail in section 6.3, poorer and geographically isolated elderly were less politically active. This was especially true for elderly blacks in the South, who were essentially barred from participating in political activities due to discrimination in the voting process.[12] As a result, the political benefits from manipulating OAA were higher along the benefit rather than the recipient margin.

3.3 Theoretical considerations

At the core of our theoretical interpretation lies the difference in incentives between a term-limited and a governor eligible for re-election. Assuming that a governor draws some private benefits from holding office and that his actions influence the likelihood of re-election, it is reasonable to expect term-limited and re-eligible governors to act differently. Our theoretical interpretation follows the reputation building framework used by List and Sturm (2006). The governor's actions reveal a type ("pro/anti-elderly") to voters who care solely about the type. Furthermore, non-incumbents cannot take actions to reveal their type. If revealing a type increases chances of re-election but is costly, then governors will only take revealing actions when they are standing for re-election. The setup of our model follows closely that of List and Sturm. What distinguishes our model, however, is that the cost of revealing type increases with the size of the target voter group (i.e. elderly).

The candidates (incumbents and non-incumbents) are heterogenous along two dimensions. First, they have an ideology, L or R, which is known to voters.

[12] In 1940, for instance, the proportion of southern blacks registered to vote was only 5 percent [Campbell and Feagin 1975]; as late as the 1950s, this fraction was only 28 percent (Quadagno 1988a, 254).

Second, they have a type, pro- or anti-elderly, which is their private information. The likelihood that a random candidate is pro-elderly is known, π The governor sets the overall level of public spending and also decides if the elderly receive assistance or not. For reasons detailed in section 2.3, we will assume that the governor cannot decide what fraction of the elderly to target. To keep the model simple, we are further assuming that assistance to elderly does not affect the overall level of public spending.[13] Furthermore, governors act strategically only about assistance to elderly. Governors can stand for re-election once.

Voters are divided into three groups, L, R, E, and NE with sizes γ_L, γ_R, γ_E, and γ_{NE} (we normalize total population to 1). L and R voters only care about governor's ideology. E(pro redistribution towards elderly) and NE (against redistribution towards elderly) voters only care about governor's type. We refer to states where $\gamma_E > \gamma_{NE}$ as "pro-elderly" states and to states where $\gamma_E < \gamma_{NE}$ "anti-elderly" states.

Governors are elected by majority rule. The elections are always between one L and one R candidate. The outcome of the election is uncertain, due to a random shock that transfers ε votes from the R to the L candidate ε is distributed with density $h(\varepsilon)$ and cdf $H(\varepsilon)$. $h(.)$ is symmetric around zero, smooth and single peaked. Hence, if the L candidate receives k votes, her probability of winning is:

$$P(k+\varepsilon > \frac{1}{2}) = P(\varepsilon > \frac{1}{2} - k) = 1 - H(\frac{1}{2} - k)$$

Governors get a payoff λ from just being in office. They get an additional payoff based on their decision to redistribute towards the elderly or not. This additional payoff changes depending on the governors type and on the size of the pro-elderly and anti-elderly population. If a governor does not act in accordance with her type she receives a negative, fixed payoff $-F$. If a governor redistributes toward the elderly she receives an additional payoff $-c_i(\gamma_E - \gamma_{NE})$, where c_i

[13] OAA spending was associated with crowding out of other welfare spending programs, and thus the net impact on overall public spending was indeed negligible.

(costs of redistribution) can take a low or high value, c_L or c_H, with probability p and $1-p$, respectively.[14] If a governor redistributes toward the elderly in the first term, the benefits to the elderly remain increased in the second term without needing to pay the redistribution costs again. To reduce notation we will denote $\gamma_E - \gamma_{NE}$ as Δ_E.The governors also have a time discount factor β.

The timing of the model is as follows:

1) nature reveals c_i to the elected governor

2) the governor chooses public spending (non-strategically) and whether to redistribute towards or away from elderly.

3) these choices are observed by the voters

4) if the governor can stand for re-election, then the election is between the incumbent and a random candidate. After election, we are back to step 1); otherwise, two random candidates face off and we also return to step 1).

We are now interested in finding the necessary and sufficient conditions for the following collection of strategies to be an equilibrium in a pro-elderly state($\Delta_E > 0$): pro-elderly governors always give assistance to the elderly; non pro-elderly governors who can stand for reelection give assistance to elderly only if costs are low; the elderly vote for the incumbent if and only if she has given assistance while in office.

If costs are low, a non pro-elderly L governor will give assistance when eligible for reelection if the gains from attracting elderly voters are higher than the costs of giving assistance:

$$\lambda - c_L\Delta_E - F + P(\Delta_E + \gamma_L + \varepsilon > \frac{1}{2})\beta\lambda > \lambda + P(\gamma_L - \Delta_E + \varepsilon > \frac{1}{2})\beta\lambda$$

Where $\lambda - c_L\Delta_E - F$ is the first term payoff if redistributing, $P(\Delta_E + \gamma_L + \varepsilon > \frac{1}{2})$ is the probability of winning a second term if redistributing, $\beta\lambda$ is the

[14]The assumption is that the assistance towards the elderly is supported by taxing the non-elderly, so the larger the difference between the two groups, the higher the distribution costs.

discounted second term payoff, and the left hand side of the inequality are the equivalents without redistribution. This inequality reduces to:

$$F + c_L\Delta_E < \beta\lambda(H(\gamma_L + \Delta_E - \frac{1}{2}) - H(\gamma_L - \Delta_E - \frac{1}{2})) \equiv \beta\lambda\Gamma(\Delta_E)$$

We denote $H(\gamma_L + \Delta_E - \frac{1}{2}) - H(\gamma_L - \Delta_E - \frac{1}{2})$ as $\Gamma(\Delta_E)$, where Γ is an increasing function, bounded from above by 1. With this notation we have:

$$F + c_L\Delta_E < \beta\lambda\Gamma(\Delta_E)$$

To ensure that high costs prohibit anti-elderly governors from ever giving assistance, we need to have the above inequality reversed when replacing c_L with c_H. Putting the two inequalities together we have the following condition for the equilibrium behavior of anti-elderly governors in a pro-elderly state:

$$F + c_L\Delta_E < \beta\lambda\Gamma(\Delta_E) < F + c_H\Delta_E$$

To ensure that high costs do not ever deter pro-elderly governors from giving assistance, we need that the present discounted benefits of redistributing when costs are high must exceed the present discounted benefits of not redistributing.

$$\lambda - c_H\Delta_E + P(\Delta_E + \gamma_L + \varepsilon > \frac{1}{2})\beta\lambda > \lambda - F + P(\gamma_L - \Delta_E + \varepsilon > \frac{1}{2})\beta\lambda$$

This reduces to

$$-F + c_H\Delta_E < \beta\lambda\Gamma(\Delta_E)$$

Hence, the final conditions for a pro-elderly state are:

$$\max(F + c_L\Delta_E, -F + c_H\Delta_E) < \beta\lambda\Gamma(\Delta_E) < F + c_H\Delta_E \qquad (3.1)$$

By the symmetry of h the condition for R governors is the same.

Analogously, we obtain the conditions in an anti-elderly state ($\Delta_E < 0$):

$$-F + c_H\Delta_E < \beta\lambda\Gamma(\Delta_E) < \min(-F + c_L\Delta_E, F + c_H\Delta_E) \qquad (3.2)$$

We also need a condition for the optimality of voter behavior. Intuitively, the individual voter must be better off voting for the incumbent if and only if she has acted in the favor of the voter's type. Given the equilibrium strategy of the governors, the elderly are better off voting for the incumbent if they received assistance, if:

$$\pi + (1-\pi)p < \frac{\pi}{\pi + (1-\pi)p}$$

Similarly, the anti-elderly are better off voting for the incumbent if the elderly did not receive assistance, if:

$$1 - \pi + \pi p < \frac{1-\pi}{1-\pi+\pi p}$$

These conditions ensure that the incumbent who has acted pro-elderly (anti-elderly) is more likely to act pro-elderly (anti-elderly) in her second term[15] than a random challenger, and is satisfied for small values of p.

$$p < \min(\frac{\sqrt{1-\pi} - (1-\pi)}{\pi}, \frac{\sqrt{\pi} - \pi}{1-\pi}) \qquad (3.3)$$

Intuitively, a small p means that the likelihood of the costs being low is small enough to be informative, whereas a large p would mean that, for example, even non pro-elderly governors provide assistance so frequently that elderly voters cannot distinguish them from pro-elderly governors. Hence, if condition 3.3 is satisfied, the non-ideologic voters vote for incumbent if she acts according to their type in the first term, because, according to their updated beliefs, such an incumbent is more likely to act according to their type than a random

[15] The likelihood that an incumbent who has provided assistance will provide assistance in the second term is in fact the Bayes updated likelihood that s/he is pro-elderly.

candidate.[16]

Proposition 1 *If either condition 3.1 (in a pro-elderly state) or condition 3.2 (in an anti-elderly state), and 3.3 are satisfied, then the spending behavior of governors will be different when they are eligible for reelection and when they are not.*

This proposition is straightforward, and confirms the intuition that governors are less likely to enact costly programs, even if these programs help them get re-elected.

Proposition 2 *The size of the elderly population has an ambiguous effect on the likelihood of the equilibrium in this model.*[17]

On the one hand a larger elderly population makes it more costly to provide assistance to elderly and on the other hand it increases the electoral benefits of providing assistance. Without making further assumptions about the distribution of the election shock we cannot say which effect dominates. Nevertheless, a schematic representation of conditions 3.1 and 3.2 in Figure 3.1 sheds some light on this relationship. For this particular functional form of h and these particular parameter values we can say that term limit effects (i.e. governors acting against their type to match the type of the state when eligible for re-election) only exist for intermediate sizes of the targeted population. Specifically, in a pro-elderly state, an anti-elderly governor will cater to the interests of the elderly by raising the OAA only for intermediate sizes of the elderly population, i.e. for $\Delta_E \in [\Delta_{E1}, \Delta_{E2}]$.

Finally, due to the symmetry about 0, smoothness and single-peakedness of h, $\Gamma(\Delta_E)$ for a given positive(negative) Δ_E is maximized(minimized) when

[16] This condition is identical to that derived in List and Sturm(2006), and a full derivation can be found in their paper.

[17] In this equilibrium, in a pro-elderly state pro-elderly governors always give assistance to the elderly; anti-elderly governors who can stand for reelection give assistance to elderly only if costs are low; the elderly vote for the incumbent if and only if she has given assistance while in office. While, in anti-elderly state anti-elderly governors never give assistance to the elderly; pro-elderly governors who can stand for reelection don't give assistance to the elderly only if the costs are low; the anti-elderly vote for the incumbent if and only if she has not given assistance while if office.

$\gamma_L = \gamma_R$ In other words, conditions 3.1 and 3.2 is more likely to hold when political competition is higher. We thus have:

Proposition 3 *The difference in elderly welfare spending between governors eligible and not eligible for reelection should be higher when political competition is higher.*

3.4 Data and Empirical Framework

Due to its administrative and implementation structure, the OAA program was highly susceptible to political influences. Moreover, the elderly eligible for OAA were a pretty successful political group, and more likely to lobby for benefit rather than recipiency rate increases. Did elected government officials in charge of administering the OAA program respond to these political incentives?

3.4.1 Data Description

In order to explore the relationship between political considerations and the size of the OAA program–and thus test the predictions of the model in section 3 empirically– we have constructed a new dataset on state OAA benefit levels and number of OAA recipients linked to political data on electoral rules and gubernatorial outcomes, and a rich set of state-level covariates. Since after 1955 OASI was much larger in size compared with OAA, and since our identification strategy relies on differences in old age income both across states and time, we restrict our attention to the 1931-1955 time period.

Welfare Programs and State Controls data. The OAA data set contains yearly information on average state benefit levels and number of OAA recipients. In addition, we also collected data on Aid to the Blind (AB) and Aid to Dependent Children (ADC), in order to perform falsification tests and show that elderly were indeed the politically targeted group. We link this database to a rich dataset on state level factors that influenced the evolution of OAA

and political outcomes during this time period. These include net personal income, demographic characteristics, measures of state revenue and expenditures, measures of education, as well as measures of employment. Summary statistics are presented in Table 3.1 and further details on this data are provided in Balan Cohen (2006).

Political Data. The political dataset contains information on the presence and length of gubernatorial term limits, the number of terms served by state governors and whether they actually ran for reelection when eligible, as well as data on victory margins in gubernatorial elections and party affiliation. Summary statistics are presented in Tables 3.1 and 3.3.

3.4.2 Empirical Framework

To test the *first* proposition, we estimate the following equation:

$$\ln(OAA)_{st} = \alpha + \beta * NoLimit_{st} + \theta * X_{st} + state_s + year_t + state_s * time + \epsilon_{st} \quad (3.4)$$

where s, t, index states and years, OAA is a measure of the size of the OAA program, $NoLimit$ is an indicator for whether the governor is eligible to run for reelection (i.e. the gubernatorial term is not binding), and X is a vector of state-level covariates. We include state and year fixed effects, as well as state specific time trends in all specifications. To allow for arbitrary correlations of the error term within each state, we cluster the standard errors by state.

The identification of the coefficient of interest β relies on the variation in political incentives faced by governors who are term-limited and those eligible for reelection. For the governors eligible for reelection, the marginal benefit of a dollar spent on OAA includes both a private benefit component (since it raises the chance of being re-elected), as well as a public benefit component. For the term-limited ("lame duck") governors, however, the marginal benefit does not

include the private benefit component from reelection. Hence, the coefficient β will capture the conditional difference in measures of OAA spending between gubernatorial terms with binding, and respectively not binding, term limits.

To estimate β consistently by OLS, the variation in political incentives provided by term limits has to be exogenous to OAA policy. Most of the literature on term limits treats them as exogenous to state fiscal policies (Besley and Case 1995, List and Sturm 2006). The reason for this is that gubernatorial term limits are the oldest and most common U.S. limitation on office holding (they go back to the 18th century), and they require significant majorities to be overturned.[18] There are some economic and demographic differences between states with and without term limits (like income per capita and population size), but we address this issue by controlling for a rich set of state level covariates, as well as for state fixed effects. There are, however, two states in our sample which adopted term limits between 1931 and 1955: West Virginia in 1945 and Idaho in 1947. Since for these observations policy making (including OAA) are simultaneously determined with term limits, conditioning on term limits might be problematic. We have therefore performed estimations both with and without these observations. Since results are essentially unchanged, in this paper we only present the results using the full sample.

To test the *second* proposition we first define a proxy for Δ_E - the number of voters who have intense preferences in favor of OAA policy. List and Sturm (2006) use the fraction of the membership in pro-environmental organizations as a proxy for the "green/brown" divide, defining a "green" state as one in which membership is above a certain threshold. Similarly, we use the fraction of the elderly population (aged 65 and above) as a proxy for Δ_E. As this fraction is highly correlated across time within a state, we use the elderly population fraction in 1940.[19]. To allow for the non-linear relationship between Δ_E and

[18] As early as 1787 the Delaware constitution established a two-term limit for the governor, and nearly four fifths of the states now place some sort of restriction on the number of terms for which an individual may hold the governorship.

[19] We have done the analysis for several other reference years and the results are virtually unchanged.

the term-limit effect, we use indicator variables for the top and bottom quartile of the 1940 elderly population fraction.[20] Hence, we estimate the following equation:

$$\begin{aligned}\ln(OAA)_{st} &= \beta * NoLimit_{st} + \delta_1 * NoLimit_{st} * Q1(Eld1940) + \\ &+\delta_2 * NoLimit_{st} * Q4(Eld1940) + \\ &+\theta * X_{st} + state_s + year_t + state_s * time + \epsilon_{st} \qquad (3.5)\end{aligned}$$

If OAA had an impact on elderly migration, then our OAA measure and the fraction of elderly in the population would be jointly determined, and estimations based on equation (2) would suffer from endogeneity problems. But elderly migration was unlikely to have been a large factor during this time period; state residence requirements for OAA were high—ranging from 1 to 5 years—and elderly cross-state migration overall was essentially nil.[21]

To test the *third* proposition we use the margin of victory(m_{st}) in the previous gubernatorial election as a (negative) proxy for the intensity of the political competition. Hence, we estimate the following equation:

$$\begin{aligned}\ln(OAA)_{st} &= \beta * NoLimit_{st} + \delta_1 * NoLimit_{st} * Q1(Eld1940) + \\ &+\delta_2 * NoLimit_{st} * Q4(Eld1940) + \varphi_1 * NoLimit_{st} * m_{st} + \\ &+\varphi_2 * NoLimit_{st} * Q1(Eld1940) * m_{st} + \varphi_3 * NoLimit_{st} * Q4(Eld1940) * m_{st} + \\ &+\omega_1 * Q1(Eld1940) * m_{st} + \omega_2 * Q4(Eld1940) * m_{st} + \mu * m_{st} \\ &+\theta * X_{st} + state_s + year_t + state_s * time + \epsilon_{st} \qquad (3.6)\end{aligned}$$

[20] Therefore β captures the term-limit effect for the states in the interquartile range of 1940 fraction elderly and δ_1, and δ_2, respectively, capture the differential term-limit effect for the states in the bottom, and top quartile, relative to the interquartile states.

[21] For instance, less than 1 percent of men aged 66-75 had moved to a new state during 1950. Among those older than 75, migration was probably even lower.

3.5 Empirical results

3.5.1 Main results

The main findings are presented in Table 3.4. The first column presents the OLS results from estimating equation 3.4 with OAA benefits per recipient as the dependent variable. The vector of state level controls includes net personal income per IRS return, the percentage of the population that is black, as well as measures of education, employment, manufacturing and agricultural conditions. Since OAA was initially designed to cover elderly not yet receiving OASI benefits, we also control for OASI benefits in each state and year.[22] To diminish concerns about reverse causality between these variables and OAA, the controls are lagged one year. Consistent with Proposition 1, the OLS regression from column 1 in Table 3.4 suggests that the average OAA benefit per recipient is 4 percent higher when the governor is eligible to stand for reelection.

The second column presents the OLS results from estimating equation 3.5 with OAA benefits per recipient as the dependent variable. In order to test Proposition 2 we interact the term-limit indicator with indicators for the top and bottom quartile of the fraction elderly. Consistent with the graphical representation of Proposition 2 in Figure 3.1, the term-limit effect is present only in the states in the interquartile range of the fraction elderly. For the states in this interquartile range the average OAA benefit per recipient is 7.5 percent higher when the governor is eligible to stand for reelection. For the states in the bottom quartile the term-limit effect is 6.5 percent lower than in the interquartile states and the overall term-limit effect in these bottom quartile states ($\beta+\delta_1$) is not significantly different from zero. For the states in the top quartile of the elderly fraction the term-limit effect is 10.5 percent lower than in the interquartile states and $\beta+\delta_2$ is not significantly different from zero. These findings confirm

[22] Since prior to 1950 OAA had low coverage and included richer recipients compared to OAA, the overlap between OASI and OAA recipients was initially small. When the provisions of OASI were liberalized in 1950, the number of new OASI beneficiaries receiving minimum benefits—and hence in continued need of assistance—increased (White 1953). As late as 1952, however, the concurrent receipt of OAA and OASI among OAA recipients was not higher than 13 percent (White 1953).

the predictions of the particular parametrization of Proposition 2. Specifically, we can conclude that it is beneficial for politicians to cater to the interests of the elderly only if the elderly are a moderately sized group: too small and the electoral benefits do not justify the costs, too large and the costs outweigh the electoral benefits.

In the third column we estimate equation 3.6 by OLS, with OAA benefits per recipient as the dependent variable. For the states where the term-limit effect is present (the states in the interquartile range of fraction elderly), the term-limit effect is highest when the margin of victory is lowest. For every 10 percent increase in the margin of victory the term limit effect falls by 4 percentiles. Our results show that in states where the margin of victory was more than 25 percent (9.7/0.4) the term-limit effect effectively disappears. We interpret this as confirming the predictions of Proposition 3, as higher political competition leads to higher term-limit effects.

3.5.2 Robustness checks

In Table 3.5 we examine whether the term-limit effect manifests itself through the intensive (OAA benefits per recipient) or extensive (OAA recipiency rate) margin. As discussed in section 2.3, increases in OAA benefits have lower administrative costs and higher political benefits than increases in OAA recipients, and should thus be the preferred political tool. Table 3.5 estimates equation 3.5 using OAA benefits per capita in column 1 and then decomposing it into OAA benefits per recipient (column 2) and OAA recipiency rate (column 3). The results show that the 15.4 percent term-limit effect observed in OAA benefits per capita is driven by a 7.5.percent increase in OAA benefits per recipient and by a 7.9 percent increase in OAA recipiency rate. However, while the increase in OAA benefits per recipient is precisely measured and is significantly different from zero, the increase in recipiency rate is not significantly different from zero. Hence, we conclude that indeed, increasing benefits per capita was the preferred political tool.

In Table 3.6 we ask whether the elderly were particularly targeted by state governors for politically-motivated transfers. To answer this we first test for the existence of term limit effects in the two other welfare measures within the scope of state governors that had similar rules and regulations to OAA, but were not targeted at the elderly population – Aid for Dependent Children (ADC) and Aid for the Blind (AB). The results in columns 2 and 3 show that these two welfare measures were not manipulated by incumbent state governors for electoral purposes. Second, we test for the existence of term limit effects in a welfare measure targeted at the elderly but outside the scope of state governors - the federally administered Old Age Insurance (OASI). In column 4 we notice that the term limit in OASI benefits per recipient was very small (less than 1 percent) and negative. Having examined the term limit effects in these additional three welfare measures we can conclude that state governors (and not higher level offices) used transfers to elderly (and not to other groups) for political purposes.

Finally, in Table 3.7 we revisit our main findings using a different proxy for Δ_E. As OAA was in essence a redistribution of income, another proxy may be the level of poverty in the state, as rich individuals would oppose such redistribution while poor individuals would favor them. Hence we use the average personal net income as a proxy for Δ_E, assuming that a high average personal net income translates to a low fraction of poor individuals.[23] The results in column 2 are very similar to our main results. The term limit effects are present only in the states in the interquartile range of average personal net income. In these states the term-limit effect amounts to an 11 percent increase in the OAA benefits per capita. In the states from both the top and bottom quartiles the term-limit effects are significantly smaller than in the interquartile states and are overall not significantly different from zero. In column 3 we find that, similarly to the main results, the term-limit effects are highest at the lowest margin of victory. However this effect is not precisely measured and is not different

[23]This would imply that income distribution is similar accross states. We acknowledge this is a rather strong assumption.

from zero. Nevertheless this robustness check does strengthen the case for our claim that the term-limit effect exists only in states where the support for the redistribution is moderate.

3.6 Discussion

Between 1931 and 1955, elderly welfare spending was in the hands of the state governments. The results from section 5 show that incumbent state governors unconstrained by term-limits manipulated OAA policy to further their electoral goals.

3.6.1 Elderly Political Participation

An open question still remains. Did the elderly have that much political clout in this period? Our findings give only an indirect answer. Since governors were manipulating elderly assistance for electoral goals, the elderly as a group must have been able to swing an election one way or the other. We now bring forward further evidence about the political power of the elderly.

Most authors have noted that the 1940s and 1950s were the "dismal years" of the "gray lobby" (Campbell 2003, 84). As late as the 1950s elderly participation in politics was low. During the presidential election of 1952, elderly were as likely to vote as non-elderly, but only two-thirds as likely to make campaign contributions (Campbell 2003, 84).[24] In addition, the number of senior membership groups with access to the policymaking process was also low. Early social insurance organizations like the American Association for Old Age Security and the American Association for Labor Legislation Security, which had actively campaigned for old age pensions in the 1920s had disappeared after the passage of the Social Security Act of 1935, and the powerful senior lobby groups of later decades (like AARP) had not yet been formed (Campbell 2003, 77). As a result, little political attention was devoted to senior citizens at the national

[24] By contrast, in current midterm elections seniors are more than twice as likely to vote compared to those under 35 (Campbell 2003, 29).

level during this time period. Prior to the 1960s, party platforms contained a paragraph or two on Social Security, but no special section on elderly issues, and relatively few congressional hearings on age-related policy were held (Campbell 2003).

3.6.2 National vs. State Level Political Participation

However, the lack of strong political participation among the elderly group at the national level masks substantial variation at more local levels between 1931-1955. For instance, several elderly pension movements were relatively successful in some states, but had little influence at the national level.

In California the Townsend movement—which advocated pensions for all elderly of $200 a month—was a powerful political force ([Amenta *et* al. 1992]). In 1936, for instance, a Gallup poll found that 14 percent of California voters favored Townsend pensions, leading George Gallup to conclude that Townsend supporters most likely held the balance of power between the Republican and Democratic parties in the state ([Putnam 1970], 57). And when the Townsend movement weakened, the California Ham and Eggs movement—favoring pensions for all unemployed elderly over 50—quickly gained momentum, receiving 45 percent of the vote in a 1938 referendum ([Mitchell 2001] [Costa 1988], 178).

Townsend and Ham and Eggs-like plans and movements had also caused a lot of stir in Ohio, Colorado, and Michigan at various points during the 1940s ([Mitchell 2001]). Similarly, in Massachusetts, the ascendancy of the Irish political power throughout the 1930s and 1940s was associated with intense lobbying of both the Democratic and the Republican parties on behalf of the elderly ([Gratton 1986]).

These groups supported pension programs that were very different from OAA state plans. Both the Townsend and the Ham and Eggs movements, for instance, advocated pensions for all elderly regardless of their financial situation (as opposed to just the needy ones). Most of these plans, however, were

unsustainable, and hence often met with skepticism.[25] Politicians and groups who adopted more moderate approaches that accepted the existing state systems of Old Age Assistance, but demanded higher payments, were much more successful.[26]

3.6.3 Political Participation Among OAA Beneficiaries

Data on political participation by OAA beneficiaries is unfortunately not available, but we can draw some inferences based on the political behavior of the poorest elderly—who were most likely to be eligible for OAA. Our calculations based on data from the National Election Surveys (NES), show that poor elderly were indeed politically active, at least relative to other poor groups. The turnout in the elections of 1948, 1952, and 1956, for instance, was much higher among the elderly (65 percent) than among the non-elderly groups (48 percent). Within the elderly group as a whole, however, the turnout among poor elderly was lower than that among richer ones.

What were the factors determining OAA beneficiaries' political participation? In recent decades, the political success of the elderly has been attributed to several factors. The elderly have more time and more resources to invest in political activities (Campbell 2003, Mulligan and Sala-I-Martin 1999a). In addition, they are a more homogeneous political group with predetermined membership criteria—everybody becomes old at some point—and thus can more easily avoid free riding issues (Mulligan and Sala-I-Martin 1999a). They are also more single-minded in their political choices due to their heavy reliance on Social Security (Campbell 2003, Mulligan and Sala-I-Martin 1999a,b). Lastly, they are more politically neutral voters, caring more about well-being than about ideology (Lindbeck and Weibull 1987, Dixit and Londregan 1996, Campbell 2003).

Similar factors influenced the OAA beneficiaries' political participation be-

[25] The Townsend plan for instance, would have cost 66 billion per year at a time when the GNP was 90 billion (Campbell 2003, 77)

[26] In Colorado, for instance, a Townsend-like group advocating increased OAA payments managed to achieve an amendment of the state constitution, and in California in 1942, Earl Warren appeased Townsendites, Ham and Eggers, and other pension advocates by raising state OAA, and thus. successfully won the California Governorship [Mitchell 2001].

tween 1935 and 1955, but in different proportions. For instance, OAA recipients had low levels of the first two politically inducing resources—time and income.[27] The other three factors conducive to political success—heavy reliance on Social Security, single-mindedness and political neutrality—played a large role, however. To begin with, since most OAA recipients had no other earnings, and did not receive any other relief, OAA assistance represented a very large share of recipients' total income.[28] Since recipients were almost entirely dependent on OAA for income support, they thus had a very large political stake in the program. It is not surprising therefore that political support for means-tested pensions (as opposed to OASI), and for generous non-insurance based pension programs like the Townsend plan was largest among the poorest of the elderly.[29]

3.7 Conclusion

In this paper, we use the variation in political incentives of state governors provided by term limits to show that the variation in the level of OAA benefits per recipient between 1931 and 1955 was due to governors' vote seeking behavior. Although the other two programs set up under the Social Security Act, ADC and AB, were also open to political influences, we show that state governors targeted elderly due to their greater political power.

As predicted by our theoretical model, the manipulation of OAA occurred only in states with moderately sized elderly population and increased with the degree of political competition. Given that OAA beneficiaries were relatively poor during this time period, and that means-tested welfare programs generally

[27] At the start of the program, OAA recipients were more likely to be in poor health, have low levels of resources, and work rather than be retired. However, the OAA program did greatly increase recipients' health, well-being, and retirement rates (Balan Cohen 2006, Friedberg 1999, Costa 1999), so it is very likely that income and time resources did play an important part in spurring OAA recipients' political participation later on.

[28] In 1944, for instance, this share was over 80 percent. Authors' calculations based on data from Bureau of Public Assistance (1944), Table 30.

[29] Authors' calculations based on data from a 1938 Gallup poll reveals that the fractions of poor, and respectively middle-income elderly who were in favor of need-based pensions (as opposed to pensions for all elderly) were 80 and 60 percent. Similarly, support for the Townsend plan in 1939 was 69 percent among relief recipients, but only 49 percent among the elderly overall (Mitchell 2001, 268).

fail to mobilize political support, our findings that politicians manipulated OAA benefits in order to attract votes are surprising. However, given that the OAA program greatly improved the health and well-being of recipients (Balan Cohen 2006, Costa 1999, Friedberg 1999), providing a better understanding of how elderly politics affected the distribution of OAA payments can provide valuable insights into the current debates over the reform of Social Security and its potential implications on low-income elderly.

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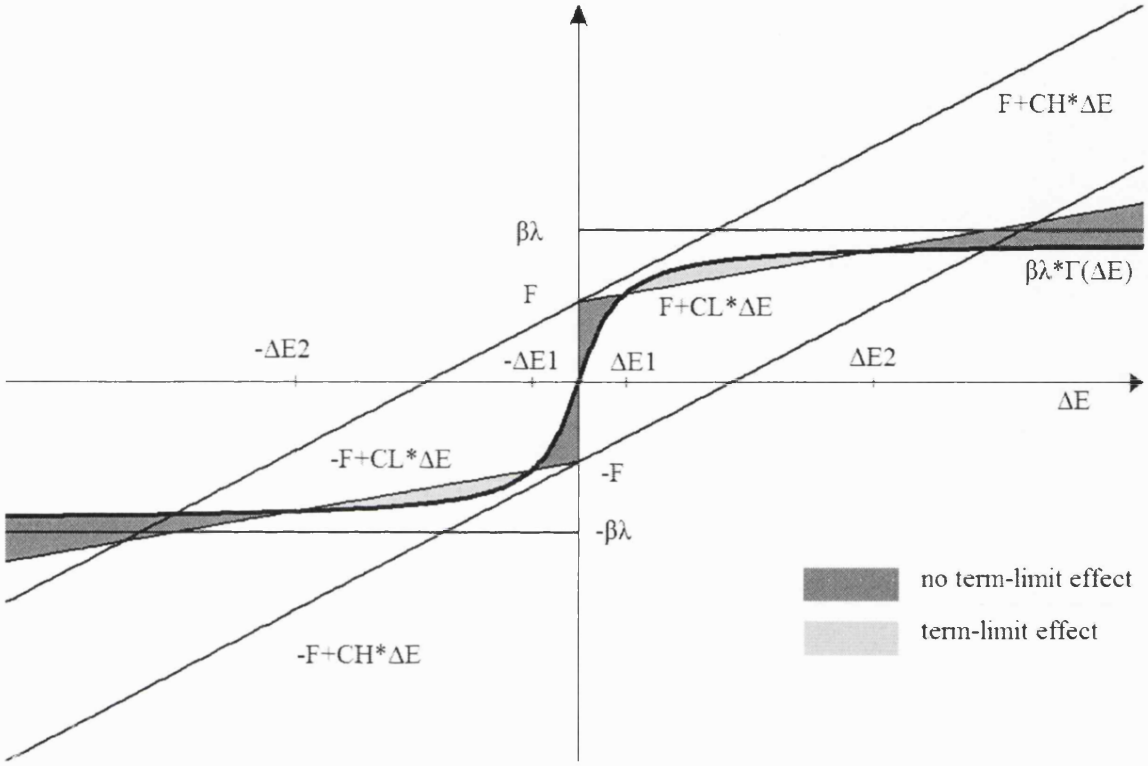

Figure 3.1: The relationship between Δ_E and the term-limit effect

Table 3.1: Summary statistics

Variable	*# Obs*	*Mean*	*St.dev*
OAA Data and State Controls			
OAA per recipient	720	1983.36	629.75
OAA recipiency rate	720	38.80	23.44
OASI per recipient	720	1412.58	434.49
ADC per recipient	697	1328.02	499.79
AB per recipient	675	2202.28	682.84
Net Income per Return	720	13677.83	1723.69
% Black	720	9.08	11.77
% Employment in manufacturing	720	1.91	1.15
% Illiterate	720	3.35	2.31
% Housing owner occupied	720	54.51	7.95
% Unemployed	720	61.62	2.94
Average farm value	720	73662.21	56849.89
Political Variables			
1= Governor not Term Limited	720	0.68	
Governor's winning voting margin previous election	718	28.02	30.71

Note : The OAA benefits and recipients data was collected from various Social Security publications, and controls data was collected from various sources, particularly United States Statistical Abstracts (see Balan Cohen 2006 for details). All monetary values (net income, OAA, OASI, ADC, AB benefits, average farm value, manufacturing values per capita, expenditure per capita) are expressed in 1982 dollars and are corrected for differences in the cost of living across states using Lindert and Williamson (1980). The data on the presence and length of term limits, the number of terms served, and the party affiliation is from *The Book of The States* (various years), and Kallenbach and Kallenbach (1977).

Table 3.2: Detailed summary statistics for sizes of targeted populations

					Percentiles			
	#Obs	Mean	St. dev	Min	25	50	75	Max
Percentage population aged 65 and above	48	7.01	2.01	4.28	5.50	6.81	8.03	16.13
Average net personal income	48	18,040	2,519	14,010	16,417	17,863	18,958	29,217
Percentage population aged 15 and below	48	18.35	1.25	16.21	17.44	18.29	19.13	22.00
Percentage blind	48	0.19	0.06	0.12	0.15	0.17	0.22	0.35

Table 3.3: Gubernatorial Data: Summary Statistics

Reelection and term limit		
	Governor running for reelection	Governor not running for reelection
Limit binding	4[a]	120
Limit not binding	240	137
Total	244	257

Governors not running for reelection		
	Governor running for other election	Other options[b]
Limit binding	28	92
Limit not binding	43	94
Total	71	186

a Four governors ran for reelection with the limit biting as they had not served a full term; they had filled in an unexpired term.
b Other options include being politically appointed to different positions, retiring completely from public office, passing away
Notes. The data on the presence and length of term limits, the number of terms served,and the party affiliation is from The Book of The States(various years), and Kallenbach and Kallenbach (1977). The data on governors, documenting whether they actually ran for reelection when eligible and whether they ran for other elections, was also collected from the National Governors' Association.

Table 3.4: Effect of Term Limits on OAA Benefits and Recipiency Rates

	ln(OAA benefits per recipients)		
	(1)	(2)	(3)
NoLimit	0.038*	0.075**	0.097**
	(0.021)	(0.034)	(0.037)
NoLimit * Fraction elderly bottom quartile		-0.065*	-0.240**
		(0.038)	(0.101)
NoLimit * Fraction elderly top quartile		-0.106**	-0.177***
		(0.047)	(0.062)
NoLimit * Margin			-0.004*
			(0.002)
NoLimit * Fraction elderly bottom quartile * Margin			0.004*
			(0.002)
NoLimit * Fraction elderly top quartile * Margin			0.004*
			(0.002)
Fraction elderly bottom quartile * Margin			-0.003
			(0.002)
Fraction elderly top quartile * Margin			-0.002
			(0.002)
Margin			0.001
			(0.002)
% illiterate	0.134	0.127	0.094
	(0.118)	(0.117)	(0.123)
ln(average farm value)	-0.038	-0.052	0.011
	(0.213)	(0.206)	(0.191)
% black	0.110	0.099	0.060
	(0.092)	(0.095)	(0.101)
% Employment in manufacturing	-0.082*	-0.088**	-0.084**
	(0.041)	(0.042)	(0.039)
% Owner occupied housing	0.000	0.000	-0.000
	(0.015)	(0.015)	(0.015)
% Unemployed	-2.092	-1.967	-1.793
	(1.744)	(1.691)	(1.603)
ln(average net personal income)	0.113	0.114	0.102
	(0.119)	(0.118)	(0.119)
ln(OASI)	-0.164	-0.137	-0.035
	(0.103)	(0.107)	(0.121)
State fixed effects	yes	yes	yes
Year fixed effects	yes	yes	yes
State specific time trends	yes	yes	yes
Number of observations	720	720	718
Adjusted R2	0.940	0.940	0.941

Notes: *significant at 10%, **significant at 5%, ***significant at 1%. Standard errors in parentheses are clustered by state. The sample in all regressions cover all 48 continental states in the 1931-1955 period. All variables except NoLimit are lagged one year. OAA benefits are expressed in real terms (hundreds of 1982 USD), adjusted for differences in costs of living.
States in the bottom quartile of fraction elderly: Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, N Carolina, S Carolina, Tennessee, Texas, Virginia
States in the top quartile of fraction elderly: California, Idaho, Illinois, Iowa, Kansas, Maine, Massachusetts, Minnesota, New Hampshire, Oregon, Vermont, Washington

Table 3.5: Effect of Term Limits on OAA, Benefits vs. Recipiency Rates

	ln(OAA per capita)	*ln(OAA per recipient)*	*ln(recipiency rate)*
NoLimit	0.154**	0.075**	0.079
	(0.059)	(0.034)	(0.059)
NoLimit * Fraction elderly bottom quartile	-0.223***	-0.065*	-0.158**
	(0.072)	(0.038)	(0.069)
NoLimit * Fraction elderly top quartile	-0.203***	-0.106**	-0.097
	(0.074)	(0.047)	(0.062)
% illiterate	-0.205	0.127	-0.332*
	(0.222)	(0.117)	(0.195)
ln(average farm value)	0.014	-0.052	0.066
	(0.268)	(0.206)	(0.152)
% black	-0.171	0.099	-0.271**
	(0.176)	(0.095)	(0.130)
% Employment in manufacturing	-0.069	-0.088**	0.019
	(0.090)	(0.042)	(0.063)
% Owner occupied housing	0.001	0.000	0.001
	(0.028)	(0.015)	(0.019)
% Unemployed	-0.068	-1.967	1.899
	(2.686)	(1.691)	(1.615)
ln(average net personal income)	0.318*	0.114	0.204*
	(0.162)	(0.118)	(0.113)
ln(OASI)	-0.193	-0.137	-0.056
	(0.145)	(0.107)	(0.099)
State fixed effects	yes	yes	yes
Year fixed effects	yes	yes	yes
State specific time trends	yes	yes	yes
Number of observations	720	720	720
Adjusted R2	0.961	0.940	0.981

Notes: *significant at 10%, **significant at 5%, ***significant at 1%. Standard errors in parentheses are clustered by state. The sample in all regressions cover all 48 continental states in the 1931-1955 period. All variables except NoLimit are lagged one year. OAA benefits are expressed in real terms (hundreds of 1982 USD), adjusted for differences in costs of living. OAA per capita is computed by dividing total OAA in the state with the population aged 65 and above. Recipiency rate is expressed in recipients per population aged 65 and above.

States in the bottom quartile of fraction elderly: Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, N Carolina, S Carolina, Tennessee, Texas, Virginia

States in the top quartile of fraction elderly: California, Idaho, Illinois, Iowa, Kansas, Maine, Massachusetts, Minnesota, New Hampshire, Oregon, Vermont, Washington

Table 3.6: Effect of Term Limits on OAA, ADC, AB, OASI

	ln(OAA per recipient)	*ln(ADC per recipient)*	*ln(AB per recipient)*	*ln(OASI per recipient)*
NoLimit	0.075**	-0.038	0.031	-0.007*
	(0.034)	(0.060)	(0.025)	(0.004)
NoLimit * Fraction elderly bottom quartile	-0.065*			-0.000
	(0.038)			(0.012)
NoLimit * Fraction elderly top quartile	-0.106**			0.014
	(0.047)			(0.009)
NoLimit * Fraction 15 and below bottom quartile		0.088		
		(0.061)		
NoLimit * Fraction 15 and below top quartile		0.127		
		(0.087)		
NoLimit * Fraction blind bottom quartile			-0.010	
			(0.077)	
NoLimit * Fraction blind top quartile			-0.003	
			(0.030)	
% illiterate	0.127	0.126	-0.134	0.055
	(0.117)	(0.124)	(0.086)	(0.033)
ln(average farm value)	-0.052	0.295	0.117	-0.025
	(0.206)	(0.209)	(0.141)	(0.037)
% black	0.099	0.215***	0.021	-0.002
	(0.095)	(0.063)	(0.095)	(0.028)
% Employment in manufacturing	-0.088**	-0.048	-0.118***	0.003
	(0.042)	(0.050)	(0.043)	(0.015)
% Owner occupied housing	0.000	0.012	0.006	-0.017***
	(0.015)	(0.021)	(0.013)	(0.005)
% Unemployed	-1.967	-1.233	-1.696	-0.039
	(1.691)	(2.089)	(2.234)	(0.351)
ln(average net personal income)	0.114	0.247	0.031	0.017
	(0.118)	(0.180)	(0.155)	(0.021)
ln(OASI)	-0.137	-0.108	-0.271*	
	(0.107)	(0.174)	(0.144)	
State fixed effects	yes	yes	yes	yes
Year fixed effects	yes	yes	yes	yes
State specific time trends	yes	yes	yes	yes
Number of observations	720	697	675	768
Adjusted R2	0.940	0.924	0.928	0.991

Notes: *significant at 10%, **significant at 5%, ***significant at 1%. Standard errors in parentheses are clustered by state. The sample in all regressions cover all 48 continental states in the 1931-1955 period. All variables except NoLimit are lagged one year. OAA, ADC, AB and OASI benefits are expressed in real terms (hundreds of 1982 USD), adjusted for differences in costs of living.

Table 3.7: Effect of Term Limits on OAA, alternate proxy for Δ_E

	ln(OAA benefits per recipients)		
	(1)	(2)	(3)
NoLimit	0.038*	0.111**	0.121**
	(0.021)	(0.047)	(0.056)
NoLimit * Personal net income bottom quartile		-0.128**	-0.172**
		(0.051)	(0.080)
NoLimit * Personal net income top quartile		-0.096*	-0.155**
		(0.051)	(0.075)
NoLimit * Margin			-0.001
			(0.004)
NoLimit * Personal net income bottom quartile * Margin			0.002
			(0.004)
NoLimit * Personal net income top quartile * Margin			0.002
			(0.004)
Fraction elderly bottom quartile * Margin			-0.002
			(0.004)
Fraction elderly top quartile * Margin			-0.003
			(0.004)
Margin			0.001
			(0.004)
% illiterate	0.134	0.128	0.109
	(0.118)	(0.117)	(0.120)
ln(average farm value)	-0.038	-0.049	-0.009
	(0.213)	(0.205)	(0.183)
% black	0.110	0.100	0.091
	(0.092)	(0.095)	(0.098)
% Employment in manufacturing	-0.082*	-0.084*	-0.075*
	(0.041)	(0.042)	(0.042)
% Owner occupied housing	0.000	-0.001	-0.001
	(0.015)	(0.015)	(0.014)
% Unemployed	-2.092	-1.870	-1.989
	(1.744)	(1.700)	(1.656)
ln(average net personal income)	0.113	0.119	0.117
	(0.119)	(0.121)	(0.128)
ln(OASI)	-0.164	-0.144	-0.109
	(0.103)	(0.108)	(0.117)
State fixed effects	yes	yes	yes
Year fixed effects	yes	yes	yes
State specific time trends	yes	yes	yes
Number of observations	720	720	718
Adjusted R2	0.940	0.940	0.940

Notes: *significant at 10%, **significant at 5%, ***significant at 1%. Standard errors in parentheses are clustered by state. The sample in all regressions cover all 48 continental states in the 1931-1955 period. All variables except NoLimit are lagged one year. OAA benefits are expressed in real terms (hundreds of 1982 USD), adjusted for differences in costs of living.

States in the bottom quartile of net personal income: Idaho, Iowa, Kansas, Minnesota, Montana, N Dakota, Oregon, S Dakota, Vermont, Washington, Wisconsin

States in the top quartile of net personal income: Alabama, Arkansas, Delaware, Florida, Georgia, Louisiana, Mississippi, N Carolina, Oklahoma, Tennessee, Texas, Virginia

Chapter 4

Rainy Tuesdays: Distinguishing Strategic from Naive Voters in U.S. Elections

4.1 Introduction

Elections provide an opportunity to study people's strategic behavior and to determine whether they act equally strategically or not. The payoff to an individual in an election depend particularly on the action of the others. One hypothesis supported by the data, is that voters are heterogenous with respect to how strategic they are. I model this heterogeneity using simple functional forms and derive an equation which can be estimated with the available data. I certainly do not rule out other hypotheses about how individuals decide whether to vote or not. For example, the same results can be explained through non-additive costs of voting.

The essence of strategic behavior is taking into account the effect of others' action on one's own payoff. A typical assumption in strategic behavior models is that all players know equally well the effect of other players' action on their own payoffs. How plausible is this assumption? After all, players are sometimes assumed to be heterogenous with respect to their type. Then why not allow

them to also differ with respect to how strategic they are? Furthermore, if individuals differ with respect to how strategic they are, then what is the source of this heterogeneity? Are there particular characteristics which influence strategicness?

Weather on the election day has been of interest to campaign managers but also to academics. For example, a common view in the United States is that rain on election day favours the Republican party with its more committed supporters. Many wonder what would have happened, had it not rained across the state of Ohio on the election day in 2004, given that Ohio was won by the Republicans by a slight margin. On a more serious note, Shachar and Nalebuff[1999] include rain as a determinant of turnout and find that 1 inch of rain decreases turnout by 3.4 percent. I use rain on election day to distinguish between strategic and naïve voters. Rain on election day has a different effect on the behavior of naïve and strategic individuals. Naive people notice the rain and see it as a deterrent to go to the polls. Strategic people notice the rain and see it as deterrent but also as an encouragement to go the polls, precisely because they know it will discourage some people to go and hence their vote will carry a larger weight. Hence, rain increases the likelihood of voting for strategic relative to naïve people. An important underlying assumption is that the shock to the cost of voting is additive, i.e. the increase in the cost of voting is the same for everybody affected by the shock. In my data I control for an extensive set of individual characteristics, and for the time of day when the rain occurred. Hence, the assumption is in fact that the increase in the cost of voting is the same for everybody, *conditional on* the observable individual characteristics, including the time of the when individuals consider voting. The remainder of the paper is organized as follows: Section 2 summarizes the literature on voting behavior and turnout, Section 3 describes the model, Section 4 presents the empirical results, and Section 5 concludes.

4.2 Literature

Anthony Downs[1957] is the first to look at elections from an economic - cost and benefit- point of view. He mentions that when individuals decide whether or not to vote, they base their decision on candidate or party differential, benefits of living in a democracy, expected closeness, and expected turnout. He conjectures that the higher the first three the higher the benefit and hence the likelihood of voting. I follow his model but allow people to differ with respect to how well they understand the implications of expected turnout. Downs' views are also supported by Tullock[1972] and Riker and Ordeshook[1968] who show empirically that increased expected closeness leads to an increased likelihood of voting. A radically different explanation of voting behavior is that of Ferejohn and Fiorina (1974, 1975). They argue that expected closeness does not have an effect on the decision to vote, as individuals simply want to minimize the maximum regret from the decision not taken. Hence, individuals vote as if they were the swing voter because the maximum regret is achieved by not voting in the event of a tied election.

More sophisticated and purely theoretical models of strategic voting are developed by Palfrey and Rosenthal (1983, 1985), and Feddersen and Pesendorfer(1996, 1997). In their initial article (1983), Palfrey and Rosenthal propose a game theoretic model of voting behavior. Individuals vote over two alternatives with fixed positions (i.e. the absolute candidate differential is equal across individuals). Individuals are split into two groups, based on their preferred alternative and all have the same cost of voting. The game is one of complete information, in that the costs and preferences of each individual are known. Information is nevertheless naturally imperfect as everybody votes (or abstains) at the same time. The authors show that there are two types of Nash equilibria, as the electorate size increases: one with turnout approaching zero and one with turnout approaching twice the percentage of the smaller group in the population. In their subsequent work (1985) the authors introduce uncertainty

over costs and preferences, thus transforming the game into one of incomplete information. They show that there are no Bayesian Nash equilibria with high turnout, and only the individuals with negligible costs of voting do vote.

Feddersen and Pesendorfer(1996, 1997) analyze a model in which the source of uncertainty is the realization of a variable - the state of the world - the affects the payoff of all voters. Similarly to Palfrey and Rosenthal, individuals are split into groups based on their constant preferred position with an additional group of independents whose preferred position varies with the state of the world. Each individual knows her own group and receives a signal about the state of the world. The precision of the signal varies, some individuals receive perfectly accurate signals and know the state of the world, some receive an imperfect signal and are uncertain about the state of the world. The authors show that uninformed voters who are indifferent between the two candidates (i.e. have the same expected utility from voting for any of the two) strictly prefer to abstain. This leads to an equilibrium in which some voters abstain although they strictly prefer one candidate over the other. The authors prove that despite these abstentions, if the only source of uncertainty is the state of the world, elections still fully aggregate information in that the chosen alternative would not change were the private information to become public knowledge.

Shachar and Nalebuff (1999) explain the strategic behavior of voters - as reflected in turnout being a positive function of expected closeness - through the activity of party leaders. Party leaders focus their effort geographically according to the chance of the effort to swing the election to their side. In turn, the likelihood of the effort being pivotal depends on expected closeness and the responsiveness of individuals to the effort. Their model is supported empirically by a structural estimation. Coate and Conlin (2004) use a similar structural estimation of turnout at Texas liquor referenda to support their model which assumes individuals behave as group rule-utilitarians. They also use weather on election day as a proxy for costs of voting but do not find a significant effect of weather on turnout.

Finally, Bartels(1996) analyzes how the behavior of informed voters differs from that of informed voters. Unlike in this paper, the difference between informed and uninformed voters is with regard to how they vote not to whether or not they vote. The author finds that the difference between the actual probability of vote for the Republican candidate and the hypothetical probability of a fully informed voter is about ten percentage points.

4.3 Model

I am assuming that there is heterogeneity among voters with respect to how strategic they are and I am trying to find out what determines this heterogeneity. The model is an adaptation of Riker and Ordeshook [1968]. Individual i is characterized by the following: a preference over the chosen alternative, X, represented by $u_i(X)$; a cost of voting, made up of an individual cost c_i, and an exogenous shock ϵ (the costs enter linearly in her utility); a benefit from living in a functioning democracy, $d_i \geq 0$, and a positive measure of how strategic she is, $\sigma_i \geq 0$.

The individual can vote for the two available alternatives, R and L, or abstain. If she votes, she attributes a subjective probability p_i^V to R winning, and a subjective probability λ_i^V to democracy being maintained through a high enough turnout, and faces cost $c_i + \epsilon$. If she does not vote, she attributes a subjective probability p_i^{NV} to R winning and λ_i^{NV} to democracy being maintained, and faces no cost. Then the subjective value of her vote is the difference between the utility of voting and the utility of not voting (I am dropping subscripts):

$$V = (p^V - p^{NV})\,|u(R) - u(L)| + (\lambda^V - \lambda^{NV})d - c - \epsilon \qquad (4.1)$$

$P \equiv p^V - p^{NV}$ can be seen as the difference her vote makes in electing the candidate and $\Lambda \equiv \lambda^V - \lambda^{NV}$ - as the difference her vote makes in maintaining democracy. The individual will vote if and only if $V \geq 0$.

P and Λ depend on T - subjective expected turnout. Expected turnout is

a function of, among other things, the exogenous shocks in the cost of voting. $T = T(\epsilon, .)$, with $\frac{\partial T}{\partial \epsilon} < 0$. The larger the shock the lower the expected turnout. The magnitude of the effect of T on P and Λ depends on σ. $P = P(T, \sigma)$, with $\frac{\partial P}{\partial T} \leq 0$, $\frac{\partial P}{\partial T} = 0$ for $\sigma = 0$ and $\frac{\partial P}{\partial T \partial \sigma} \leq 0$. Similarly $\Lambda = \Lambda(T, \sigma)$, with $\frac{\partial \Lambda}{\partial T} \leq 0$, $\frac{\partial \Lambda}{\partial T} = 0$ for $\sigma = 0$ and $\frac{\partial \Delta}{\partial T \partial \sigma} \leq 0$. These are to say that the individual believes that the higher the turnout the lower the difference her vote makes both in terms of electing the candidate and maintaining democracy. More importantly, the more strategic she is the stronger this relationship. For a completely naïve individual ($\sigma = 0$), there is no relationship between expected turnout and the difference her vote makes. The link between the value of the vote, magnitude of the shock and strategicness can then be summarized by:

$$\frac{\partial V}{\partial \epsilon \partial \sigma} = \frac{\partial P}{\partial \epsilon \partial \sigma}[u(R) - u(L)] + \frac{\partial \lambda}{\partial \epsilon \partial \sigma} d \geq 0 \tag{4.2}$$

meaning that for a given exogenous shock, the value of one's vote increases more, the more strategic she is.

To make this link more tractable and usable in an estimation I will now simplify the model, by introducing more specific functional forms for P, Λ, and T.

$$\begin{aligned} T &= T_0 - h\epsilon \\ P &= P_0 + \sigma f(T), f' < 0 \\ \Lambda &= \Lambda_0 + \sigma g(T), g' < 0 \end{aligned}$$

Furthermore I will assume that $\sigma \in \{0, 1\}$, 0 representing a naïve individual and 1- a strategic individual. Hence, the difference between the value of the vote for the strategic and the naïve voter is:

$$V^S - V^N = f(T_0 - h\epsilon)\,|u(R) - u(L)| + g(T_0 - h\epsilon)d \tag{4.3}$$

which is increasing in epsilon. This allows me to design a simple test to deter-

mine which individual characteristics determine how strategic she is. First, I identify an exogenous shock to the cost of voting: rain on election day. Second, I look at how this shock affects the differential in the probability of voting across categories of voters. Rain has a first order effect - a higher cost of voting reduces the payoff from voting and thus reduces the probability of the vote. In addition, rain has two second order effects that work through expected turnout - a higher cost of voting implies a lower expected turnout. First, a lower expected turnout leads to an increased probability of being a pivotal voter. Second, a lower expected turnout implies an increased responsibility to maintain a democratic system. When one expects fewer voters one's abstention has an increased chance to disrupt the democratic system through a near-zero overall turnout. These two indirect effect thus increase the probability of the vote.

The identifying assumption is that voters who are naïve (i.e. less strategic) do not take into account the indirect effects[1]. Thus, for the same shock to the cost of voting the probability of the vote decreases more for naïve voters than for strategic voters, when controlling for and interacting with differences in the party/candidate differential and in the benefit from democracy. An underlying assumption is that the majority of people are not aware of the second order effect, otherwise a higher cost of voting would not imply a lower expected turnout. Another assumption is that the shock to the cost of voting is additive, i.e. the increase in the cost of voting is the same for everybody affected by the shock. This is of course a rather strong assumption. It is not a stretch of imagination to think that some people have better means of protecting themselves from the elements than others. However in my data I control for an extensive set of individual characteristics, so the assumption is in fact that the increase in the cost of voting is the same for everybody, *conditional on* the observable individual characteristics. Furthermore, using hourly measures of rain I can isolate variation in rain at particular times in the day. Since individuals that intend to vote at similar times are likely to be equally affected by rain, the differential

[1] One can be too strategic, thinking of third and higher order effects, but I leave this aside.

effect of rain on these individuals is more likely to reflect differences in strategic behavior.

4.4 Data

Voting data

The voting data comes from the National Election Studies[2] 1948-2002 cumulative datafile. The NES survey is administered in the United States in all electoral years, (including Presidential and Midterm election years) to a sample of roughly 2,000 individuals from all states. Presidential elections take place on the Tuesday after the first Monday in November in years divisible by four. The survey contains a comprehensive set of personal characteristics and political variables. The respondents include both voters and non-voters. The data is a repeated cross section. I am using sample from 1972-1998, 14 election years (looking both at Presidential and Midterm elections) Before 1972 and after 1998 county information is not recorded in the survey so it cannot be matched with weather data. The sample size is approximately 27,500 and the unit of observation is the individual. The summary statistics are presented in Table 4.1, Table 4.2, and Table 4.3. The absolute candidate differential is measured as the absolute value of the difference between the thermometer ratings for the Democratic and Republican presidential candidates.

Weather data

The weather data comes from the datasets available at the National Climate Data Center[3]. There are two datasets of interest, containing daily and hourly meteorological data. The daily weather dataset[4] contains cumulative amount of rain, snow for the entire election day (24hrs) and maximum and minimum

[2] Available to download from www.umich.edu/~NES

[3] Available at www.ncdc.noaa.gov. The datasets can be downloaded free of charge if accessed from a US educational server (.edu).

[4] U.S. Daily Surface Data TD 3200/3210/3206/3205

temperature for the entire election day. The hourly data[5] contains hour by hour rain amount, throughout the election day. The daily data has the advantage that it is available for all counties, almost every year. The disadvantage is that it is more noisy: since it contains cumulative measures, rain during the night is no different from rain during the day; in addition as measurements are recorded during the day, the information for two consecutive days must be used to cover the entire election day. The hourly data has the obvious advantage that is hour by hour, hence more accurate. The disadvantage is that it is available for a lot fewer counties and fewer years per county. The year by year averages are presented in Table 4.4. Hourly data can be used to validate the daily amounts. For example, the unusually high daily value in 1972 is confirmed by the hourly amount. The unit of observation is the weather station.

The location of the individuals survey in the NES is most closely described by the county they reside in at the time of the interview. Therefore, in order to link the individual to the weather data, county level weather information is constructed by averaging the readings of all weather stations in the county. The voting data is then merged with voting data by state-county-year.

4.5 Results

To identify whether differences in education translate into differences in strategicness I use a difference-in-difference-in-difference model. In addition, the data structure allows several fixed effects to control for unobserved variables. The equation to identify whether, for example, education leads to a higher probability of being strategic is:

$$P_{icst} = \alpha_c^1 + \alpha_{st}^2 + \beta X_{icst} + \gamma edu_{icst} + \delta rain_{ct} + \eta candd_{icst} + \theta edu_{icst} \times rain_{ct} + \varepsilon_{icst} \tag{4.4}$$

[5] U.S. Hourly Precipitation Data TD3240

where P_{icst} is the probability that individual i votes, in county c, in state s, in year t. The state×year fixed effect controls for any state level variables, including those that change over time. For example, this fixed effect would control for whether the individual finds herself in a "swing", "blue", or "red" state. The county fixed effect controls for any county level variable that do not change over time. Perhaps the most important county level control is for the normal weather conditions. Certainly an extra inch of rain in a typically rainy county has a different impact than one in a typically dry county.

Education is measured by a categorical variable which records the highest level of education completed: grade school, high school, college without degree, and college with degree. The results are presented in Table 4.5. In the first column I use the daily measure of rain. In this first column it can be observed that an inch of rain increases the likelihood of voting for an individual who has finished high school by 14 percent more than for an individual with only a grade school education. This is consistent with the hypothesis that finishing high school induces a more strategic voting behavior relative to finishing only grade school. Furthermore, the total effect of rain on the likelihood of voting for a person who has finished high school or more -obtained by adding the coefficient for rain with the relevant interaction- is not significantly different from zero. This is to say that for individuals with more than grade school, rain has no effect on their likelihood of voting, whereas for individuals with only grade school it has a negative effect. Similar differential effects can be observed for having some or a complete college education. In columns 2 through 5 I use hourly measures of rain. As hourly measures were taken in a much smaller number of counties, the sample size drops considerably. In column two I use the amount of rainfall for the entire voting day, 7am to 10pm.[6]. The signs of the coefficients are identical to those in column one and the sizes are quite similar. However, the coefficients are not precisely measured, perhaps due to the smaller sample size. In columns 3 through 5 I break down the hourly measure of rain

[6] All hours are expressed in the local time of the county.

into three intervals, 7am-12pm, 12pm-5pm, and 5pm-10pm, and interact the amount of rain during these intervals with the education measures one at a time. The results in column 3 show that the differential effect of rain in the 7am-12pm interval is very large and precisely estimated. An inch of rain drops the likelihood that an individual with only a grade school education votes by 85 percent, while leaving this likelihood unchanged for people with at least a high school education. By focusing on the effect of rain in this particular time interval, I can further address the concerns that the differential effect of rain is due to unobserved differences in the cost of voting. The individuals who, perhaps because of constraints in their schedule, are only considering voting in the 7am-12pm interval are the ones who will be affected by rain in this interval. They are also more likely to represent a homogenous group with regards to the increase in cost of voting due to rain.

In all the regressions it can be observed that the larger the absolute candidate differential - a measure of the difference in utilities derived from the two candidates - the larger the likelihood of voting. This supports the Downsian conjecture[1957] that the less perceived difference between candidate the lower the likelihood of voting.

The available data allows for an even more accurate test to distinguish between the story of differences in strategicness and that of unobserved differences in the cost of voting. All that is needed is a circumstance under which each vote weighs heavier but without increasing the cost of voting. An exogenous change in the closeness of the election which does not change the cost of voting would be such a circumstance. A plausibly exogenous source of within state-variation in closeness is the type of House race. In the congressional districts where no incumbent is running for re-election and no candidate is running unopposed the election is more likely to be up for grabs and hence expected closeness is higher. The race for the House is "open" in roughly 10 percent of the cases. Since the type of house race changes over time for the same congressional district this variable is identified at the county-year level. Interacting the dummy for open

House race with the education measures allows us to further distinguish between the two stories. Consider the estimating equation:

$$P_{icst} = \alpha_c^1 + \alpha_{st}^2 + \beta X_{icst} + \gamma edu_{icst} + \delta open_{ct} + \eta canndd_{icst} + \theta edu_{icst} \times open_{ct} + \varepsilon_{icst} \tag{4.5}$$

The results of the estimation are presented in Table 4.6. A change in the type of House race does not change the cost of voting, but only the weight of the vote. Hence, that I observe the θs to be similar in sign and significance to those estimated in the rain equation is further proof that the results in the rain equation are driven by differences in strategicness. The more educated individuals realize the increase in the weight of their vote and hence turnout in larger numbers. A note of caution should be made. The open race and the rain are not perfectly comparable effects, in particular because everybody knows whether it's raining or not, but not everybody knows that the House election is made more competitive in the absence of an incumbent. Therefore the differential effect of the open race by education level can be decomposed into differences in strategicness and differences in knowledge. Without further data I can not gauge the relative sizes of these two components.

4.6 Conclusion

This paper adds a simple modification to the older models of strategic voting by allowing individuals to differ in their understanding of the rules of the game. In addition, this paper presents a simple approach to the paradox of non-voting and backs up its claims with empirical results. The results show that it is not implausible to think individuals differ with respect to how strategically they behave. Education is significant in determining this heterogeneity. The caveat mentioned in the introduction about the reliance on the assumption of additive costs of voting is not a minor one and needs to be kept in mind. By focusing on subgroups of the population among which voting costs are plausibly additive

and by highlighting a situation where the costs of voting do not change, I have presented suggestive but not definitive evidence that differences in strategicness do play a role in explaining the observed outcomes.

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Table 4.1: Summary Statistics

		Percentage/ Mean	Total nr. obs
	Age	45.19	
	(SD)	(17.81)	27,482
	Female	55.91	27,591
Race	White	80.47	
	Black	11.70	
	Hispanic	4.36	27,443
Education	Grade School(0-8)	11.29	
	High School(9-12)	47.66	
	Some college(13+)	21.93	
	College(degree)	19.11	27,318
Location	City	25.93	
	Suburban	39.10	
	Rural	34.97	27,591
Income percentile	0-16	16.71	
	17-33	16.17	
	34-67	34.07	
	68-95	27.84	
	96-100	5.21	25,200

Table 4.2: Summary Statistics Continued

		Percentage/ Mean	Total nr. obs
Occupation	Prof. & manag.	25.70	
	Clerical & sales	19.52	
	Skilled & service	33.77	
	Laborer&Farmer	5.27	
	Homemaker	15.74	26,473
Employment	Employed	59.78	
	Not Employed	8.20	
	Retired	14.26	
	Homemaker	17.76	27,552
Church	Every week	26.22	
	Almost	11.55	
	Few a month	13.16	
	Few a year	24.68	
	Never	19.52	
	No religious	4.86	27,268
	Home own	67.48	27,264
	Married	58.67	27,504
Media	Days Read news	3.83	
	(SD)	(2.92)	15,515
	Days TV news	4.50	
	(SD)	(2.67)	15,505

Table 4.3: Summary of Political Variables

		Percentage/ Mean	Total nr. obs
Vote	Not registered	20.64	
	Reg. no vote	13.92	
	Reg. & vote	65.44	23,740
Interest in election	Not much	26.69	
	Somewhat	44.99	
	Very	28.31	25,899
Interest in public affairs	Hardly	13.37	
	Now and then	21.86	
	Some time	35.75	
	Most time	28.73	25,392
Contact by major party		25.58	24,250
Close pres election		57.32	14,153
Party ID	Strong D	17.26	
	Weak D	21.26	
	Ind D	12.29	
	Ind Ind	12.30	
	Ind R	10.87	
	Weak R	14.22	
	Strong R	10.80	27,440
Absolute Cand diff		33.51	
	(SD)	(26.51)	18,186
Absolute Party diff		27.16	
	(SD)	(25.58)	19,873

Table 4.4: Rain Summary, in 1/100 inches

	Daily rain			Hourly rain 07-22		
Year	Mean	SD	N	Mean	SD	N
1972	100.07	111.41	2,607	35.93	36.64	1,124
1974	30.94	33.47	1,534	15.48	16.07	568
1976	4.26	21.64	2,201	16.37	22.37	163
1978	15.76	24.39	2,183	15.75	20.65	667
1980	12.76	18.38	1,563	17.58	17.00	444
1982	35.85	53.94	1,355	27.53	29.22	409
1984	8.58	20.70	2,243	16.61	19.73	293
1986	29.51	46.16	2,080	31.18	41.57	538
1988	11.39	19.09	1,978	10.15	8.32	441
1990	17.13	21.58	1,943	10.09	11.04	591
1992	53.01	64.57	2,414	30.64	32.98	766
1994	16.32	26.80	1,688	14.37	20.71	394
1996	7.30	17.37	1,634	5.17	9.87	312
1998	10.89	23.00	1,166	6.00	9.87	279
Total	27.68	54.93	26,589	20.88	27.86	6,989

Note: daily rain is the sum of rain on election and following day

Table 4.5: Effect of education on strategic behavior

	Daily rain	Hourly rain 7am-10pm	Hourly rain 7am-12pm	Hourly rain 12pm-5pm	Hourly rain 5pm-10pm
Daily rain	-0.1501***				
	(0.0493)				
Hourly rain 7am-10pm		-0.2661			
		(0.1903)			
Hourly rain 7am-12pm			-0.8498***	-0.0185	-0.0174
			(0.3212)	(0.1616)	(0.1616)
Hourly rain 12pm-5pm			-0.1641	-0.0520	-0.1695
			(0.2810)	(0.4137)	(0.2815)
Hourly rain 5pm-10pm			-0.0019	0.0077	-0.0458
			(0.3501)	(0.3509)	(0.4388)
Candidate differential	0.0574***	0.0666*	0.0637*	0.0630*	0.0637*
	(0.0186)	(0.0375)	(0.0375)	(0.0376)	(0.0376)
High School	-0.0247	0.0226	-0.0027	0.0773	0.0627
	(0.0214)	(0.0542)	(0.0467)	(0.0489)	(0.0472)
Some college	-0.0020	0.0399	0.0355	0.1007*	0.0823*
	(0.0229)	(0.0567)	(0.0495)	(0.0515)	(0.0497)
College degree	0.0095	0.0447	0.0371	0.1003*	0.0952*
	(0.0241)	(0.0592)	(0.0520)	(0.0537)	(0.0520)
High School * Rain measure	0.1392***	0.1397	0.8918***	-0.3109	-0.1100
	(0.0485)	(0.1536)	(0.2948)	(0.3132)	(0.2747)
Some college * Rain measure	0.1799***	0.2585	0.8475***	-0.0351	0.2861
	(0.0493)	(0.1577)	(0.2941)	(0.3199)	(0.2973)
College degree * Rain measure	0.1678***	0.2389	0.8772***	0.0482	0.0571
	(0.0494)	(0.1600)	(0.2947)	(0.3404)	(0.3011)
Adjusted R2	0.184	0.203	0.205	0.201	0.202
Number of observations	6,587	1,544	1,544	1,544	1,544

Notes: The dependent variable is whether an individual voted, either in a presidential or mid-term election
The equations are estimated using a linear probability model
The rain measure used in the interactions is one specificied in the column header
Rain is measured in inches; daily rain is measured over the election date and the following day;
hourly rain is measured during the election day
Candidate differential is measured on a scale from 0 to 0.97
Controls included but not reported: employment status, occupation, income, gender, race, urbanism, marital, homeownership, exposure to media, interest in election
The equations include State*year, and county fixed effects
Robust standard errors, clustered at county*year level in parenthesis
* significant at 10%; ** significant at 5%; *** significant at 1%

Table 4.6: Effect of Open House Race

Candidate differential	0.0603***
	(0.0185)
High School	-0.0101
	(0.0207)
Some college	0.0211
	(0.0223)
College degree	0.0351
	(0.0235)
Open House race	-0.0583
	(0.0568)
High School * Open House race	0.0375**
	(0.0163)
Some college * Open House race	0.0501**
	(0.0240)
College degree * Open House race	0.0442**
	(0.0204)
Adjusted R2	0.184
Number of observations	6,807

Notes: The dependent variable is whether an individual voted in a House election
The equations are estimated using a linear probability model
The omitted education category is grade school (at most 8 years of education)
Candidate differential is measured on a scale from 0 to 0.97
Controls included but not reported: employment status, occupation, income, gender, race, urbanism, marital, homeownership, exposure to media, interest in election
The equations include State*year, and county fixed effects
Robust standard errors, clustered at county*year level in parenthesis
* significant at 10%; ** significant at 5%; *** significant at 1%